



Intelligent Teaching Mode of Creative Writing Course in Colleges and Universities Based on Data Mining Technology

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Abstract. The research on intelligent teaching mode of creative writing course in Colleges and Universities Based on data mining technology is a paper aimed at studying the effectiveness of intelligent teaching mode of creative writing course. The research will be based on data mining technology, and the research methods will be qualitative methods using content analysis, investigation methods and case study methods. The researchers conducted this study by collecting data from different sources, such as journals, books, and the Internet. This paper also introduces the results of the research work, which shows that there is no significant difference in performance between students who use intelligent teaching mode and students who do not use intelligent teaching mode.

Keyword: Data mining technology · Writing · teaching model

1 Introduction

When we have a deeper understanding of the subject of creative writing, we have become more aware that this is a major that best meets our interests and needs. However, it is also found that although the theoretical research on creative writing in domestic academic circles is becoming more and more in-depth, and the teaching of creative writing has also shown an obvious trend of sinking to primary and secondary schools [1]. Some creative writing courses have also appeared on the Internet, but creative writing itself seems to be confined to the space of colleges and universities to a large extent, and has not been recognized, loved and applied by more and more people.

Of course, university scholars have also noticed this problem and are working hard for it. In the field of new media (mainly wechat official account), there is not much promotion and introduction of creative writing itself. Many platforms related to it are to display works and publicize activities. Even if there is only a word of introduction, it is often too academic and not easy to be widely understood by netizens with different levels of education. Previously, I also promoted the theoretical books on creative writing on the official account (click to read), but if I have no concept of creative writing, I believe that not many people are willing to read it.

It is well known that students' learning cannot be separated from the five skills of "listening, speaking, reading, reading, and writing", and among these five skills training links, writing is clearly the most important and difficult to conduct training. In the teaching of English writing, to ensure a good quality of composition writing, students are required not only to have a solid knowledge of English, but also to have a high comprehensive ability to use English, and be able to effectively output their basic knowledge of English. It can be seen that the teaching of English writing involves not only many aspects, but also a challenging task. From the perspective of English writing teaching, constructing an effective writing evaluation mechanism can not only help students achieve positive feedback on writing issues, but also help teachers conduct teaching effectiveness analysis. In the teaching of English writing, if only the teacher corrects the composition and gives scores, the workload for the teacher is heavy, and the feedback cycle for the students is long, which can easily cause students to lose interest and hinder the development of English writing ability (Qin Chaoxia, 2009) [2]. However, in the traditional writing teaching model, English teachers' teaching tasks are heavy and mainly focus on exam oriented education. In addition, correcting compositions takes time and effort, and teachers often rush through the process. As a result, students' writing training is very scarce, and there are few writing opportunities. They often only complete writing in written English expressions in tests, which only give a score, and few students revise their compositions again.

From the perspective of students' current writing level, students generally master the basic skills of English writing. However, in daily teaching, the author has conducted several limited time writing exercises and found that students' English writing is not satisfactory and their English writing ability is low. The main problems include: confusion in structure and unclear paragraph division; Empty and poor content; Vocabulary and grammar errors. According to daily conversations with students, their previous high school writing feedback model was traditional and single teacher feedback, which means that the teacher corrects and scores them all at once. Some students, even if they receive the teacher's correction and scoring, simply do it in a hurry and do not make any changes or reflections on their compositions, which means they lack the awareness of autonomous revision. Even if students want to revise their compositions repeatedly, they will be affected by the timeliness of teacher feedback, which seriously affects students' enthusiasm and initiative in English writing. In addition, for some students who want to learn independently and receive timely writing evaluations and feedback, teacher evaluations cannot be timely fed back to students [3]. Over time, English writing will not receive the attention of students, and students will lose enthusiasm for writing. This will also reduce confidence in writing, which is not conducive to improving students' writing skills. As for online intelligent evaluation systems, their advantages are mainly manifested in the following aspects: First, they can achieve real-time feedback; Second, comment on sentences; Third, it has online modification function. Using this system to develop English composition writing, students can not only stimulate their desire to learn writing, but also enable this part of students who want to learn independently to receive timely feedback during the writing process, and modify their compositions. Students' errors are gradually corrected, ultimately achieving continuous improvement in their writing skills. Not only that, repeated training is also conducive to improving

their self-confidence and making them more passionate about English learning [4]. The architecture is shown in Fig. 1 below.

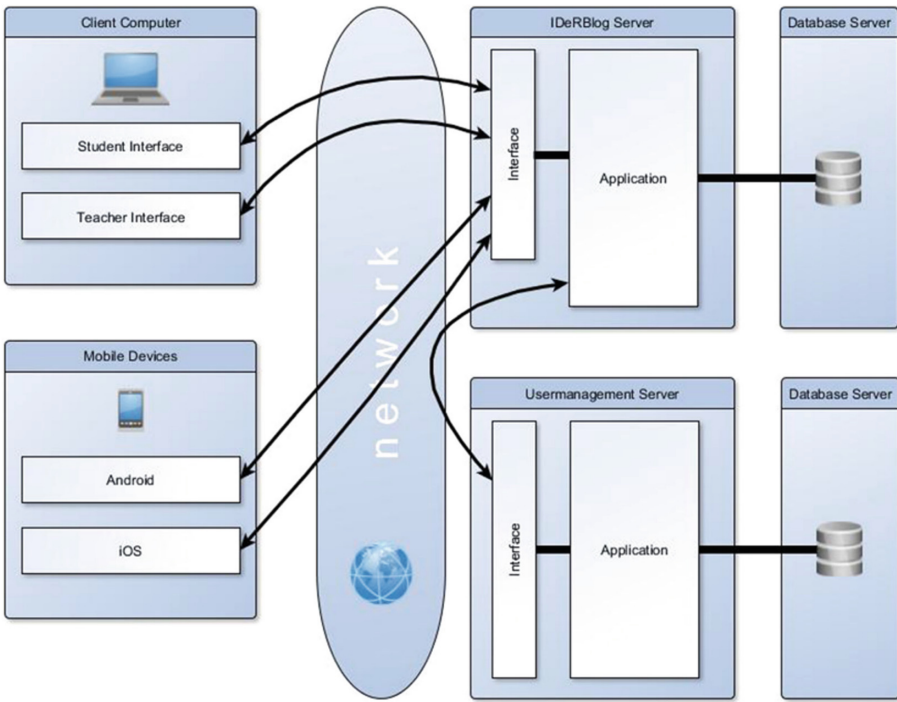


Fig. 1. Architecture

It is hoped that more people will know creative writing, its existence, its past and its value. Perhaps, compared with the efforts made by experts and scholars to promote creative writing, a push does not play much role, but as a creative writing enthusiast, learner and practitioner, it is difficult to curb his desire to write such an article to introduce his creative writing to more people [5]. Based on this, this paper studies the intelligent teaching mode of creative writing course in Colleges and Universities Based on data mining technology.

2 Related Work

2.1 Creative Writing

As an important way of language output, second language writing is an emotional cognitive activity. Zemel pointed out that writing can essentially be seen as a way for authors to communicate with others and an effective way for authors to think and create. In his view, writing is a process of continuous reflection, modification, and elaboration by the individual's brain, as well as the output and expression of the individual's own inner

emotions and ideas (Zemal, 1985). Writing is a powerful tool for thinking, learning, and communicating. For high school students, writing can cultivate their thinking awareness and language output ability, and can also focus on reflecting a high school student's comprehensive language use ability. Therefore, in the teaching of English writing, teachers should not only provide students with formal assistance in language, but also attach importance to guiding students in thinking, cognition, discourse, semantics, and other aspects [6].

To understand what creative writing is, what it is for and against, we must first know where it comes from. As an independent subject, creative writing was born with its specific historical background. The concept of "creative writing" was first put forward. It is generally believed that it came from Ralph Waldo Emerson's speech to the National Association of university students honors in 1837. In this speech, Emerson clearly used the concepts of creative writing and creative reading.

The historical background of the concept of "creative writing" can be summarized as "the reform of educational thought" and "the development of English Literature" [3]. The historical context behind Emerson's speech was the reality that academic writing, literary works and literary education in American higher education were not valued at that time. At that time, teaching practice overemphasized the status of linguistics, especially ancient language and rhetoric, which restrained the development of literary originality. Since its birth, creative writing has clearly defended the independent status of literature and protected the original value of literature. Creative writing, as we know it today, evolved on the basis of English writing courses in American colleges and universities in the 19th century. It itself emerged to get rid of the tedious classical Chinese education and change the situation that literature itself is not valued [7]. Its initial goal is to bridge the gap between academic research on literature and social practice. Figure 2 below shows the creative writing scheme.

Obviously, the traditional Chinese language education has been unable to adapt to the development background of the times, and the rise of creative writing is natural.

2.2 Text Data Mining Technology

This is the process of extracting useful information from unstructured data, identifying and recording the relationships and entities between related data. In addition, you can record data entities and attributes from unstructured or semi-structured data. This information is stored in the database. Whenever necessary, the relational schema is examined and used for business or any other requirements [8]. Check the efficiency of stored data so that data stored procedures can help meet future needs.

This is another process of extracting required patterns and collections from data according to user needs. For example, users can search for data using a specific set of words or patterns to easily understand the data. The algorithm is used to identify the user pattern of search data to provide relevant information faster. In addition, these algorithms help the system identify the user behavior to be tracked to find the same pattern of relevant data. Google search is the best example of data retrieval technology.

$$\arg \min_{SC} \sum_{i=1}^k \sum_{x \in C_i} |X - \mu_i|^2 \quad (1)$$

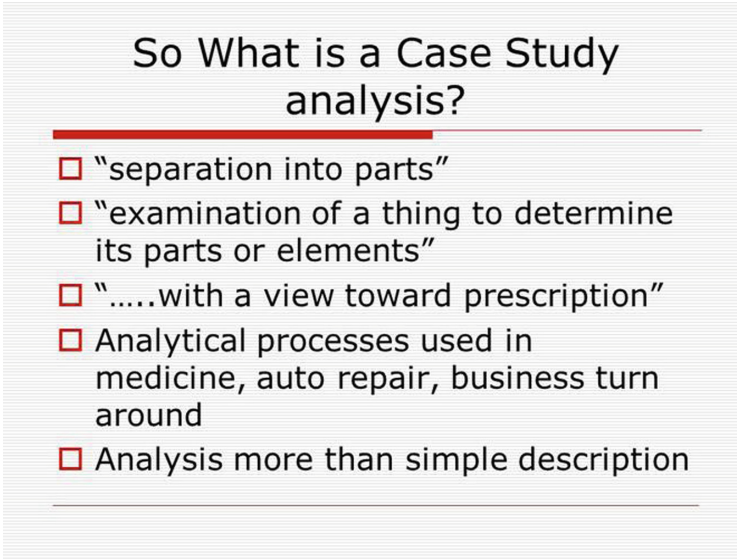


Fig. 2. Creative writing scheme

$$J(\Pi, W) = \sum_{k=1}^K \sum_{x \in \pi} \sum_{d=1}^D (x_{id} - v_{kd})^2 \quad (2)$$

$$O_{v,j} = h \left(\sum_{i=1}^{f_{k-1}} \sum_{u \in N[v]} w_{i,j,u,v} x_{u,i} \right), (j = 1, \dots, f_k) \quad (3)$$

$$\max_I \sum_I [U^I(X^I) - C^I(X^I)] \quad (4)$$

From the perspective of data scientists, this process belongs to supervised learning technology. This is also called natural language processing. Based on the data in the database, predefined topics are selected and provided to the data. Collect and analyze the documents, provide the correct title for the data, and process them for further analysis [9]. This process is very simple. Just as users know relevant topics, they can search for topics, so there is no need to analyze the entire data. This saves time and the work of data analysts. In addition, this process can be easily automated in different environments. In fact, this process has been automated, so spam filtering, web page classification and other data science and technology can be easily applied to the NLP process.

$$\arg \min_{SC} \sum_{i=1}^k \sum_{x \in C_i} |X - \mu_i|^2 \quad (5)$$

As the name suggests, the abstract of an article is formed by this technique. Provide valuable information to users by automatically compressing data. Examine different text

sources to form accurate information from the data, extracting the same content as a large number of original documents [10]. Different techniques are used in the text summary because this process requires different inputs. Neural network and regression model are commonly used in text summarization. The long text is shortened so that the entire text forms a summary. This makes it easy for users browsing the summary to retrieve the data and understand it.

3 Research on Intelligent Teaching Mode of Creative Writing Course in Colleges and Universities Based on Data Mining Technology

When many people see “writing”, they will associate it with “writer” and “Literature” at the first time [11]. However, creative writing is quite different from traditional writing. In the research of Professor gehongbing ° of Shanghai University, creative writing is defined as “the general name of all creative activities in which human beings take writing as their activity style and work as their final outcome”. At first glance, this seems nothing, but in fact, this definition is quite different from the traditional writing.

First of all, the understanding of creative writing for writing is not limited to the category of “literary creation” [12]. Creative writing has a new interpretation of the two concepts of “creativity” and “writing”. Professor gehongbing pointed out that in the perspective of creative writing, creativity is a fundamental practical activity for people to realize themselves as subjects; Writing is an aesthetic practice based on human’s ontological practice.

Data mining teaching focuses on integrating scattered and trivial language training into a comprehensive language practice activity, forging rich language with distinct images and sincere emotions into a “language alloy” that integrates images, emotions, and language in language learning, with strong vitality and aggregation functions, and can integrate new language information and transform students’ own language [13]. Therefore, data mining teaching scientifically and reasonably arranges various Chinese practical activities such as listening, speaking, reading, and writing based on the characteristics of students’ age stages, integrating scattered Chinese activity projects in the past into a comprehensive practical activity block, and constructing three levels of Chinese practical activity blocks: first, a sequence of integrated reading and writing activity blocks, with the aim of improving students’ reading and writing abilities; The second is the sequence of exploratory learning activity blocks, which aims to stimulate students’ enthusiasm, initiative, and creativity in learning; The third is the sequence of comprehensive practical activities, which is based on social life, selects the problems faced by students, guides students to solve problems, and closely communicates with various disciplines. Over time, in such integrated language practice activities, students’ language abilities gradually improve imperceptibly.

Data mining teaching also focuses on the reorganization of teaching content, integrating teaching content into one section. Select and combine teaching content blocks suitable for students’ learning through the “trilogy”. One is “subtraction”, which filters out important parts of the textbook that are worth learning as a “core” of the teaching content. The other is “linkage”, which focuses on the core “core” and selects content

suitable for students to learn from social life. These content can be the same as or opposite to the “core”. The purpose is to broaden the field of students’ learning [14]; The third is “integration”, which integrates the selected teaching content, clarifies the sequence, enriches students’ emotional experience, and broadens their horizons for learning Chinese. Therefore, intelligent Chinese education is formed. For example, when Mr. Xue was teaching Bai Juyi’s “Light Rain Walking at Night”, he selected and edited famous sentences about “light rain” around the description of “light rain”, forming a teaching content plate with “rain” as the core. On the basis of learning the original text, he guided students to feel the difference between rain in different seasons, light rain and rainstorm, and the difference between vernacular and ancient poetry. In this way, Students’ emotional experience of “rain” is based on their own experience and thinking, which makes their emotional experience more rich and detailed, thereby gradually expanding their horizons in learning Chinese, and thereby generating wisdom in language learning. Text vocabulary data generation is shown in Fig. 3 below.

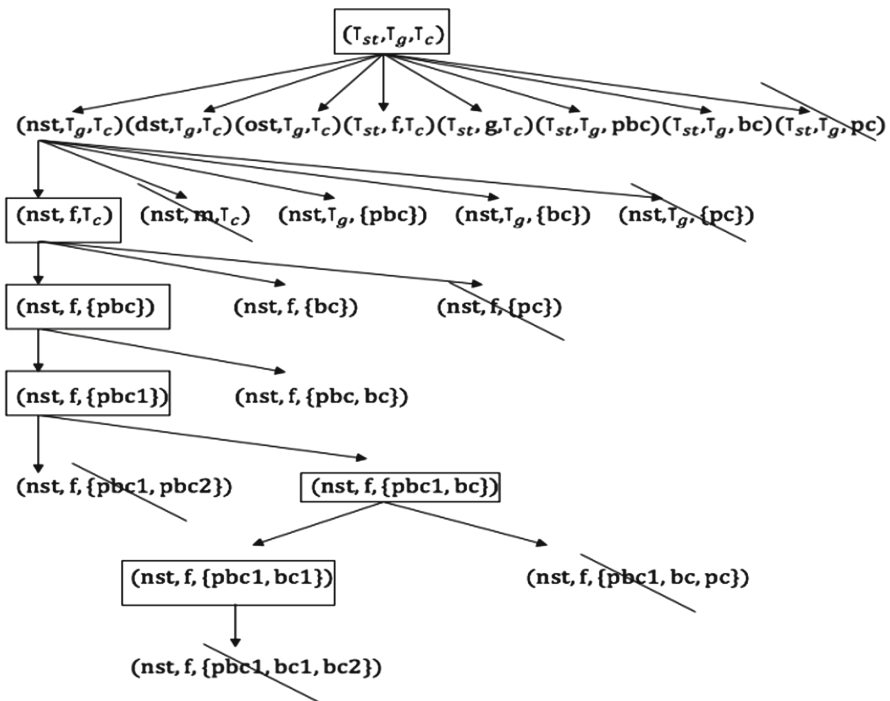


Fig. 3. Text vocabulary data generation

Such a definition seems too abstract and academic. However, once it is pointed out that “creative writing as a writing activity includes literary writing in our traditional sense, as well as many non literary writing oriented to cultural and creative industries, emerging technologies and daily applications. These writing activities, including writing education activities, are based on literary writing”, we can clearly realize that [15], The “writing” recognized by creative writing is not only the traditional “literary writing” of

poems and songs, but also contains all other text content based on human creativity - such as the writing of a wechat official account or the creation of a song lyrics, which belong to the category of “creative writing”.

This is the best way to identify the data you need whenever there are many documents, whether online or offline. Automatic document classification helps you easily identify data with few keywords. WordNet or expert knowledge tools help you find relationships between terms or clusters for easy automation. In addition, this can be achieved by pairing attributes and values with each other and creating entity relationships for words, although the repetition of words in documents is not common.

4 Research on Teaching Mode

In constructivist theory, learning is not a passive acceptance, but an active process that requires learners to use their sensory organs throughout the body to absorb and construct their own meaning in a certain social and cultural environment. According to the basic content of constructivism theory, during the entire teaching process, teachers usually play a leading role, coordinate and take charge of the entire teaching process, organize the teaching process and specific implementation, guide students to actively participate in the entire teaching process, fully consider the individual differences of different students, and develop targeted teaching content [16]. It should be noted that the concept advocated by constructivism is “active learning by students”, which is obviously different from the traditional teaching of “passive absorption” by students. In constructivist theory, teachers mainly assume the dual roles of guidance and supervision, and students’ knowledge and skills are acquired through their own independent learning, rather than being imparted forcefully by teachers.

Constructivist learning theory emphasizes the importance of taking students as the center, constructing an ideal teaching environment in teaching, providing students with a system that can build their own knowledge, while online intelligent scoring systems provide students with an unconstrained learning platform that can be based on their own learning level and style [17]. Therefore, teachers must fully understand the differences in the actual ability levels of different students, and maximize their cognitive structure by implementing differentiated teaching to help them achieve better development. Students need to rely on their own knowledge to conduct second language writing, using online scoring systems to modify their compositions, using machine evaluation to modify their compositions, making full use of the learning resources on the platform, and receiving timely guidance and feedback from teachers, actively participating in writing learning activities to fully tap their potential.

Diversified choices of creative writing teaching courses in Colleges and universities. As for the current situation of the simplification of creative writing teaching courses in Colleges and universities, colleges and universities should set up diversified courses to expand the writing content into special topic writing, novel writing, memoir writing [8], TV program writing and advertising creative writing, so as to stimulate students’ writing thinking, innovate their ideas, enrich their creative writing content, and broaden students’ writing path. In this way, whether it is the accumulation of literary knowledge or the expansion of employment choice channels, It is also of great significance to

improve the soft power of Chinese culture. Therefore, setting up diversified creative writing teaching courses in Colleges and universities has become a necessary choice on the road of innovation.

By using certain terms and associating them, you can classify one group of documents from another. In addition, this correlation helps to identify patterns and frequencies of data in a given document set. Another common document classification method is document clustering [18]. As described above, in this method, documents of similar sets are identified and clustered into similar groups. Document classification can form some rules because it is different and difficult compared with other data. These documents will be huge and the background will be different. The general workflow of the text creation and review process is shown in Fig. 4 below.

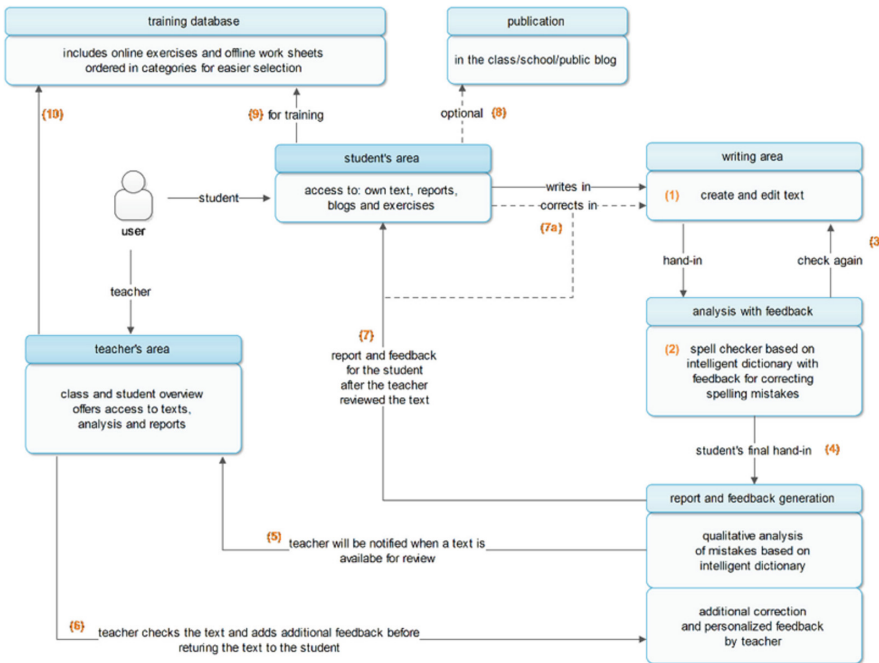


Fig. 4. General workflow for the text creation and review process

When some words or phrases appear frequently, it is best to form a relationship between words in order to form a correlation. This is helpful for data association mining and process automation. Data must be preprocessed to avoid confusing words by parsing and identifying terms. It can form an algorithm to identify common words, and can easily identify patterns. This automated process reduces human effort and produces relevant results to validate the data. Association mining is based on terms in data, because every repeated word is recognized as a term or item.

Most of the global data are unstructured, and the importance of text data mining is self-evident. If information is not collected from unstructured data, the collection of data itself becomes irrelevant [19, 20]. Storing large amounts of data and using traditional

tools to collect information from the data has become a challenge, and text data mining helps to solve this problem to a large extent.

5 Conclusion

This study aims to find out the best teaching mode of creative writing course in Colleges and Universities Based on data mining technology. The main purpose of this paper is to study the influence of teaching mode on students' learning process. This paper is divided into two parts; The first part contains literature review, and the second part contains research methods. Let the students exchange their ideas with each other, carry out creative collision, and then write the draft and finalize it. Such a teaching method makes students become the masters of the classroom, helps to cultivate their own innovative spirit, and helps to break out their inspiration.

References

1. Wang, X.: Construction of civil engineering teaching system based on data mining algorithm and big data technology [J]. *J. Phys. Conf. Series* **1852**(3), 032022 (6pp) (2021)
2. Kong, Y.: Research on reform intelligent effect evaluation system (RIEES) of teaching methods of ideological and political theory course in colleges and universities[C]. 2018 International Conference on Smart Grid and Electrical Automation (ICSGEA). IEEE (2018)
3. Luo, Y., Wan, J., She, S.: The construction and research of the platform of intelligent sharing laboratory based on big data[C]. International conference on Big Data Analytics for Cyber-Physical-Systems. Springer, Singapore (2022)
4. Jamil, A.: Reflections on the teaching of creative writing at the American universities [J] (2016)
5. Li, Z.: Paths to realize informationization teaching in the psychological course of tourism service based on intelligent tourism[C] (2019)
6. Han, X., Hongwen, Y.U.: Construction of Characteristic Thematic Database of Record Room in Colleges and Universities – Discussion on the Construction of Chinese Language Thematic Database (2016)
7. Liu, X.: The application of data mining technology in the teaching evaluation in colleges and universities [J]. *J. Comput. Theoret. Nanosci.* **14**(1), 7–12, 14 (2017)
8. Zhang, Z.L.: Research on construction technology of prefabricated structure based on BIM technology [J] **6**(5), 14–19 (2022)
9. Shen, L.H.: Research on innovation of Chinese writing teaching in colleges and universities based on creative perspective [J]. *J. Qiqihar Junior Teachers' College* (2018)
10. Zhi-Chun, L.L., Zhang, Y., Bai, H.W. et al.: Teaching design of “environment science” course based on intelligent classroom in colleges and universities [J]. *Sci. Technol. Vis.* (2019)
11. Jia, S., Zhang, X.: Teaching mode of psychology and pedagogy in colleges and universities based on artificial intelligence technology [J]. *J. Phys: Conf. Ser.* **1852**(3), 032033 (2021)
12. Sun, B.: Analysis of empirical research model for computer teaching in colleges and universities based on data mining learning analysis [J]. *Modern Electron. Technique* (2019)
13. Sun, C.: Construction and implementation of intelligent classroom teaching model in colleges and universities [J]. *Wirel. Int. Technol.* (2019)
14. Qian, Z.: Innovation of the school computer teaching model based on the information network and the intelligent campus[C] (2020)

15. He, J., Liu, B.: Reform and practice of university computer basic course teaching mode based on smart learning[C]. 2020 15th International Conference on Computer Science & Education (ICCSE) (2020)
16. Hui, L.I.: The significance and strategies of offering drama creation course in western colleges and universities [J]. J. Guangxi Sci. Technol. Normal Univ. (2016)
17. Jianrong, L.I.: On the humanistic mission of creative writing teaching reform in universities [J]. J. Guangxi Sci. Technol. Normal Univ. (2017)
18. Xiao, H., Ma, Y.N., University, T.: Teaching present situations and thinkings of creative writings based on application: take tongling university as an example [J]. J. Tongling Univ. (2016)
19. Zhang, X.: Exploration on teaching reform of contemporary Chinese literature under the major field of creative writing [J]. J. Guangxi Sci. Technol. Normal Univ. (2019)
20. Zhang, X.: exploration on teaching reform of literature course under the major field of creative writing [J]. Writing (2018)