Research on the Teaching Reform of Graduate Information Retrieval Course in the Big Data Age

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Abstract: This paper analyzes the influence of big data age on graduate information retrieval course. In view of the problems existing in the course, such as the lag of teaching content and the lack of close integration with graduate research, it puts forward the information retrieval course system framework based on graduate research activity flow in the big data age, and points out that the course should make full use of the new resources and technologies brought by big data age, and use of new thinking and new technology tools to solve the new generation of students with fragmentation, mobile, collaborative learning and other features of new problems, enabling students to learn for life.

1. Introduction

With the rapid development of the information age, new resources and new technologies are emerging [1]. The learning methods and habits of the new generation of students are undergoing great changes, such as the increase of fragmented learning and the collaborative learning [2]. The traditional graduate information retrieval course is facing great challenges, which can not meet the needs of students charactered by autonomous, collaborative, personalized and lifelong learning [3]. We need to deepen the reform from three aspects: teaching content, teaching modes and teaching methods.

2. The impact of big data age on Graduate Information Retrieval Course

In the big data environment, new resources and new tools are constantly emerging. All kinds of learning and research tools are emerging. Scientific and technological information resources are no longer limited to databases purchased by libraries, but also include open access academic resources [4], professional Official WeChat with various themes, large-scale online courses MOOC and various professional websites. At the same time, resources are extremely rich with new phenomena, such as the increase of fragmented learning, co-construction and sharing as the theme, which determines the corresponding transfer of information utilization contradictions: the explosive growth of information makes the contradictions change from information scarcity to information overload, from focusing on information collection to information evaluation, analysis and management[5]; fragmented learning makes the cloud synchronous recording software (such as impression notes,Wiz notes, Youdao cloud notes, etc.) and systematized sorting software (such as MindManager, Xmind, etc.) are just needed; co-construction and sharing make the learning or problem-solving method change from individual solving to multi-person collaboration, learn from the existing achievements, and improve the efficiency of scientific research.

On the one hand, these new resources and tools have greatly enriched the teaching content and means of graduate information retrieval course. On the other hand, the big data environment has also posed unprecedented challenges to the traditional information retrieval course. For example, many

online MOOC courses have a huge impact on offline teaching [6]: almost all knowledge can be obtained through online courses, which is questioning the necessity of Class Teaching. The change of teaching environment and students learning habits caused by big data requires teachers to alter their thinking mode quickly, enhance their learning ability, adapt to the change quickly, make good use of the resources and tools brought by big data, think about and accurately grasp the change of students information needs, and strive to create a new information retrieval course that adapts to the development trend of the times and the new needs of postgraduates.

3. Problems in postgraduate information retrieval course

The University Information Retrieval Course for postgraduates teaches students how to acquire, identify and use information, and trains students to solve problems based on information. It plays an important role in the scientific research activities of postgraduates, and is an important position to cultivate postgraduates information literacy. However, at present, there are the following problems in the big data environment:

3.1 The problem of teaching content lagging behind

The acquisition of professional information is the basis for graduate students to engage in scientific research activities. In the context of big data, on the one hand, the access channels and contents of professional information resources have been greatly enriched. In addition to the databases purchased by libraries, there are also various open access resources (OA), professional Official WeChat with various themes, scientific web blogs and large-scale online MOOC courses. The forms of information carriers are increasingly enriched. Besides texts, there are video and rich media. Body and other formats. However, these contents are not reflected in the existing teaching contents in a timely and systematic way.

On the other hand, the main contradiction transfer of information utilization brought by big data environment is from information lack to information overload, and the information demand is transferred from information collection to information evaluation, analysis and management. However, the existing teaching content still focuses on information retrieval and acquisition, while the information evaluation, management and innovation capabilities are not fully reflected.

3.2 The problem that teaching modes can not meet the needs of postgraduate education

In the postgraduate education, more attention is paid to the cultivation of self-study ability, scientific research ability and the ability to explore unknown solutions. The big data environment needs people keep lifelong learning to keep up with the times. However, due to the limitation of class hours and faculties, the information retrieval course in the Limited class hours is still dominated by teacher-student one-way knowledge transfer, students participation is limited, teacher-student interaction and the feedback is not enough, which does not achieve the ideal teaching effect. Scientific research activities are the main form of postgraduate learning and ability cultivation. However, the existing teaching mode has not been deeply integrated with postgraduate scientific research activities. The internal relations and application scenarios of various knowledge points are not revealed enough. It is difficult for students to flexibly apply the knowledge they have learned to their current scientific research, nor to effectively meet the needs of future development, that is, the current teaching mode is not suitable to meet the needs of personnal training.

3.3 Simplification of teaching methods

On the one hand, teaching methods are still mainly face-to-face teaching by teachers and students. Although PPT and other multimedia courseware teaching and network practical operation demonstration are used, the teaching content, class hours, time and place are greatly limited. Students can only accept the specified teaching content at a specific time and place, and the teaching effect can not be fed back in time. Students learning initiative and teaching effect are not ideal. On the other hand, the application of new Internet Technology in the current teaching methods is not

enough. The rapid development of network information technology and the popularization of intelligent terminals in the big data environment make the students learning environment expand from offline to online, from fixed to mobile, thus changing the learning habits of students. For example, the new generation of students fragmented learning increases, and the proportion of online learning increases. At present, the teaching methods do not make full use of the Internet curriculum resources and technical advantages, and integrate online and offline courses into an organic system to adapt to the new fragmented, mobile and collaborative learning mode of students in the digital era.

4. Exploration on the teaching reform of graduate information retrieval course in the big data age

4.1 Establish a curriculum system based on postgraduate research activities

Scientific research is the essential connotation of graduate education. It is not only a means of learning in the process of graduate education, but also one of the objectives of graduate education[7]. The course is based on graduate research activities, integrating new resources, new tools, new ideas and new methods emerging in the big data environment into each scientific research link. The course system diagram is as follows:
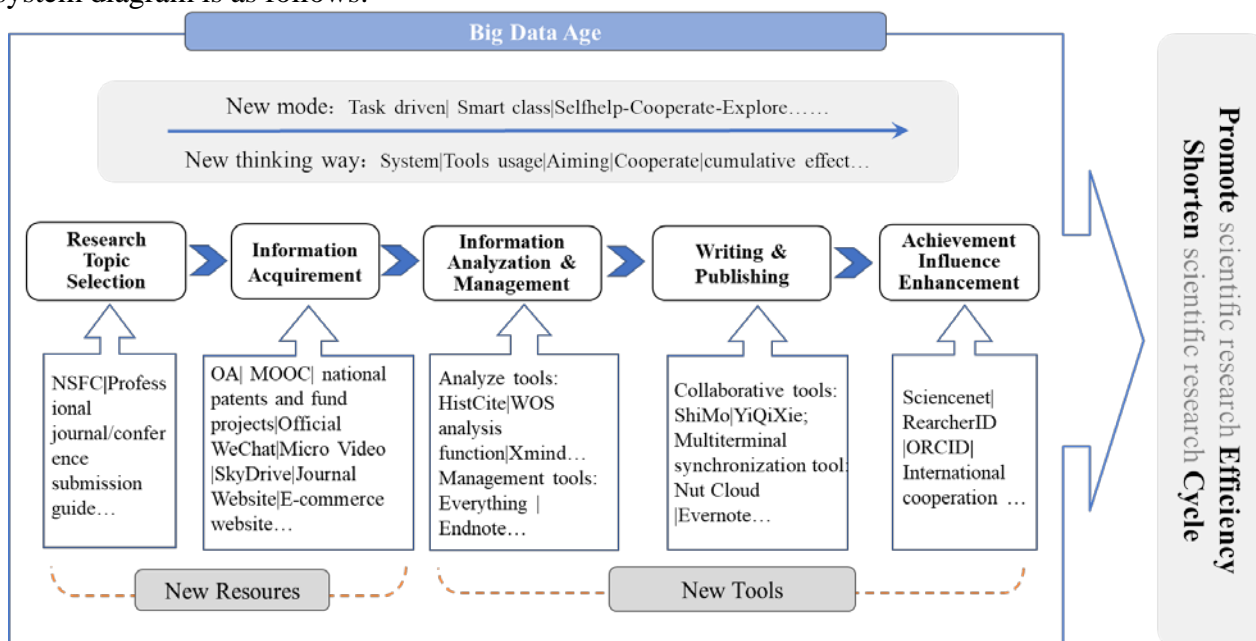

Figure 1. Curriculum system based on scientific research process

As shown in Figure 1, from postgraduate research topic selection, information acquisition analysis and management, to thesis writing and promotion, the course not only improves the scientific research efficiency of each stage, but also organically integrates the scientific research activities of each stage into a systematic scientific research framework to help graduate students establish a knowledge system that can constantly update and iterate, effectively improve the overall scientific research efficiency of graduate students, and shorten the cycle of scientific research, and will increase the overall scientific research influence of postgraduates.

4.2 Teaching contents, expand access to information resources, focus on information analysis and management and achievement promotion

The teaching content needs to keep pace with the times and focus on the needs of graduate research. Postgraduate scientific research activities include five links: scientific research topic selection, information acquisition, information analysis and management, thesis writing and scientific research achievements promotion. The teaching content systematically improves the

overall efficiency of scientific research by improving the efficiency of scientific research in each stage:

Open resources can be used for reference to improve the efficiency of scientific research topics, such as national science and social science fund project database, professional journal contribution guide, and professional conference document collection guide.

Information acquisition can widen the access channels of information resources. Besides the professional databases purchased by libraries, it also includes open access resources (OA), official websites of various journals, various professional Official WeChat, network cloud discs, and public library websites (such as Zhejiang Library). Some resources are convenient to aquire, some are authoritative with no absolute advantages or disadvantages. They should be selected flexibly and applied comprehensively according to study purposes.

With the help of analysis tools, information analysis, extraction and management can help students quickly find out key documents in a certain field among thousands of documents, and give priority to them, such as citation analysis tool Histcite; grasp the development trend of a scientific research field as a whole, and determine influential researchers and research institutions, such as the analysis function of WOS; effectively manage thousands of documents, documents can be found quickly when they are used. For example, everything software, which is only about 1m in size, supports combined retrieval and makes the hard disk change into database in seconds.

For paper writing, you can use collaborative tools to improve efficiency, such as collaborative work software ShiMo document, Yiqixie, etc., and save the revision history, which makes the latest version will not be confused; multi terminal device cloud synchronization software, such as Nut Cloud, Evernote, Wiz note, etc., makes the work seamless; Endnote's writing and citing function greatly reduces the laborious work of the reference format setting.

In promoting scientific research achievements, we should pay attention to improving the influence of scientific research achievements. In the information age, even after the paper is published, it does not mean the end of the research cycle. At present, the influence of scientific research is more reflected in the frequency of being cited. According to this principle, we can appropriately increase the efforts to display and promote scientific research achievements, such as registering and using the research ID function in WOS, opening a blog on science network, uploading published papers to the Institutional Repository (IR) and other open access platforms.

4.3 Teaching modes, the task driven teaching method is introduced in close combination with the teaching requirements of postgraduates

"The best learning is teaching, the best input is output", and "output" forces "input". The curriculum closely combines with the teaching requirements of graduate students, such as selecting research topic in the first academic year, etc., and adopts the task driven teaching method of "Task as the main line, teacher as the leading role, and student as the mainly body".

The course elaborately designs and studies the "general task", that is, "complete a standardized professional related subject retrieval comprehensive report", and divides the "general task" into several "small tasks", which are completed in each course module. When each small task is completed one by one, the whole big task is also completed.

This new study mode, on the one hand, takes students as the main body, fully mobilizes the enthusiasm of students independent learning, effectively grasps the writing ability of the comprehensive report of professional subject retrieval, and achieves the teaching requirements of postgraduates; on the other hand, students have experienced the whole process of task module decomposition, sub task completion and total task completion, and this learning mode solves large-scale problems for students in the future scientific research tasks and collaborative work have great guidance and reference significance.

4.4 Teaching methods, build a smart classroom model and build a "micro video" Database

With the rapid development of Internet technology and the popularization of various intelligent terminals, on the one hand, students learning behavior has changed from individual learning to

collaborative learning; on the other hand, a large number of tools focusing on cloud synchronization and collaborative learning have emerged, such as Evernote, Youdao cloud notes, Wiz note, Nut Cloud and various online disks. All of these provide the possibility for more efficient collaborative learning.

Building a smart classroom model, for example, using the "Rain Classroom" smart classroom platform, introducing the network practical operation demonstration, information literacy MOOC related curriculum resources into the classroom to enable students to self-study anywhere anytime; Setting up a cognitive learning activity feedback chain consisting of preview before class, practice in class and review after class, which enables students to break through the study limitation of time and physical space, not only improving learning effect, but also stimulating learning interest and saving teaching cost.

Establishing the "micro video" database, aiming at the key and difficult points of the course, and the feedback of students in teaching practice, including the latest information source expansion, database use, and information analysis management tool introduction, etc. Each micro video focuses on a small knowledge point or a small skill, with an average time of 90 seconds, no more than 3 minutes. The database platform selects the cloud storage "Baidu Cloud Disk" commonly used by people at present. As shown in Figure 2, we use the easy dissemination of the Internet to achieve the precise push through the library Official WeChat, library website, instant messaging software and social networking platform, and extend the teaching effect to the classroom.
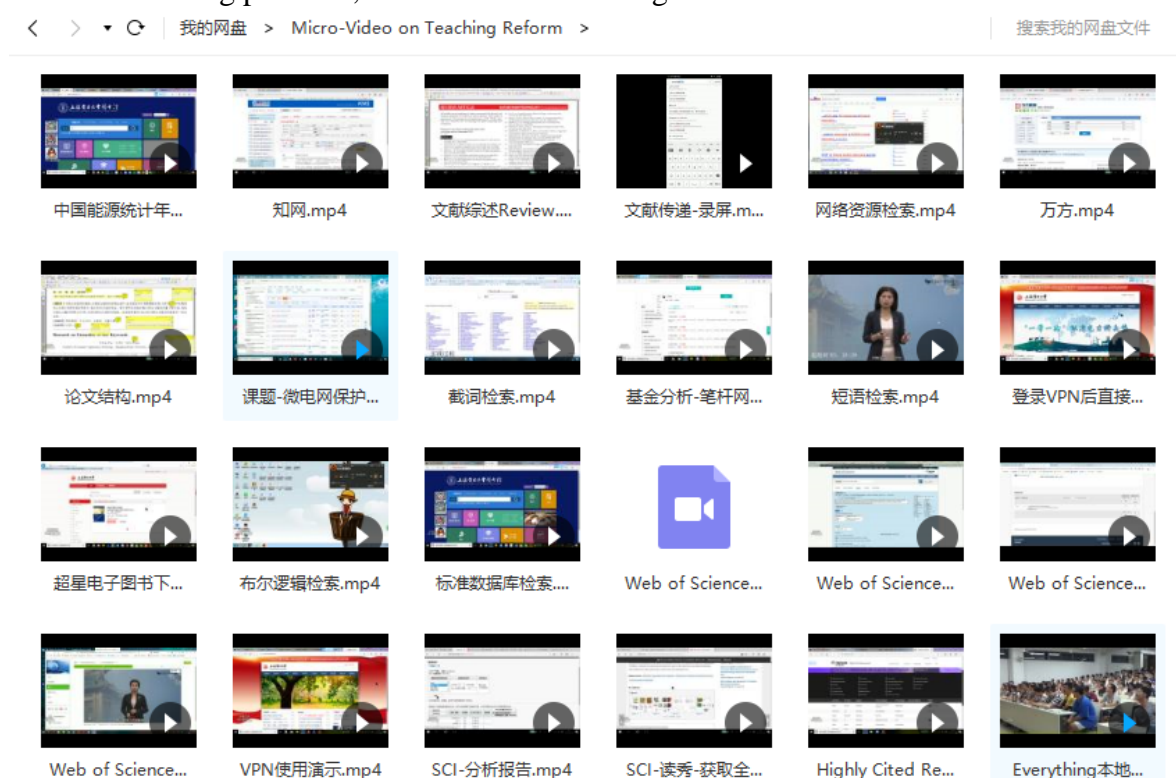

Figure 2. "Micro-Video" database based on cloud disk platform

5. Conclusion

New resources and technologies emerging in big data environment provide infinite possibilities for teaching to break through class hours, time and place restrictions and improve teaching effect. However, new problems in big data age such as information overload and fragmented learning, need to be solved by new thinking and new tools. In the era of fragmented learning, more systematic thinking, goal awareness and tool awareness are needed. All of these need graduate information retrieval course to combine with the needs of talent cultivation in the new environment, adjust teaching objectives in time, optimize the new curriculum system. Integrating active thinking, tool

using, innovative thinking, etc. into teaching process, helping graduate students to build a knowledge system based on scientific research process that can be constantly self updated and iterated, and empower students lifelong learning.

Acknowledgments

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