Discussion on the Reform of Comprehensive Experimental Teaching of Cognitive Psychology Based on Research-Oriented Teaching Mode

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Abstract. As a compulsory course for university students who are psychology and related majors, cognitive psychology is highly theoretical and practical. In experimental teaching of cognitive psychology, there are some realistic problems such as unclear positioning of subject experimental teaching, insufficient care of experimental research ability and single evaluation mechanism of experimental teaching. In practice, it is necessary to seriously discuss the positive effect of research-oriented teaching mode on the reform of experimental teaching of cognitive psychology and actively carry out practical exploration of comprehensive experimental teaching reform of cognitive psychology based on research-oriented teaching mode in order to improve the overall effect of experimental teaching in cognitive psychology and cultivate students’ ability of theoretical research and practical innovation.

Introduction

As an extremely important branch of modern psychology system, cognitive psychology is very popular now. In our school, cognitive psychology is a compulsory course for undergraduates who are psychology and education-related majors and is offered in the fifth semester of junior year. Actually, cognitive psychology is not only a professional core course based on general psychology and experimental psychology, but also an extremely important psychological methodology course. Its teaching process emphasizes both the systematic explanation of basic subject theory and knowledge and the effective implementation of students’ experimental practice and teaching activities. Besides, it also emphasizes both the systematic study of the knowledge of experimental principles of cognitive psychology and the cultivation of students’ comprehensive practical ability such as independently designing experiments and so on. In particular, the current development of cognitive psychology keeps changing rapidly, therefore the emphasis on comprehensive experimental design of the subject has become an inevitable trend during the development of subject teaching, and the development and design of comprehensive subject experiments attaching equal importance to frontier, intersection and application have become an important task of the reform of experimental teaching of cognitive psychology. The research-oriented teaching mode focuses on cultivating students’ innovative spirits and practical abilities through teaching, which can fully realize the organic combination of subject teaching and scientific research. To actively explore its positive effect and realization path on the reform of experimental teaching of cognitive psychology has become the important path to deepen the teaching reform of higher education.

Examples of Current Practice Confusion in Comprehensive Experimental Teaching of Cognitive Psychology

First, the positioning of comprehensive experimental teaching of cognitive psychology is not clear. The implement of experimental teaching of cognitive psychology requires the basic knowledge of general psychology and experimental psychology as the early basis for if students do not pay much
attention to these courses, their later learning of cognitive psychology courses including experimental operations may be quite difficult. Therefore, it is particularly important to scientifically and accurately assess the basic level of students before class, and to explore effective teaching in accordance with students’ different conditions. It is precisely because the professional foundation and development needs of different major students are inconsistent, the experimental teaching of cognitive psychology relatively lacks a unified standard. The simple, repetitive and rigid mode will inevitably lead to unclear positioning, so it is difficult to truly teach students according to their aptitude. Meanwhile, due to the lack of more authoritative experimental teaching materials of cognitive psychology and the lack of innovation in the design of experimental teaching content, in practice teachers fail to pay attention to the effective connection between students’ knowledge in different subjects. Cognitive psychology often repeats operating theoretical knowledge and some experimental projects of general psychology and experimental psychology. Experimental teaching mostly refers to simple and repeated confirmatory experiments. Even if there are some comprehensively-designed experiments, they are not particularly closely connected with the frontier research of the development of cognitive psychology. The experimental research launched in teaching activities makes it difficult for students to adapt and know what to do.

Second, the design of comprehensive experimental teaching content of cognitive psychology is completely disconnected from scientific research. The course of cognitive psychology involves a wide range of knowledge, including not only a rich theoretical knowledge system but also extremely complicated experimental design. Besides, its content is very massive and complicated. An important issue that teachers must think deeply and face directly is that the basic content of experimental teaching should be designed scientifically in a relatively limited teaching time. Especially for those students who are not psychology major, they lack relevant theoretical knowledge base of psychology. In the face of the practical requirements of this subject with special emphasis on experimental support, many teachers feel too exhausted to deal with. Especially there is a lack of connection between the design of experimental teaching content and scientific research, so the effective connection and mutual promotion of the two cannot be achieved well. It is difficult for students to have access to frontier knowledge of cognitive psychology, let alone to participate in teachers’ scientific research activities. Even if there is such an opportunity, it is more going through the motions than getting deeply involved, therefore the in-depth understanding and participation of frontier research project of cognitive psychology is hard to achieve.

Third, the current assessment methods of experimental teaching of cognitive psychology do not pay enough attention to students’ research abilities. Following the traditional assessment methods of cognitive psychology, many schools still adopt the form of closed-answer questions in the same way as theoretical exams for experimental teaching of cognitive psychology with the content of examination mostly referring to theoretical explanations related to experiments of teaching materials, over-focus the standardized operating function of experimental teaching assessment, and lack sufficient attention to students’ professional abilities shown in the process of experimental teaching. The problems existing in the current subject experimental teaching materials are also manifested most vividly in the assessment, that is, the experimental teaching content is mostly old traditional experimental projects, which cannot reflect the latest progress of the subject experimental teaching; the experimental teaching assessment focuses more on the memory and simple reproduction of knowledge, which is not conducive to the detection of research ideas and innovative abilities such as experimental design shown on individual students. Therefore, it is also a very urgent task to actively explore the assessment methods that are suitable for the subject characteristics in the reform practice of experimental teaching of cognitive psychology.
Positive Effect of Research-Oriented Teaching Mode on the Reform of Comprehensive Experimental Teaching of Cognitive Psychology

In fact, we advocate the effective integration of the research-oriented teaching mode into the reform of comprehensive experimental teaching of cognitive psychology, which is not only proposed due to the disadvantage that traditional teaching over-focuses on unidirectional knowledge transference, but also inevitably required by the high development of contemporary cognitive psychology. The research-oriented teaching mode does not oppose the teaching of basic subject theoretical knowledge and students’ knowledge accumulation. Instead, it will regard this as its important foundation to guide students to learn to use subject professional knowledge and skills creatively, thereby independently discovering, researching and solving problems, gradually accumulating professional knowledge and enhancing professional abilities during learning and discussion. The research-oriented teaching mode particularly emphasizes the close integration of scientific research and subject teaching, which is highly consistent with the basic spirit of the current education and teaching reform in China. Due to its different characteristics from other subjects, cognitive psychology particularly emphasizes the use of empirical research to explore internal psychological operations as the subject basis, thereby prompting cognitive psychology to develop a content framework with an applied research-oriented teaching mode. That is to say, with the help of research-oriented teaching mode to promote the reform of comprehensive experimental teaching of cognitive psychology, the teaching goal of cultivating students’ innovative spirits and practical abilities can be better achieved, and the organic combination of scientific research and course teaching can be better realized. Therefore, teachers should pay attention to the practical exploration of comprehensive experimental teaching of cognitive psychology, guide and help students to actively discover, analyze and solve problems, and allow students to actively design and operate experiments in the process of experimental exploration and knowledge construction also to realize the comprehension and conversion of experimental skills in the process of accumulating and exercising knowledge reconstruction, in order to promote the sustainable development and integration of students’ experimental practical skills.

Practical Exploration of the Reform of Comprehensive Experimental Teaching of Cognitive Psychology Based on Research-Oriented Teaching Mode

Scientifically borrowing from basic theory and connotation of research-oriented teaching mode, in practice we actively try practical exploration of the reform of comprehensive experimental teaching of cognitive psychology. We divide students into different groups according to their majors, and carefully design a basic program of the subject experimental teaching. Under the guidance of subject teachers, students can carefully look for the latest literature on experimental teaching of cognitive psychology. They are guided to pay attention to thinking about the experiment and actively solving various problems that arise in the early exploration and specific operation process, and combining the method of group discussion and summary report to complete the teaching task of subject experimental course. In the whole experimental teaching process, attaching importance to the guidance and participation of students will naturally help them actively construct subject knowledge and transform the application of experimental skills. The interaction between teachers and students can remarkably enhance students’ enthusiasm and independently-operational ability. Therefore, students’ ability of independent exploration and innovation has been effectively improved.

Scientifically Positioning Research-Oriented Experimental Courses of Cognitive Psychology

Generally speaking, students have systematically studied the related contents of general psychology and experimental psychology when studying cognitive psychology. As a more professional course in cognitive psychology, it contains more carefully-designed and extremely ingenious experimental designs, which is actually a basic scientific research method that students must master through subject learning. Through the study of theoretical and experimental courses in cognitive psychology, students can grasp the subject’s basic theory and research paradigm more systematically, form a clearer idea of
subject research, and initially have the basic ability to engage in subject research. With the help of experimental teaching in cognitive psychology, teachers can help students fully understand the important position of cognitive psychology in the entire psychology system, and clarify the relationship between cognitive psychology, general psychology and experimental psychology. The introduction of research-oriented teaching content in the experimental teaching of cognitive psychology can comprehensively target the actual situation of its development, actively expand the subject’s new research results and related content to conduct experimental teaching design, scientifically integrate the frontier experimental research content system of cognitive subject, constantly enrich and improve the experimental teaching of cognitive psychology, and comprehensively solve the problems of students’ insufficient cognition of the subject and relatively passive learning.

Highly Valuing and Carefully Designing Research-Oriented Experimental Teaching Content

In order to adapt to the basic requirements of research-oriented teaching, in view of the current common problems in the course construction and experimental design of cognitive psychology, it is necessary to repeatedly compare and carefully select teaching and experimental referenced materials, take the domestic relatively-classic system of teaching materials and experimental teaching as the basic framework of subject experimental teaching, appropriately increase teaching contents that can reflect the latest subject research results, and effectively integrate these results into experimental teaching content system. Judging from the composition of the experimental teaching content of cognitive psychology, more than 60% of the content in our current experimental teaching system of cognitive psychology can be closely linked to the characteristics of the times and the subject research focus. At the same time, teachers should not only fully and systematically grasp the basic structure of the subject when preparing courses and teaching, but also have a deep understanding of the frontier research information of subject development, extensively collect data and scientifically design subject experimental teaching content. For example, when learning the pattern recognition in real practice, on the basis of fully combining the introduction of traditional classic pattern recognition views and the operation of related experimental design, we scientifically integrate research content about face recognition and emotion recognition. The subject experimental teaching content can keep up with the times, plus it helps students systematically understand the frontier research achievements of the international cognitive psychology and constantly expand their professional horizons and research skills.

Actively Implementing Effective Research-Oriented Experimental Teaching Methods

In order to effectively overcome the problems that students’ lack of problem awareness and poor inquiry ability in the traditional experimental teaching process, in the experimental teaching of cognitive psychology, we pay special attention to guiding students to learn independently, and actively adopt the teaching mode that organically combines various methods such as experimental theory lectures, experimental specific operation skills trainings, experimental research report guidance and after-experiment discussions. Teachers explain the basic content of cognitive psychology in detail, divide the whole class into research groups of about 5 people, and guide students to choose topics, consult literature and design experimental programs autonomously. According to the theme, every group should search, select, read and report a high-level experimental research literature published in recent years. At the same time, during the process of experimental theory teaching and experimental report writing, teachers should actively guide and create problem situations to stimulate students’ thinking and discussions around the theme. In this process, teachers try to play the role of facilitator and leader well, guide students to finish experimental discussions and summaries, and sort out and review students’ reports and discussion contents professionally. This kind of experimental teaching form of cognitive psychology with rich research characteristics can effectively promote students to gradually master the basic methods and skills of scientific research in
the process of in-depth exploration, and cultivate students’ scientific and rigorous thinking way and active learning spirit.

**Making Efforts to Explore a Standardized Research-Oriented Experimental Teaching Assessment System**

It is precisely because we attach importance to the cultivation of students’ research-oriented learning ability in the reform of experimental teaching that the teaching assessment method of the experimental course in this subject is different from the traditional way. In practice, we have carried out bold and beneficial attempts during the reform of the assessment system of experimental teaching in cognitive psychology, and put more emphasis on the comprehensive assessment of students’ experimental practice, hands-on operation and applied research abilities. In addition to the traditional writing of experimental teaching reports, the assessment of small papers on subject experimental teaching research is moderately increased, or students are required to choose a certain experimental research topic in cognitive psychology for a simple review. By systematically sorting out experimental reports or combining group analyses and summarizing the problems in the experimental process, students can obtain practice to improve their scientific research thinking. The small papers or research reports of the subject can help students learn and understand how to write more standardized papers, thus laying a solid foundation for the future writing of graduation thesis. At the same time, combining group discussion, experimental plan design, experimental report writing and other methods to comprehensively assess students’ experimental practice teaching, teachers can make overall and scientific assessments of students more objectively and fairly, highlighting the effectiveness of research-oriented reform of experimental teaching assessment in cognitive psychology.

**Summary**

Through a comparative analysis of the effectiveness of the reform of experimental teaching of cognitive psychology conducted by our school staff who are psychology and related majors in recent years, we find that students’ satisfaction with experimental teaching of cognitive psychology has been greatly improved. Besides, students’ mastering of theoretical psychology knowledge and skills related to experimental practice have also improved significantly. Paying high attention to the introduction of research-oriented teaching mode into the practice of the reform of comprehensive experimental teaching of cognitive psychology can fully stimulate students’ learning desire for cognitive psychology and promote students’ understanding and mastering of subject theoretical knowledge and experimental design, which can effectively improve students’ professional research ability and achieve relatively-ideal teaching effect.

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**References**

[1] Duan Haijun. Practice and Evaluation Model Construction of Experimental Psychology Teaching Reform, Education Exploration, No. 3, pp. 146-148, 2010.

[2] Jiang Qin, Wang Enjie. Teaching Reform of Cognitive Psychology Based on Research Teaching Mode, University Education, No. 3, pp. 48-49, 2016.

[3] Yuan Fang. Research Teaching and Training of Research Teachers in Universities, Forum on Contemporary Education, No. 9, pp. 112-113, 2011.
[4] Liu Bing, Chen Hou, Ni Wenli. A New Idea of Research-Oriented Teaching Based on the Nature of Science, Higher Education of Sciences, No. 3, pp. 74-78, 2011.

[5] Zhao Hanqiang, Zhao Shukai, Yu Peiming. On the Research Teaching Mode of Research University, Higher Education of Sciences, No. 3, pp. 101-104, 2007.

[6] Wang Hui, Zhang Wenxue, Yuan Dening. Some Ideas and Practice on the Teaching Model in Research Universities, Research On Education Tsinghua University, No. 1, pp. 17-22, 2002.