Inquiry Practice Design Teaching in Application-Oriented University
Idea, Model and Case

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Inquiry practice is proposed based on the training objectives of high-level application-oriented talents of design major in Application-oriented Colleges and universities. It originates from inquiry learning, but it is very different from inquiry learning, research learning and research practice. Its characteristics of emphasizing free operation, open autonomy and vivid activities are especially suitable for application in practice teaching of design major. Taking the undergraduate course "brand communication design" during the epidemic period in 2020 as an example, this paper discusses the curriculum logic, teaching process and teaching methods of inquiry practice teaching of design major in application-oriented universities, and puts forward some ideas on the ecosystem of inquiry practice teaching of design major.

Keywords: applied university; design major; inquiry learning; inquiry practice; practice teaching ecosystem

The applied higher education is an important direction of the reform of higher education in China in the new period. It complements with the double first-class construction. The applied higher education undertakes the important task of cultivating the highly skilled talents in various industries which are urgently needed for social development. In the applied higher education, the design specialty emphasizes the value and significance of practical teaching in the process of professional talents training because of its special training objectives, teaching contents, teaching methods and talent positioning. Therefore, most colleges and universities that set up design major in China regard the implementation and exploration of practical teaching mode as the core of the research and practice of professional education. According to the theory and method of systematic science, Pan Lusheng (2007) proposed that the overall design of all elements of practical teaching is carried out around the talent training goal of design art education. Through reasonable curriculum setting and reasonable allocation of each practical teaching link, it is extremely important to establish a practical teaching system which is compatible with the theoretical teaching system, with the optimization of structure and function necessary. However, it is worth noting that although each design education institution or specialty highly agrees with the value and connotation of practical teaching, it has different cognition on the specific problems such as operation mode, implementation method, relationship between theory and practice, and proportion of practice teaching, which has influenced the actual teaching implementation. For example, how to coordinate the balance between practice teaching in practice teaching in class or extracurricular project practice training; whether practical teaching is the narrow sense of equipment software operation or the general professional comprehensive ability improvement; practice teaching is an imitation operation according to manual and regulations, and also an open exploration based on principles and rules. Based on the basic requirements of design education to train high-level application and skilled talents, we believe that the practical teaching of design specialty should expand the exploratory practice with independence, innovation and pioneering on the basis of the repetitive, basic software operation and graphic drawing practice in general sense.
1. The Theoretical Basis of Inquiry Practice Teaching: Inquiry Learning and Its Classroom Model

Inquiry practice is based on the expansion and extension of inquiry learning. Inquiry learning emerged with the American education modernization movement in the 1960s, which was first oriented to science. Joseph Schwab (1961), a professor at the University of Chicago, believed that science does not need to be a process to determine the stable truth of the world we live in. Science can be a flexible, multi-directional, exploration-oriented thinking and learning process. Therefore, science in the classroom should more closely reflect the work of scientists in practice. In the process of science teaching, students should, like scientists, discover and solve problems as masters, acquire knowledge, develop skills, cultivate abilities, especially creativity, and be educated in scientific methods, spirit, values, and develop their own personality. Since it was put forward, inquiry learning has been concerned, studied and practiced as a reflection and breakthrough of traditional education methods in basic education. Its theory can be found in constructivist learning theories, such as Dewey (1961), Vygotsky (1962) and Freire (1962). It has been widely used in Science Education (Joseph Schwab, USA, 1966), social and historical studies (Kathy swan, S.G. grant, John Lee, USA, 2013), kindergarten learning (Vanderlee, Mary Louise, Youmans s, Peters R, Eastbrook J, Canada, 2012), reading and writing (Ewald Vervaet, Netherlands, 2019), etc.

In the research on the application of inquiry learning theory in basic education teaching, S.G. grant, Professor of Binghamton University, Kathy swan, Professor of Kentucky University and John Lee, Professor of Northern California State University, are the most influential. They believe that inquiry is the core of social research, and well-designed questions and thoughtful answers to these questions can stimulate deeper and richer teaching and learning (S.G. Grant, John Lee, Kathy Swan, 2015). At the same time, Professor Grant and others put forward ten principles of inquiry learning, namely: inquiry begins with a question, inquiry theme and output are based on standards, subject knowledge and skills are included in the survey, students are active learners in inquiry, the purpose of evaluation is for learning, subject resources are the cornerstone of inquiry, students need opportunities to practice citizenship, social research sharing reading and writing training responsibility, inquiry is not all, inquiry is best organized by experienced teachers. Under the guidance of these principles, Professor Grant and others summed up the content elements of inquiry learning classroom model and its corresponding activity objectives, which are: planning problem activities (cultivating students' interest); supporting problems (developing key content); formative performance tasks (showing new understanding); characteristic resources (providing opportunities to generate curiosity, build knowledge and build arguments); and summative performance Effective tasks (demonstrating evidence-based arguments); outreach activities (providing choices for summative tasks); and smart actions (providing opportunities for thoughtful citizen participation).

The following shows the inquiry learning process of “Should we tax robots” in a class teaching in the United States (see Table 1). The purpose of inquiry learning in this case is to help students realize the ways and methods of improving productivity by using advanced products and manpower. First, it should be in line with the curriculum level and teaching standard standard set by the competent education department. Before students carry out inquiry, teachers organize teaching activities and guide the problems: broadcast the interview video of Bill Gates about robot taxation, ask students what "robot" means, and discuss the possible advantages and disadvantages of the growing technology in our society. Next, in order to help to explore the problems better, teachers divide the problems into three supporting questions: 1. What is the impact of technology in the workplace? 2. What is the impact of technology on the family? 3. What is the impact of technology on employment in the U.S. economy? Based on the three decomposition supplementary problems, teachers guide students to complete three formative performance tasks: one is to make a Venn chart (Wien chart), compare the difference between the middle of the last century and the contemporary factory; second, create a productivity report using the survey data; and third, make a conclusion on the relationship between manufacturing and employment. The three tasks correspond to different characteristic resources respectively, so as to provide students with the ability to explore and discover, establish knowledge and construct arguments. For example, under the first task, there are three characteristic resources to explore, namely, the photos of a factory in the 1960s, the photos of a factory in the 1990s and the interview of Bill Gates; the second task features the survey data from the parents of students; the third task is the output and employment of American manufacturing since 1975, the unemployment rate in the United States and alternative information on the manufacturing industry in the United States since 1975, based on the above characteristics of resources exploration and analysis, the course requires students to complete their summary performance tasks: first, we should answer the question whether we should tax robots, students should use specific claims based on existing resources to construct and express a point of view based on the specific
claims and relevant evidence. The existence of this argument can be a detailed outline, poster or article; then, on the technology How to change work to interview an adult in the community as an extension and supplement to the argument expression. The last part of inquiry learning is to show the participation of citizens, including cognition, evaluation and action: the way to check the local economic change; to consider ways to help others understand the local economic change, to suggest the way the community can adjust; and to show the results of the investigation to the local business or political leaders. From the above specific cases, we can see that inquiry learning emphasizes the problem setting, layer by layer inquiry, multiple evaluation and substantive action in the learning process, which is the core characteristics of ensuring the effect of inquiry learning, and becomes an important measurement index and performance characteristics of inquiry practice teaching.

Table 1. “Should we tax robots?” inquiry learning process (S.G. Grant, John Lee, Kathy Swan, 2015)

2. The Academic Path of Inquiry Practice Teaching: Inquiry Learning, Research Learning, Research Practice, Inquiry Practice

In the teaching of higher education, the research and application of inquiry learning has not been paid as much attention as basic education. Instead, it has been transformed into two academic categories, research practice and research learning, which are similar to the connotation of inquiry learning and also have the characteristics of openness and autonomy. For research practice, most of the research results focus on the perspective of teachers. For example, in search of a way to teach research methods, Noe Alexander Aguado (2009) has turned to a practical, hands-on approach that encourages students to partake in the rewards of conducting their own empirical research. Zhang Qi (2011) put forward that the research teaching of professional theme design in universities is a kind of comprehensive practical teaching, which can not only realize the refinement and deepening of curriculum knowledge, but also closely connect with the market; Chen Huoying et al (2014) proposed that research practice teaching can realize the organic combination of teachers’ and students’ research-based learning, so as to stimulate students’ spirit of independent exploration of practice; Xiong Fei et al (2019) proposed that research-based practice teaching is an effective teaching method A modern teaching method with the core of cultivating students’ practical and innovative ability. The related research results of research-based learning mostly focus on the perspective of students. For example,
Lu Junchen (2005) believed that research learning is to cultivate students' ability to actively acquire knowledge, apply knowledge, explore rules and solve problems through the process of cooperative design, personal reading, group activities, feedback evaluation and induction under the guidance of double qualified teachers, with special topics as the carrier, inquiry as the way and practical activities as the form. According to Liu Liqian and Chen Fangfang (2015), research learning, as a new form of practice teaching of ideological and political theory course, mainly included social investigation, innovation plan, reading practice, course paper, discussion and communication type. On the whole, these research views are related to the management, agronomy, law, science, economics, engineering and other natural sciences, humanities and social sciences in higher education. It shows that the research-based practice and research-based learning theories derived from inquiry learning are applicable to many disciplines as education and teaching methods.

Compared with the extensive attention and research on "inquiry learning" in the field of basic education and "inquiry practice / learning" in the field of higher education, the attention of "inquiry practice" is less in the field of basic education and higher education. Most of these documents do shallow research on the meaning, stage and other basic issues of inquiry practice, and rarely involve the application value and system construction of design major. For example, Bobby Jeanpierre (2006) proposed that based on an analysis of teachers’ responses to a rated closed-ended survey on their inquiry practices, which was crosschecked with open-ended qualitative responses, they were using several different science research skills during instruction; however, teachers reported use of inquiry research skills likely occurred during guided inquiry projects with little evidence to support that they used full inquiry as suggested in the National Science Education Standards (NSES) (NRC, 1996). Barbara Neuby (2010) proposed that inquiry students are more likely to build hypotheses, integrate, and apply new knowledge more than students in traditional lecture-format classrooms. But he also points out that although inquiry-based learning may be beneficial, in a study of 77 faculty members at two universities, students’ grades in inquiry-based classes were not significantly higher than grades in standard lecture classes. Inquiry methods are not a panacea for college student learning. But more scholars believe that inquiry practice may the good solution to solve the problem that Neuby pays attention to in China. Ye Qian (2015) put forward that inquiry based practice teaching is the process of teaching through the teacher’s inspiration and guidance, students’ independent practice learning and cooperative discussion; take the current teaching materials as the basic content, teachers provide some examples and problems, take the actual system in production practice as the controlled object, students find and master the corresponding principles and conclusions through a variety of ways; Even scholars who discuss inquiry practice teaching from a systematic point of view, it is difficult to distinguish it from the general meaning of practice teaching, which is superficial. For example, Yu Xiaohe (2012) proposed to carry out inquiry practice teaching: in terms of teaching organization, teachers should be the leading role, students should be the main body; in terms of teaching content arrangement, cases and projects should be the leading role of inquiry based practice, combined with other forms of practice; in terms of teaching resources, practical teaching base should be used as the basis, all kinds of resources inside and outside the school should be coordinated; in terms of teaching evaluation, process evaluation should be taken as the core leading, combined with other evaluation methods. To carry out inquiry practice teaching activities, we should adhere to the unity of teaching standardization and flexibility, the complementarity of theoretical teaching and practice teaching, and the coordination of ideological and intellectual teaching objectives.

3. The Internal Logic and Structural Framework of Inquiry Practice Teaching in Design Major

Inquiry is not only a form of thinking, but also a skill acquired through individual experience; inquiry practice is not only a way of learning, but also a way of teaching, an open exploration and a result of research. On the surface, exploration and research are synonymous, but on the depth, there are obvious differences between them. The English word for inquiry is interpreted by the Oxford English dictionary as: the activity of seeking knowledge or information, especially the activity of seeking truth, the activity of searching, researching, investigating and testing, the activity of asking questions and questioning. From the perspective of Chinese interpretation, Cihai interprets "inquiry" as "in-depth exploration and repeated research"; it interprets "research" as "exploring the essence and laws of things with scientific methods". From the perspective of language sense, exploration is more energetic, dynamic and lively, while research is more rigorous and steady. This is one of the reasons why basic education tends to use inquiry learning.

The relationship between inquiry practice and inquiry learning, research learning and research practice can be illustrated by the following chart (see Table 2). Here, we can see that learning is mainly based on students’ behavior, while practice (teaching) is mainly based on Teachers' behavior; learning pays more attention to the
results of behavior, while practice (teaching) pays more attention to the process of behavior; because it can show a lively and vivid atmosphere, inquiry learning or practice can be widely used in science and humanities, especially humanities. The research learning or practice with rigorous and meticulous overall atmosphere is more suitable for application in science.

Table 2. The relationship between inquiry learning / practice and research learning / practice

| Inquiry learning          | Research learning          | Research practice(teaching) | Inquiry practice(teaching) |
|---------------------------|----------------------------|----------------------------|---------------------------|
| Results oriented          | Results oriented           | Process oriented            | Process oriented          |
| Based on students' behavior | Based on students' behavior | Based on teachers' behavior | Based on Teachers' behavior |
| Lively                    | Rigorous                  | Rigorous                   | Lively                    |
| Science and humanities    | More scientific           | More scientific            | Science and humanities    |

According to S.E. Dreyfus and Hubert L. Dreyfus (1980), in acquiring a skill by means of instruction and experience, the student normally passed through five developmental stages which we designate novice, competence, proficiency, expertise and mastery. Based on this theory, we think that inquiry practice teaching should have five characteristics: first, from the perspective of educational objectives, inquiry practice teaching focuses on the quality education of students, that is, emphasizing the values and attitudes of students, especially the cultivation of practical ability, and more emphasis on the achievement of ability improvement through the process of inquiry. Second, from the perspective of method, it is mainly in the way of inquiry, which is different from the traditional practice training of the teacher hand handle transmission. It is not to tell the conclusion directly to the students, then to verify it through demonstration experiment or student experiment, but to ask students to put forward solutions or conclusions through various inquiry activities such as observation, investigation, operation, design, data collection, etc., so that students can participate in and experience the acquisition process of knowledge and skills, construct new understanding of life and cultivate them. Third, from the way to inquiry, inquiry practice teaching adopts open education, integrates into nature and society, and attaches importance to cooperative training and learning. The traditional practice training is mostly closed and personal. In the practice of inquiry, it is often necessary to assign work plans and group survey, and to study in cooperation such as discussion, debate and opinion synthesis. This can make students see different aspects of the problem, reflect on and criticize their own and others’ viewpoints and solutions, thus building a new and higher level of understanding, and enhancing team spirit and cooperation awareness. Fourth, from the impact on students, its advantages lie in always making students active, active thinking, and mobilizing learning interests. Moreover, the positive, based on investigation and inquiry based teaching and learning skills and values, also the most easy for students to remember and use it. Students walk out of school, integrate into society and understand the world because of such independent free, real or simulated activities, thus forming correct social outlook, outlook on life and values. Fifth, from the evaluation, inquiry practice teaching attaches importance to formative evaluation and students’ self-evaluation. Inquiry practice teaching requires a high level of requirements. It should evaluate what abilities each student has increased. Whether the past knowledge and skills can be flexibly used to solve problems, whether problems can be found and raised, whether to design and implement exploration or solution plans, and whether to analyze and process the collected data information, so as to make reasonable judgments and assumptions. To achieve the above objectives, it is not enough to rely on the summary evaluation alone, but also to strengthen the formative evaluation, that is, in the practice process, strengthen the evaluation of the students’ notes on the practical process, the discussion and interpretation of a problem, the sketch drawn, the model, and the face-to-face communication of students and the explanation for a certain problem. In addition, it is another characteristic of inquiry practice teaching to pay attention to the evaluation of students’ own practice process. Students constantly evaluate their inquiry practice, such as checking whether the methods adopted are appropriate and whether the scheme meets the original goal, so as to improve the efficiency of practice and to achieve the practical goals.

In the teaching of design major in Application-oriented universities, we attach importance to the cultivation of students’ inquiry practice quality. The surface meaning is that students actively participate in the practice, including observing, experiencing, analyzing, explaining and discussing the design practice activities and
existing works, and then practicing in person, summarizing and reflecting on themselves. The inner meaning is the accumulation and generation of design intrinsic quality, including design knowledge, design skills, design emotion, design attitude and design values. The integration of the inner and outer layers can form the explicit and optimized design practice elements.

The ultimate goal of inquiry practice learning in design education is to achieve a deep understanding of the knowledge learned and a comprehensive improvement of the design practice skills mastered through inquiry, so as to solve the diversified design problems actually faced. The steps and requirements are as follows: first, to observe and experience purposefully under the necessary guidance, and to think about the results. Second, ask questions directly or by describing the conflict between the learned knowledge and the discovered problems, so as to clearly ask questions. Third, according to their own knowledge and experience analysis of the problem, put forward the hypothesis and design concept. Fourth, use various information means to collect relevant data and information as far as possible to test hypotheses, or design specific concepts. Fifth, make logical design decisions and make reasonable evaluation. Sixth, combine personal design experience gained in practice into a coherent solution, communicate with others and consider others' evaluation. In this way, at the end of inquiry practice learning, students major in design can do at least two things: one is to apply the existing design solutions to new problems, the other is to apply the new design solutions to existing problems. The basic mode is shown in Figure 1.

Figure 1. The structure frame of inquiry practice teaching in design major

Therefore, the inquiry practice teaching in design major emphasizes action, experience and interpretation in the practice process. That is, the subject actively participates in the practice situation, experiences the practice process, thinks about the practice variable, and does not do the spectator of the practical activities. In terms of research methods, we should emphasize autonomy, cooperation and inquiry. That is to say, the students' consciousness of subject, creativity and practical ability are exerted to make them the master of the practical activities. In terms of practical results, emphasis is placed on generativity and diversity. That is, the practical results are not only a kind of imitation, but also must generate self meaning, and the form of works should not be single, but diverse and spiritual. In terms of value standards, we emphasize diversity and openness. That is, the criteria of practical activities should be open and pluralistic, rather than pursuing absolute consistency. In teaching mode, we fully explore the advantages of subject teaching and team mode teaching. Teachers
participate in inquiry practice equally in the role of team members, brainstorm and audit design together, and keep a considerable amount of guidance and stimulation management in the dark, and organize students to make a good record of the practice process. The whole practice activity is embodied in the self-management and operation system with strong innovation and exploration with external results.

4. Design Major Inquiry Practice Teaching Case: Brand Communication Design of Hongjitang, A Time-Honored Enterprise

Hongjitang is one of the famous time-honored brands in China. Le Jingyu, a descendant of Beijing Tongrentang, who founded in Jinan, Shandong province in 1911. It has a deep historical origin with Tongrentang. As a century old entity enterprise of traditional Chinese medicine in Shandong province, Hongjitang pharmaceutical is well-known at home country and abroad. Its donkey hide gelatin products won the "excellent gold medal" in Panama International Expo, and its nine extraction and nine processing technology of donkey hide gelatin has become the industry standard. However, in view of historical reasons and practical problems in recent years, its donkey hide gelatin products have been in the market position of follower for a long time in the fierce market competition and changing consumption upgrading, which is inconsistent with its brand history, brand value and positioning. How to create a more competitive and younger brand image in the concept of big health and new consumption wave has become an important brand transformation issue faced by Hongjitang. During the epidemic period in 2020, the author of this paper opened the course of "brand communication design" for the third year undergraduate students of visual communication design major. The course takes "Hongjitang brand rejuvenation design and communication" as the subject, and takes inquiry practice teaching as the tool to guide students to solve the problem of enterprise brand building with integrated design and communication strategy.

In the process of inquiry practice teaching, this course uses the inquiry learning model proposed by Grant (2017) (see Table 1) for reference, and combines with the structural framework of design professional inquiry practice teaching summarized by the author (see Figure 2) for classroom organization, focusing on the interpretation of inquiry problems, the setting of inquiry tasks, the carding of inquiry resources, the guidance of inquiry process, the evaluation of inquiry effect, and the expression of inquiry results to explore the inquiry practice teaching in many links and stages.

4.1 Interpretation of Inquiry Problems

According to Grant (2017), a good question is very important for inquiry practice. The question should be concise enough, convincing enough to arouse students’ interest in inquiry. Around the question, a series of activity elements can be carried out, and the corresponding goals and tasks can be displayed. The significance of the problem lies in a series of inquiry activities in the process of students’ learning, not just a series of curriculum units about facts. In the course of brand communication design, the teacher puts forward the following questions: what kind of time-honored brand Hongjitang do that young people like. Its core is the rejuvenation of Hongjitang’s brand. Specifically, how does Hongjitang achieve the rejuvenation of products, image and communication?

4.2 Setting of Inquiry Tasks

In inquiry practice teaching, inquiry tasks include formative tasks (such as defining terms, confirming cases, brainstorming ideas), summative tasks (such as comparing similarities and differences of phenomena, analyzing text paragraphs, and writing reports based on evidence) and expansive tasks. Good inquiry teaching should be combined with the use of knowledge and skills in each task stage: students need knowledge to discuss and skills to support their own views. In the teaching of this course, the formative task is to understand the connotation of advertising concepts, advertising ideas, advertising design and advertising communication; The summative task is to analyze the progressive relationship between these behaviors; and the expanding task is to form advertising concepts, creative advertising points, carry out advertising design and implement advertising communication (see Table 3).
4.3 Carding of Inquiry Resources
In the process of inquiry, teachers will provide a large number of subject knowledge resources in time, which can come from the library, network or other ways. It aims at three aspects: stimulating students’ curiosity and interest in the topic; building students’ content knowledge; helping students construct and support their arguments related to a convincing question. In the teaching of this course, teachers mainly provide the following resources: resources from the brand side (see Figure 2), such as the website of Hongjitang and the statement of the person in charge of the brand side; common reference cases from the industry (see Figure 5), such as professional marketing and advertising websites; Resources from the professional knowledge database, such as CNKI and Wanfang.

4.4 Guidance of Inquiry Process
Bruner J (1990) believed that the process of inquiry is a process in which students actively construct knowledge, rather than passively accept knowledge. Teachers need to find a way for all students to participate in inquiry, and guide and monitor the process in real time. In the teaching of this course, the teacher divides all students into different groups. The group’s inquiry experiences three stages: individual thinking, part of the team members’ inquiry, and all the team members’ inquiry. In the three different stages, there are different problem setting and exploration output, which guide the students to independently carry out practice learning. In the process of inquiry practice, the organization and coordination of teachers is very important. Therefore, in this course, teachers focus on the use of various teaching media tools under the condition of online learning, such as the filling of various content forms, the provision of various organizational materials and results output statistical materials, so as to ensure the effective and orderly conduct of inquiry activities (see Table 4).
Table 4: Teacher control and guidance in the process of inquiry

| Level | Topic | Teacher control and guidance in the process of inquiry |
|-------|-------|------------------------------------------------------|
| 1.0   | -     | Teacher control and guidance in the process of inquiry |
|       | -     | The evaluation of inquiry effect is crucial to the learning process. |
|       | -     | The purpose is to ensure the effectiveness of the inquiry process. |
|       | -     | The evaluation methods include formative and summative assessment. |
|       | -     | The formative assessment involves ongoing feedback and adjustments. |
|       | -     | The summative assessment evaluates the final inquiry results. |
|       | -     | The evaluation criteria include student participation, problem-solving skills, and inquiry outcomes. |
|       | -     | The evaluation process should be transparent and fair. |
|       | -     | The evaluation results should be used to improve the inquiry process. |

4.5 Evaluation of Inquiry Effect

Task evaluation happens frequently and runs through every stage of inquiry, and the evaluation methods in different stages are also different, but the purpose is to learn. The assessment of formative task includes writing, debate, chart, etc., while the assessment of summative task includes report, chart, poster, etc. The assessment includes the means of media design, presentation task evaluation, presentation evaluation, etc. Each evaluation lays the foundation for the next exploration activity.

4.6 Expression of Inquiry Results

The results of inquiry practice should go out of the classroom and cut into the real scene of society or enterprise. This course requires students to test the brand communication design works produced by inquiry practice design in the real marketing environment and brand communication environment of enterprises, such as outdoor advertising display, new product packaging application, digital communication means landing, etc. In generally speaking, the inquiry practice teaching of brand communication design aims to help students form multi-disciplinary knowledge and skills. Through the teacher guided students' independent inquiry learning, students' design ability can be trained in many aspects, such as looking for information, comparative analysis, cooperation, debate and persuasion, criticism and explanation, design and evaluation scheme, and implementation action based on the ability of practice related, it has formed an innovative inquiry practice teaching ecosystem with students' inquiry learning as the center, involving the integration of teaching objectives and tasks, teaching process management, teaching resource allocation, teaching effect monitoring, teaching achievement application and other aspects.

5. Conclusion

Practice teaching is very important for the training of design talents. The practice teaching system of design major based on inquiry practice is to find a reasonable point between the applied talents required by the design industry and the high-level talents defined by higher education, so as to form an appropriate and effective talent training mode. The inquiry practice of design major is not the creative research at the level of theoretical knowledge, but the effective exploration of design behavior, design procedure and design results based on the framework of practice under the guidance of certain theory. Its ultimate goal is to improve the
depth and validity of design practice activities. In the final analysis, it is a higher level of design practice behavior.

For the students majoring in design in application-oriented universities, inquiry design practice is an effective way to acquire knowledge independently and improve skills actively. Inquiry practice follows the idea that design is "problem solving". It takes finding problems, analyzing problems and solving problems as the main link and basic procedure of practice, and guides students to actively mobilize various design resources and tools to creatively put forward design solutions. Because teachers put the dominant power of teaching into the hands of students, and students design and practice according to the procedures and projects agreed with teachers, students have stronger initiative and higher interest in learning. At the same time, teachers' timely instruction and guidance in the process of practice can help students to expand the depth and breadth of practice, so as to stimulate students' stronger desire for exploration and sense of achievement, and achieve the goal of achieving research through practice and improving the height through practice.

On the basis of theoretical explanation and case analysis of inquiry design practice, we can construct the ecosystem of inquiry practice teaching of design major in application-oriented universities, and divide this system into conditions, courses, contents, management, evaluation and other levels and corresponding links. Inquiry design practice is the core activity type and leading guiding teaching concept of each level and link. This practice teaching ecosystem can not only greatly improve the effect of professional practice teaching, but also promote more open results, and fully ensure the students' freedom and interest in learning. At present, our research on this practice teaching ecosystem is neither in-depth nor detailed, and there are still a lot of contents, fields and focus issues that can be explored and innovated in the future.

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