Open Network Knowledge and Independent Inquiry Teaching Mode of College Chinese Course based on Information Retrieval

Xu Na

*College of Lecture, postgraduate, Xi'an Physical Education University, Xi'an
710068, Shaanxi, China*
m13772152739@163.com

Abstract

Open network knowledge base has become an effective tool and it provides a new resource and method for solving the problem in web information retrieval. The integration of information technology and curriculum based on the network environment, especially the multimedia technology, is able to create an ideal learning environment for autonomous learning. In this paper, the author analyzes the open network knowledge and independent inquiry teaching mode of college Chinese course. Through the inquiry teaching experiment, the result shows that the score in experimental class is higher than the control group, and the statistical result is significant. So that, the inquiry teaching mode of college Chinese course is effective, at the same time, it could also increase the students' learning interest.

Keywords: Network Knowledge, Inquiry-based teaching, Information retrieval, Chinese course

1. Introduction

The characteristics of network oriented massive big data, free and open content, open network knowledge ontology as an effective knowledge representation tool based on structured, and provides resources and new methods to solve the problem of natural language understanding and information retrieval in Web [1]. Most of the existing information retrieval techniques are based on a single word as the processing object. From the user perspective, using only a few key words to clearly describe the retrieval requirement is a very difficult thing [2-3]. The vague retrieval requirements will inevitably lead to the retrieval results from confusion; key word retrieval technology itself, simple matching methods often retrieves many non-relevant documents in the document representation technology [4]. At present, the method is mainly based on the theory of vector space model, to a single word as the processing object, and that word and the word is independent of each other, but in the actual text of words and words is interrelated, which is the bottleneck of Web search technology development. The introduction of ontology knowledge base system as a representation of a text based on the open network provides a structured data basis to the research field of information retrieval optimization.

The integration of information technology and curriculum based on the network environment, especially the multimedia technology and network technology, it is able to students' autonomous learning to create an ideal learning environment for teaching, to enrich the teaching resources, especially the rich and colorful image, vivid and specific situation, can effectively promote and ensure the smooth development of the independent inquiry learning of students [5-6]. Through a lot of practice, we summed up the information technology in the cultivation of students' ability to explore learning directly related to the number of features and advantages. This is: the visual teaching environment, the integration of a variety of media, multimedia materials, intelligent information

interaction, multi collaborative interaction, open teaching resources, personalized learning, real-time information feedback, network resource sharing. More than a variety of functions and advantages can effectively help students get rid of the shackles of teachers, classroom and books, and comprehensively improve their ability to explore their own [7]. The students independent inquiry learning, refers to the teacher's inspiration, guidance, inspiration and help, with a positive and wills to understand and solve problems, using the research methods, and actively participate in learning, so as to solve the questions, master relevant knowledge and ability; or as a scientist for a scientific invention or discovery and do experiment, to strive to create the invention or discovery success mentality of inquiry learning [8]. Before an independent inquiry learning called "problem solving" teaching, it is the students to find the questions and solve problems in the process of self-exploration in the learning process; after an independent inquiry learning is called "task driven" teaching, it is put forward under the guidance of the teacher or explain the learning task, let the students drive learning objectives and tasks clear under the independent inquiry process to solve the problem. These two kinds of self-inquiry learning teaching, in the teaching process, in addition to the teacher for the corresponding inspiration, guidance, inspiration and help, rely mainly on student self-inquiry, including individual and group consultation interaction between individual student self-study, students and teachers, students and students with learning.

2. Information Retrieval of Open Network Knowledge

2.1. Open Network Knowledge

In recent years, the rapid development of Internet technology and application mode, in changing people's way of life, which has huge data resources. According to the Internet data center, the amount of data in 2012 the world's 2.7ZB (1ZB equivalent to 10 trillion gigabytes), is expected to 2020, the total amount of global data will reach 35ZB, far more than the human the history of all printed materials since the amount of data (200PB) data processing. Google per month more than 400PB; Badu every day to deal with dozens of PB Facebook data; more than 1 billion registered users, every generation of more than 300TB. The network log data space (cyberspace) in various types of applications emerge in an endless stream triggered data size The explosive growth, the formation of a large data network space. Contains a large amount of valuable information in large data network, according to the different ways can be divided into Web, Web content data structure data, since the media data and log data. The Web content data is generated through the Internet and web data released it can be text, text, news, pictures can also be audio and video, as well as HTML, JavaScript's, Interstitial, Microsoft. Flash and other window clearance, produced or analytical data. Today, Web content data has increased exponentially, such as the web page online book a total of 50 billion, up to 750 million, The English Wikipedia number 4 million 270 thousand page features Chinese encyclopedia data up to 9 million. Web content data includes a huge amount of data and abundant information, also has the dynamic update fast, heterogeneous. Web configuration data refers to the data structure between Web pages, including the page structure between hyperlinks and Web with the Web content. The growths of the data, the links between Web pages also show a large-scale growth trend.
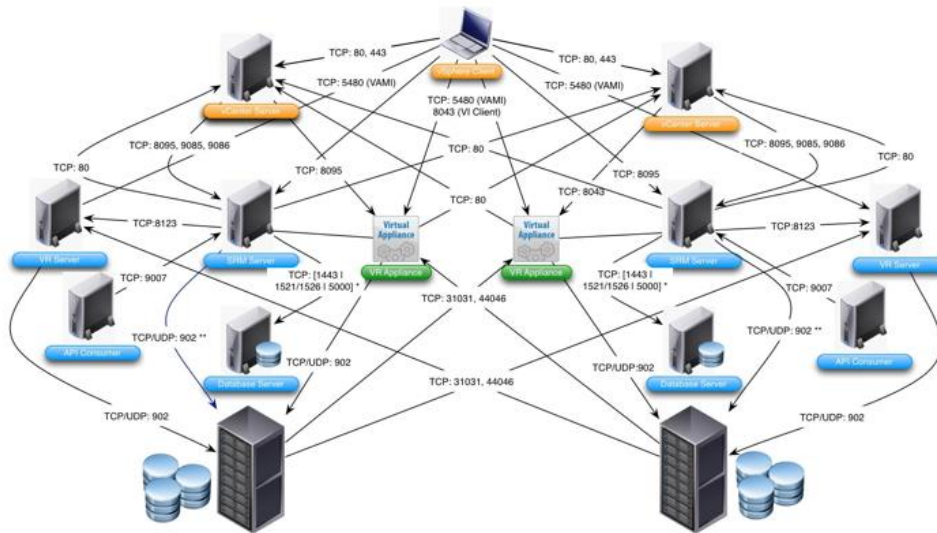
Figure 1. Open Network Knowledge

Data from the media mainly refers to the user generated data generated by Facebook, Twitter as the representative of social networks (user generated content, UGC), with the scale and community unprecedented, huge amount of data, data changes very fast in.1min, more than 100 thousand Twitter on new data; Facebook users share every day the contents of more than 2 billion 500 million, the data in the database every day more than 500TB. in addition, data from the media also has the intrinsic relationship between very complex, more than 1 billion of Facebook users and Twitter users more than 500 million friends of the concern relations constitute an extremely complex network of relationships Network. These large data network directly reflects is an isolated and scattered data links, but they reflecting the relationship link is to integrate a network. The network data is heterogeneous, interactivity, timeliness, sociality, sudden and high noise characteristics, not only structured data, and real-time data. Information related information and data within the network structure and characteristics are hidden in such data network, network data often exist in the complex network data associated with such a unique form. The main task of the effective use of the value of big data network not to get more and more data, but the data redundancy to classification, knowledge from data mining, on the back of the big data network of deep knowledge In social network analysis. Contains the user knowledge model, dating rich user's emotional evolution and message propagation among users; e-commerce sites such as Amazon have the users to browse, buy and comment on the commodity information reveals the user purchase behavior; search engine service providers to store a large number of users log information implicit in the user's query intention and queries, the real query log can help the search engine providers understand users about which entities really want to query what entities and attributes for each entity, which is the real interest.
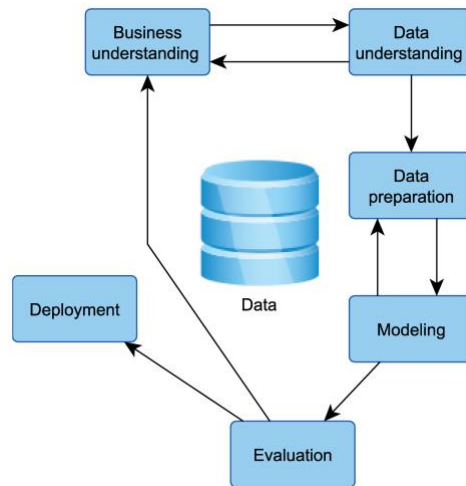
Figure 2. Knowledge of Data Mining

2.2. Information Retrieval

Information retrieval technology is committed to the filter from massive data and useful information for the user the traditional, and then the filtering results or knowledge back to the user, but the relationship between these results has not been well mining and analysis, to the lack of deep mining rules and knowledge from the semantic point of view. The user can only from the results themselves to understand and not to mention the screening knowledge, retrieval technology has some disadvantages such as recall and precision is not high, still cannot meet the needs of users, the effect is not satisfactory. Worthy of comfort is, the search engine is based on keywords or text content understanding and Retrieval Knowledge mining this is a shallow level based on semantic understanding and expression, to the relationship between these deep knowledge mining development. L founder of the Internet EE put forward the framework of semantic Web at the XML2000 International Conference. While in the semantic Web "semantic" is the core of knowledge sharing, including sharing between computer and computer, and the computer. Semantic information or knowledge in machine to deal with the way of free text, semantic relations between resources exist in an implicit way, the semantic information lost due to the lack of a clear description.

Figure 3. The Knowledge Sharing

To build an open network knowledge base, is to build several basic elements, including the extraction of concepts, instances, attributes and relations. From the way of construction can be divided into manual and automatic construction of construction. The manual construction is to rely on expert knowledge to prepare certain rules, from different sources to collect relevant information system construction method the structure of. Bootstrapping knowledge with recognition rules or the context of a new advantage of these new rules and can be used to identify the context to concept and attribute and relationship between the new results, which greatly improves the recall rate. However, if the extraction result has ambiguity prone to error, resulting in semantic drift (semantic drift). In order to overcome this shortcoming, a lot of scholars never The same point of view of the bootstrapping algorithm to improve: such as the Carnegie Mellon University researchers have developed a new knowledge extraction system NELL (language learner Never-ending).
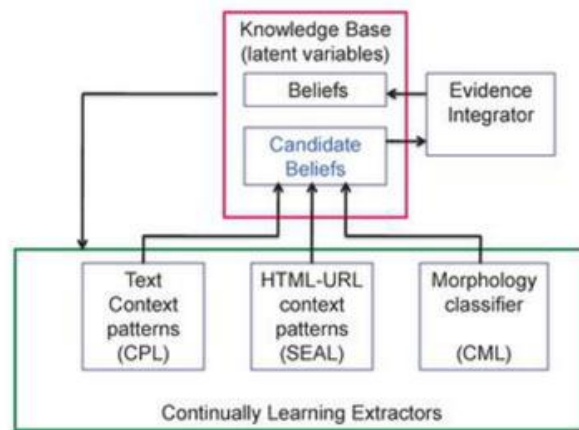

Figure 4. NELL System Framework

In the vector space model (VSM), the text includes articles, queries, or a section of the article, see as it is by a set of entries （$t1,t2,...,tn$）constitute, for each entry ti, according to its importance in the document given to a certain degree of weight wi, it will be converted into a coordinate system, $w1,w2,...,wn$, for the corresponding coordinate values. Suppose the user query vector is Q＝（$wq1,wq2...wqn$）,the document was retrieved for di = （$w1,w2...wn$）, the degree of similarity between the two can be measured by the angle between the vectors:

$$Sim(d_i,Q) = \cos\theta = \frac{\sum_{k=1}^{n} w_{ik} * w_{qk}}{\sqrt{\sum_{k=1}^{n} w_{ik}^2 \sum_{k=1}^{n} w_{qk}^2}}$$

(1)

Automatic relevance feedback (pseudo-feedback), also known as feedback is based on vector space model the relevance feedback mechanism on derivative. Relevance feedback algorithm classic formula is as follows:

$$Q_{new} = \alpha \cdot Q_{old} + \frac{\beta}{|Dr|} \sum_{\forall dj \in Dr} d_j = \frac{\gamma}{|Dn|} \sum_{\forall dj \in Dn} d_j$$

(2)

d_j represents the document vector representing the initial query vector; Q_{old}; Q_{new} represents the extended query vector; Dr represents and user query intention related

document collection; and *Dn* represents the user's query intention is not related to the document collection. Automatic relevance feedback method, the expressions for = 0:

$$Q_{new} = \alpha \cdot Q_{old} + \frac{\beta}{|Dr|} \sum_{\forall dj \in Dr} d_j$$

(3)

Automatic query expansion method assumes that the retrieval results in the first row, is related to the query in the N article first, then carries on the statistics to this part of the document, select the most relevant to the original query T (T is any integer) words added to the query, and research by the extension query.

3. Self-Exploring Chinese Teaching Mode

3.1. Independent Inquiry Teaching Strategy

For students, learning to own a certain psychological development level as the basis, also is to "learn"; to their intrinsic motivation as the premise, also is to want to learn to self; must grasp certain learning strategies as a guarantee, also is to "learn"; must be a condition in order to volitional control, is to be able to keep on learning". From the perspective of teacher talk, when teachers hold a positive attitude and a firm belief in the inquiry teaching, the content of knowledge and reasoning ability is equal to or higher than the curriculum requirements, and mastered the specific teaching skills, inquiry teaching will have the most success. Research shows that, in the attitude of those who advocate democratic classroom environment, allow students to freely communicate, give students the autonomy of teachers, often show more exploratory behavior tendency, while those who advocate strict control, pay attention to the teachers' classroom order less show inquiry teaching desire.

Self-exploring Chinese teaching mode strategy: first, design the structure of inquiry activity. Teachers can design the structure of inquiry activities to reduce the logical requirements of the inquiry; second, open the process of solving the problem. The diversity of the problem solving process leads to the diversity of the results. We live in the real world is full of rich and complex information, when we combined processing of such information in a variety of ways, it is possible to solve different problems, achieve different goals, openness is the requirement of the times; third, showing the students' Autonomous learning. That is to say, to make it through self-study, discussion to solve what students learn to master, then the teacher for students cannot master the contents of the highlight or give methodological guidance, reflecting the "learn this, because the study guide teaching" ideological education; fourth, to seek technical support. Constructivism believes that learning is a thinking for intermediary, in order to more directly influence the learning process should be reduced has been excessive focus on the transfer of technology, and more concerned about how to ask learners thinking in different tasks in technology. The theory of cognitive tools arises at the historic moment. According to the theory of cognitive tools, the cognitive tools can make learners thinking activities, teaching monitoring to advanced thinking; and at the same time, reasonable design and use of external cognitive tools can activate cognitive and metacognitive strategies, so as to promote reflective thinking. Obviously, the emerging multimedia teaching technology provides professional database software; data analysis and processing software can become an ideal cognitive tool.

3.2. Chinese Teaching Mode

It is the independent research of Chinese teaching activities is summarized and the formation of the system, orderly and concise form to express the structure, relationship, state and process of teaching paradigm. It originated from Chinese teaching practice of independent inquiry, but not the original reproduction practice, but based on what has

been teaching practice and experience, through a summary of the process thinking made the teaching forms of cognition, is a reference to imitate the teaching behavior model and framework, with operation, example.

- **Basic Chinese class:** the general procedure is: self-perception, brewing research topic; thinking questions, the establishment of a research topic; access information, careful analysis; discuss the debate, exchange research results; doubt left ask, new growth point excitation. The basic characteristics of the first is the subjectivity, from the students, the students ask questions, put forward the main research to solve the problem, through the students to discuss, to solve the problem by the students. The two is open, the whole class is not the default, but open, with the spark of thought in students will open environment, beyond the teacher preparation, students, the subjective spirit of uplift.

- **Expanding Chinese course:** trying to increase the accumulation of students' culture at the same time, improve the ability of independent research. There are two tasks: the first is a poem that each lesson, according to student turns, each Chinese class a student by the introduction of a poem. The procedure is: reading comprehension, analysis, courseware, preaching exchange, familiar recitation.

- **Research type Chinese Course:** to research topic for the Chinese carrier of the research study, the procedure is: to understand the learning goals, to understand the general process of the problem or the formation of subject, put forward ideas or research programs, or discuss feasibility and defense, implementation research program, the research is complete, the formation of the. The role of students is positive thinking, positive research, whether it is the knowledge of the perception, understanding, grasp the process, or consolidation, application process, are in the thinking activities, under the effect of mental.

Figure 5. Inquiry-Based Teaching

3.3. Functions and Advantages of Network Environment

Constructivism and Humanism learning theory, all emphasize that we should create an ideal learning environment for students to study independently, provide rich learning resources, and create a good learning environment. As Bruner attaches great importance to the creation of a variety of situations for students to learn, to provide a variety of situational materials for them, guide students to discover and explore; Rodgers stressed

that teachers should put a lot of time on learning to provide the resources needed for the students, including the situation of resources, it can promote the occurrence of meaningful learning. The integration of information technology and curriculum based on the network environment, especially the multimedia technology and network technology, is able to students' autonomous learning to create an ideal learning environment for teaching, to enrich the teaching resources, especially the rich and colorful image, vivid and specific situation, can effectively promote and ensure the smooth development of the independent inquiry learning of students.

Without the support of information technology, especially the multimedia network technology, it is difficult for students to participate in the real social environment and the natural environment. But the multimedia network technology, can solve this problem by pictures or virtual simulation, so as to explore the learning of students autonomy, providing strong support. And in the integration of the whole process, in improving the ability of students to learn a variety of learning at the same time, but also improve their emotional experience and information literacy, really can be described as multiple. In a word, multiple stimuli and so on advantages of network context image, multimedia teaching content and teaching resources integration, diversity and openness as well as teaching information, can effectively inspire students' positive thinking, which can help the students to think independently, and can help students collaborate in learning, and strengthen basic knowledge at the same time, and is not influenced by the book knowledge and the limit of time and space, and vigorously expand the knowledge outside the books, so as to effectively promote the development of students' personality, implement the principle of individualized. All of the above said that the students have a strong guarantee for the smooth development of independent inquiry learning. It is possible to fundamentally promote the students' learning and teachers' teaching mode of comprehensive change, make the structure relation in classroom teaching of teachers, students, teaching materials and media of the four elements, especially teachers' and students' roles, the status of fundamental change, so as to build a teaching mode and a variety of it becomes new type of students under the network environment.

4. Research on the Mode of Self-Inquiry Teaching

4.1. Constructing the Teaching Mode of Independent Inquiry Reading

Chinese language teaching model is a model or example of Chinese teaching. It is to reveal the essence of Chinese teaching process, and it is the abstract of the form and process of Chinese teaching. It is based on the teaching theory to summarize the language teaching process after making a brief formula. It is the natural result of the study of the Chinese teaching process, and it is also the objective need to promote the teaching practice. It originated in the process of Chinese teaching; it is different from the process of Chinese teaching. The difference between them is that the language teaching process is embodied in the order, the stage, the process, and the mode is a brief summary of the process. The Chinese teaching mode and the Chinese teaching process are closely linked and interdependent, the Chinese teaching process is complicated and changeable, and the Chinese teaching mode changes with the change of the Chinese teaching. The so-called self-inquiry reading teaching mode, is refers to under the guidance of teachers, to fully protect the dominant position of students, stimulate students' consciousness of main body participation, to give students a free reading room to teach students some reading methods, to enable students to perceive, exploration and discovery of knowledge and information, and on this basis, through multiple channels communication and cooperation, exchange, information analysis and innovation, a reading teaching mode to improve students' thinking and creative ability. To construct a new dynamic teaching and learning framework, from the origin to the establishment of teaching procedures set, from the

search for the teaching process to teaching and to grasp the node new research point, is the old teaching model of the rebellion, in essence is to our teaching object subject and learning the power of respect. This is a revolution of teaching and learning, it complies with the requirements of the times, the needs of students, but also in line with the law of the development of language itself.

4.2. Questionnaire Investigation

After a large number of questionnaires, I found that 80% of the students to explore the teaching of reading a lack of a comprehensive understanding of. 50% of the students think that is the problem of class, the teacher questions constantly in the classroom, students will automatically answer the teacher's question, such a question and answer, students are in passive learning situation, students' initiative did not really improve. Some teachers inquiry is the name of the banner, in order to explore and study, learning a text, teachers intense discussion on a text and have little relevance, a lesson looks very busy very successful, teachers actively guide students to speak, but after the end of the course, the students also did not learn what. Teachers only pay attention to the form of inquiry, lack of attention to the content. We chose two parallel classes, one for the experimental class, and one for the control class. Two classes each class 50 people, a total of 100 students. In the inquiry teaching of reading, the students are divided into the study group, so the monitoring and evaluation of the students' ability to explore, mainly through the students' self-evaluation form and peer assessment. Students' self-evaluation form on the one hand can evaluate students' reading skills, cooperation enthusiasm, exploring the problem of the initiative and other factors, but mainly want to enable students to achieve automation through the above aspects of monitoring. I put the evaluation results are divided into three grades: excellent, good, general. In order to make the evaluation result more objective and fair, students' self-evaluation should be true and reliable, according to their own performance in the group, with reference to the evaluation of the overall evaluation elements.

In the "Inquiry Teaching" before the experiment, the students of the final results were statistically compared, as a result of Table 1 as a result of the previous test. The results of the pre-test statistics show that the results of the experimental class and the control class are basically the same, the difference is not obvious. Through the inquiry teaching of the experimental class, we conducted a test every 2 months, as shown in Table 2.

Table 1. Comparison of Results Before Experiment

Test	The number	Average	Variance	The value of Z	The value of P	Significant
Experimental class	50	79.4	89.72	0.2012	P>0.05	Not Significant
Control class	50	79.27	89.98			

Table 2. Comparison of Test Results between Experimental Class and Control Class

Test	Sample	The number	Average	Variance	The value of Z	The value of P	Significant
1	Experimental class	50	66.25	71.35	0.5874	P>0.05	Not Significant
	Control class	50	65.58	78.14			
2	Experimental class	50	67.13	63.05	2.1615	P<0.05	Significant

	Control class	50	63.10	71.72			
3	Experimental class	50	72.08	61.12	2.0455	P<0.05	Significant
	Control class	50	67.58	79.13			

By comparing the test results of each unit, the results of the experimental class are higher than those of the control class, and the gap is more and more big, and the significant difference is not significant, which indicates that the variable has a role in teaching. The beginning of the experiment, the first unit test, scores difference between the two classes is not obvious, I talk with the students, found that students in the experimental class of inquiry reading teaching is still not fully adapt to the teaching, there are still some deficiencies. With the deepening of the experiment, the experimental class students are familiar with the process of inquiry reading teaching; actively participate in reading, after the two test scores of the experimental class and the control class gap are widened. Can be seen from the numerical variance on the table, the first unit variance test scores of the experimental classes and control classes, but with the experiment, the experimental class after two times compared with the control class variance was smaller, indicating discrete degree of the experimental classes and control classes are gradually become smaller. The variance of the control group gradually increased, which showed that the degree of polarization of the students in the control group increased. The variance of the experimental class is gradually reduced, to a certain extent, it shows that the research of reading teaching is conducive to the polarization of the control results, and improves the teaching effect.

Table 3. The Learning Ability of the Experimental Class

Learning ability	Excellent rate%		Good rate%		General rate%		Failure rate%	
Stage 1	10	25	13	32.5	14	35	3	7.5
Stage 2	11	27.5	17	42.5	10	25	2	5
Stage 3	12	30	17	42.5	12	30	0	0

Peer assessment table by "the innovation ability of students, students of the method skills, participation attitude, emotional experience, and evaluation attitude" consists of five aspects, a monthly evaluation of students, we can set the four files that "excellent, good, general, fail, evaluation must be objective, fair and impartial. From Table 3 we can see that the experimental class and the control class in the first stage of the learning ability of students is basically similar to that of the experimental class in the second stage of excellent rates and good rate were higher than the control class, the experimental class in the third stage of the failure rate is zero, the control class and the failure rate decreased significantly, but there are still. So we said, with the continuous development of inquiry reading teaching, the experimental class and the control class students ability has been improved, but the experimental class students to enhance the ability is more significant. Therefore, we can see that in the inquiry reading teaching, the students' innovation ability and the method skill are improved, and the students' participation in the cooperation and the evaluation attitude are more positive. Students' emotional experience is more real and deep. The communication between teachers and students and students is very pleasant, which is conducive to the improvement of reading ability.

5. Conclusions

Inquiry based reading teaching pays attention to the cultivation of students' learning ability and inquiry ability. In the process of teaching, the students' learning achievement is improved, and the learning ability is improved. They discussed through group cooperation, learn how to express and communicate their opinions, positive thinking we benefit by mutual discussion, was mobilized, a good solution to the text of the question, the real understanding of the text. After the experiment teaching, I have made a summary of the inquiry reading teaching. Teachers play a leading role in the teaching of inquiry reading. Before the teaching activities, teachers should do a lot of preparatory work. Before the class, the teacher should consult a large amount of information, the text has a thorough, thorough understanding, in order to better guide students to explore the reading. Before the class, teachers can understand the students' understanding of the text and the existing problems by means of interviews. According to the specific circumstances of the students, the teachers put forward different requirements for the inquiry, to explore the ability of the students are not very good, to actively encourage and timely help. Open inquiry reading teaching, students will present a variety of problems in the process of reading, generative classroom presents a great challenge to the teachers, this requires teachers to have strong wisdom and ability to control the classroom. Teachers should strive to build a democratic, open and harmonious classroom environment for students, so that students can truly become the main body, the right to speak in the classroom, the courage to challenge the authority. The discussion and cooperation between teachers and students, not only stimulate the students' autonomy, cooperation, and explore the enthusiasm, but also to promote the continuous learning of teachers, improve the teaching level. At the same time, teachers should strengthen the theory of inquiry teaching learning, truly combine theory and practice, make the theory guiding practice better, make the inquiry reading teaching implement, improve students' learning ability and language literacy training.

References

[1] W. Dai and L. Fan, "Discussion about the Pros and Cons and Recommendations for Multimedia Teaching in Local Vocational Schools", Physics Procedia, vol. 33, **(2012)**, pp. 1144-1148.

[2] R. Khansa, "Teachers' Perceptions toward School Counselors in Selected Private Schools in Lebanon" ,Procedia - Social and Behavioral Sciences, vol. 185, **(2015)**, pp. 381-387.

[3] N. R. Mastroleo and R. Turrisi, "Examination of posttraining supervision of peer counselors in a motivational enhancement intervention to reduce drinking in a sample of heavy-drinking college students", Journal of Substance Abuse Treatment, vol. 39, **(2010)**, pp. 289-297.

[4] Z. Huang and M. Benyoucef, "From e-commerce to social commerce: A close look at design features", Electronic Commerce Research and Applications, vol. 12, no. 4, **(2013)**, pp. 246-259.

[5] C. Zhang and X. Chen, "Use of Multimedia in Gross Infective Pathogen Experimental Teaching", Procedia Engineering, vol. 37, **(2012)**, pp. 64-67.

[6] C. Krstev and A. Trtovac, "Teaching Multimedia Documents to LIS Students", The Journal of Academic Librarianship, vol. 40, no. 2, **(2014)**, pp. 152-162.

[7] S. J. Hua and L. Hong, "Explore the Effective Use of Multimedia Technology in College Physics Teaching", Energy Procedia, vol. 17, **(2012)**, pp. 1897-1900.

[8] R. A. Sabella, "School counselors perceived importance of counseling technology competencies", Computers in Human Behavior, vol. 26, **(2010)**, pp. 609-617.

Authors

Xu Na, 1978.11, xi'an, Shaanxi, P, R, China, Current position, grades: the lecture of College of sports media, Xi'an Physical Education University, Xi'an, China. Scientific interest: Her research interest fields include Chinese language and literature education. Publications: more than 8 papers published. Experience: She has teaching experience of 10 years, has completed three scientific research projects.