Abstract—Classified cultivation is the task and necessary choice under the popularization of higher education. This paper adopts normative analysis, empirical analysis, expert interview and field investigation to analyze the connotation of classified training mode of undergraduate talents and proposes the talent classification standards and basis, and the core task of classified cultivation. It targets the talents as the practical application type, innovative research type, interdisciplinary and comprehensive cultivation. It attempts to build a classified training system including the subject of education, curriculum system, teaching team, management system and other elements, to enrich the research results in the field, explore the reform and innovation of talent training methods, and promote the innovative development of talent training mode in colleges and universities.

Keywords—classified education; employment orientation; differentiation; curriculum system; practical teaching

I. INTRODUCTION
Under the popularization of higher education, the scale of undergraduates keeps expanding, resulting in the widening gap in cultural foundation, academic performance, learning ability as well as emotional attitude, values and career expectation of students in the same university, school, grade and even the same class. What’s worse, the singularities of the existing undergraduate training objectives and the assimilation tendency of training methods are also very evident, which have seriously restricted the independent and characteristic development of the subject of education. To be specific, cope with the diversified and differentiated needs by the unified teaching plan and method, evaluation system and standard, which greatly inhibit students’ consciousness and initiative in learning, taking a toll on students’ adaptability and employability in the society. The contradiction will inevitably lead to the reform of the undergraduate training mode in the aspects of training objectives, course teaching, quality evaluation, etc., which provides an opportunity and a realistic basis for the exploration of classified talent training mode.

The classified cultivation of undergraduates is an innovative mode, which has become the objective requirement of the profession development in colleges and universities. It is now under the exploration and the trial in engineering specialty in few colleges and universities. For example, Fuzhou University implements diversified personnel training scheme, explores the pluralistic education mode inside and outside the school. It has successfully explored a new kind of joint engineering talents training mode - “Zijin model”, that is, enterprise support the school construction, participate in the educational process and inspect results. Chengdu University puts forward to constantly refining the connotation of talents and constructing a classified training system based on social needs and professional characteristics, and tries to construct diversified talent training modes. However, many research results are in a state of theoretical exploration, just as a thought. At present, the domestic theoretical achievements are mainly about the connotation, type and target orientation of classified cultivation, while the research on the selection of cultivation path and construction of cultivation system still needs to be further explored. The current theories of classified cultivation also need to be modified and improved in the process of theoretical research and practical exploration.

II. CONNOTATION OF CLASSIFIED TRAINING MODEL
A. Taking career development and social needs as guidance
The connotation of classified training of professional talents lies in establishing market demand orientation, subdividing and integrating all kinds of social needs, respecting the diversified needs of professional development, industry development and emerging posts for talents, and valuing students’ autonomy and differentiated choices. It can be said that no institution or specialty can surpass the market value orientation and consumer identity. Market-oriented education represents the inherent attribute and value orientation of higher education. Whether the educated can adapt to the society and get a higher social evaluation is the ultimate measure of the success or failure of talent training. Classified training is directly oriented to social needs, and the promotion of social adaptability and competitiveness of the subject of education is the prerequisite for the popularization of higher education and the rational choice for the
popularization of mass education from scale expansion to quality improvement.

B. Taking the cultivation of employment ability as the core

The concept of employability originated in the 1950s, which can be summarized as the ability of educated people to obtain and compete for jobs. It is essentially a kind of employment competitiveness. It covers four levels of content, namely job-hunting ability, basic vocational ability, vocational adaptability and sustainable development ability. It represents the social awareness of universities and their majors. It is not only an important yardstick to measure the level of professional development, but also a decisive factor for the survival and development of colleges and universities. Employability training has become the core content of university education and professional development. Classified training mode is an effective way to improve employment ability. From the establishment of training objectives to the construction of training system to the operation of training plan, every link of classified training is centered on the promotion of employment ability.

C. Taking the cultivation of diverse and multi-specified talents as a task

Higher education can be seen as a process of producing products. It is the suppliers of products, while demand comes from three main bodies, that is, learners, society and disciplines. To meet these three needs is the realistic task of undergraduate talent training. For learners, the demand will inevitably be diversified based on the differences of interests, career preferences, social cognition and career expectations; for society, with the adjustment of industrial structure and the change of job demand, various fields of society will inevitably put forward multi-class and multi-level requirements for undergraduate talents; for disciplines, it mainly summarizes as the establishment of training objectives to the construction of training system to the operation of training plan, every link of classified training is centered on the promotion of employment ability.

III. CLASSIFICATION OF TALENTS TRAINING OBJECTIVES

A. Trade practical type

The goal of personnel training can be expressed as systematic mastery of basic professional knowledge and related theories, skilled use of professional skills, application technology and modern information and communication technology, competent for professional expertise, skills and other work. The training of applied talents should focus on three aspects. Firstly, we should adhere to the combination of academic education and vocational ability improvement and attach importance to the training and examination of professional qualifications, so as to enhance the employment ability and market competitiveness of graduates of this major. Secondly, we should strengthen the practical teaching system. We should standardize the practice teaching link; expand the practice training base; innovate the mode of cooperation between production, teaching and research; enrich the practice teaching methods; improve the teaching effect and enhance students’ practical ability.

B. Innovative research type

The training objective is to produce innovative research talents with solid theoretical foundation and systematic professional knowledge, strong scientific research consciousness and preliminary ability to engage in research work, and that are excellent enough to receive graduate education and competent for theoretical study and applied research post in research institutions and the enterprise scientific research department, and professional teaching work in colleges and universities. Solid theoretical basis and basic scientific literacy are the key to the training of such talents. The training should focus on the following two aspects. The first is the academic and cutting-edge nature of the curriculum. The curriculum content should reflect the major achievements, frontier theories, development direction and trend of the discipline in the field of discipline and production, and lay a solid theoretical foundation for its further study and theoretical innovation. The second is to highlight the research and enlightenment of teaching methods, focusing on the training of students’ problem consciousness, innovative thinking and scientific research methods, and cultivating students’ habit of independent thinking and self-learning.

C. Interdisciplinary and comprehensive type

Interdisciplinary and comprehensive talents are required to have good professional background, get familiarity with and master basic theoretical knowledge such as economy, politics, management, foreign languages and computers; good communication and coordination skills, and competence in management, research, publicity and planning work in government, enterprises, institutions and other units. The cultivation of the kind of talents, on the one hand, is to construct a teaching platform of quality development course, set up one or more groups of related professional courses according to the specialty characteristics and training objectives for students to choose independently, and incorporate them into the students’ grades and credit management; on the other hand, it is to guide students to choose courses across majors and disciplines, and to realize the intersection of majors and disciplines in the form of “two majors, two degrees and major and minor subjects”, hence improving their comprehensive quality and enhancing their employment advantages.

D. Innovation and entrepreneurship type

Entrepreneurial talents must have innovative thinking, innovative consciousness, perfect knowledge structure and strong pioneering ability, and be able to use what they have learned to achieve independent entrepreneurship in the form of individuals or teams. The quality of entrepreneurship is called “the third education passport”. The entrepreneurship education is the sublimation of the university education idea and the education goal. We should integrate the innovative entrepreneurship education into the talent training plan and curriculum system; build a multi-level and three-dimensional innovative entrepreneurship training platform; cultivate
students’ innovative thinking and habits; stimulate students’ enthusiasm for entrepreneurship and enhance entrepreneurship ability by carriers of business plan competition, business project contest, ERP sand table simulation confrontation, entrepreneurship salon activities; provide a realistic platform for innovative entrepreneurship activities and accelerate the cultivation and incubation of students’ entrepreneurship projects with the driving force of school entrepreneurship incubation base and national, provincial and municipal three-level entrepreneurship incubation fund.

IV. CONSTRUCTION OF CLASSIFIED CULTIVATION SYSTEM

Classified training system is a comprehensive system consisting of educational subjects, training objectives, teaching system and system factors which promote and depend on each other. It is characterized by integrity, orderliness and dynamic development. The external environment, including social needs, school-running orientation and regional characteristics, is the external environment on which the talent training system depends for survival. Separating from the reality of colleges and universities, the goal of classified training can only “look beautiful”. It is difficult to embody the features of talent training without regional characteristics. Classified training system must reflect the changes of external environment in time, and actively affect the improvement of external environment, so as to achieve a good interaction between talent training and external environment finally.

A. Core level - education subject

The subject of education is at the core level of the talent training system. The establishment of training mode, curriculum system and teaching management system must revolve around this central goal. The classification of talents cannot be decided by the educators, but by the learners themselves. In other words, the decisive factor of talent training mode is not the orientation and subject level of universities, but the subjective needs of learners. The school-running mode is not the same as the training mode, the discipline development cannot replace the professional construction, and the viewpoint that the academic type equals the social elite also needs to be discarded. Otherwise, there will be a deviation between the discipline development and the professional development-the discipline level is very high, but the professional construction level is not complimentary, and the employment quality of graduates is worrying. The differences and diversified needs of the educated subjects are the direct basis for the classified training of talents. Without this point, our education will not be able to cater to the society.

B. Intermediate level-safeguard measures

1) Construction of teaching staff team

Promoting the coordinated development of teachers and students’ classified training is an important support for realizing diversified talents training. According to the requirements of various training objectives, team building can be divided into three directions: double-qualified teaching team, research-based teaching team and innovative entrepreneurship mentor team. (1) Double-qualified teaching team. Teachers should have solid theoretical basis and rich teaching experience, have received training in relevant industries or have working experience in the industry. Dual-qualified teachers mainly solve the problem of “how to do”. They play the role of preacher, instructor and puzzle-interpreter. They aim at cultivating students’ professional consciousness and practical ability and designing curriculum content according to actual production process. They do not pursue the profundity of professional theory, but seek to realize knowledge dissemination, technology imparting and experience transfer. (2) Research-based teaching team. Research-based teaching team not only requires teachers to have solid and profound theoretical literacy, but also puts forward special requirements for teachers’ innovative thinking and scientific research ability. The teaching emphasizes integrity of the knowledge system. We should organize and implement the teaching content with the inherent logic of discipline knowledge. We shouldn’t be satisfied with the transfer of knowledge, but pay more attention to the cultivation of students’ innovative thinking and scientific research consciousness, acts as the designer, organizer and guide of teaching activities, encourages students to participate in academic discussions and research projects, and enables them to grasp basic research methods, hence cultivating their independent thinking habits and questioning and critical spirit. (3) Innovation and entrepreneurship mentor team. Members are mainly composed of full-time teachers, professional teachers, psychological consultants and elites in the industry. They highlight the combination of full-time and part-time work, the combination of managers and professional teachers, and complete the guidance work in a face-to-face and intimate manner. There is no doubt about the significance of team building of entrepreneurship mentors, but they are faced with four major obstacles: lack of resources, lack of motivation, lack of experience and lack of institutional mechanisms. It is urgent to explore and properly solve such problems as strengthening the training, selection and introduction of entrepreneurial instructors, implementing entrepreneurial fund and venues, and incorporating guidance performance into job evaluation and employment.

2) Construction of course system

The curriculum system under the classified training mode is mainly based on the needs of society, students and subject development. It must be open, targeted and regional-based in order to achieve specific training objectives by arranging and combining the elements of curriculum structure, proportion, and inside and outside class hours. Openness means that the curriculum system must be characterized by dynamic development and must accurately grasp the changes of employment market and social needs through stable feedback mechanism of social evaluation and dynamic and orderly self-regulation mechanism, and timely adjust, enrich, update and improve it; pertinence means that the curriculum system can meet the needs of specific training objectives. A group of courses should correspond to and support the training requirements of specific types of talents. Every detail, such as course attributes, school hours, teaching contents and teaching methods, can meet the characteristics of specific target groups.
Regional characteristics refer to the regional features of resources, industries, nationalities and geographic characteristics, etc., whose role for professional development and curriculum system construction cannot be ignored. Only by building the curriculum system relying on regional characteristics can we form distinct professional characteristics.

3) Construction of practical teaching system

Practical teaching system is the sum of a series of teaching activities based on certain training objectives and it is around the cultivation of practical ability. Specifically, it includes the target system, content system, guarantee and management system of practical teaching. To strengthen the classified training of talents, we must embody the diversity and multi-levels of teaching objectives, build a three-level practical teaching platform around the cultivation of basic practical ability, comprehensive practical ability and innovative practical ability; standardize teaching content, improve training programs and teaching plans, and build a comprehensive and three-dimensional practical teaching network that is featured by “school-enterprise combination plus in-class and out-of-class collection plus examination and qualification training combination plus simulation and full-fledged integration plus double-qualified team”; strengthen the construction of the assessment and evaluation system of practical teaching quality and provide strong support and institutional guarantee for the standardization and orderliness of practical teaching, hence realizing “doing in learning, learning in doing, doing in innovation”, creating students’ profession ability and employment advantages and offering a solid guarantee for the implementation of the talent classification training model.

4) Construction of employment guidance service system

Strengthening employment guidance and providing students with all-round and systematic services from enrollment to graduation are the key links to implement classified training and improve their employment ability. A perfect employment guidance system is a comprehensive system composed of scientific career guidance courses, specialized guidance institutions and professional teachers. To cultivate students’ healthy employment concept in the form of specialized guidance institutions and professional teachers. To cultivate students’ healthy employment concept in the form of specialized guidance institutions and professional teachers. To cultivate students’ healthy employment concept in the form of specialized guidance institutions and professional teachers. To cultivate students’ healthy employment concept in the form of specialized guidance institutions and professional teachers.

C. Outer layer-institutional factor

Institutional factors are the baton of command of teaching and learning activities in colleges and universities, as well as an important guarantee for the realization of teaching objectives. To do a good job in classified training mode of students, flexible teaching management system, diversified teaching quality evaluation system and teacher classified management system should be matched.

1) Flexible teaching management system

Flexible management emphasizes students’ self-learning, self-development and self-improvement, which coincides with the design concept of talent classification and training. (1) Class system and learning team system are parallel. Class system is a traditional education management model, which has its space and advantages, but it cannot meet the specific requirements of classified training. The learning team can be positioned as a learning organization with teachers’ guidance and students’ free participation. Under the background of classified training, we should advocate team learning and knowledge sharing, strengthen team building and management, classroom teaching, practical teaching and graduation design (thesis) links, and enhance the comprehensive evaluation of team members’ cooperative ability; (2) Deepen the reform of credit system. Implementing flexible education system, work-study alternation and mutual recognition of credit among colleges and universities are the key objectives of deepening the reform of credit system. Perfecting the teaching management mode suitable for credit system and realizing the linkage of credit system, tutorial system and learning team system are the feasible ways to realize the reform task. (3) Undergraduate tutorial system. The tutorial system for undergraduates is indispensable for the development of students’ autonomy and individuality. The function orientation of tutors is mainly carried out in ideological guidance, curriculum guidance, life guidance and talent guidance. It is implemented in many ways, such as “one-to-one”, “one-to-many”, “many-to-one” and “team-to-team”, and runs through the whole process from enrollment to employment. In the specific implementation process, we should scientifically and reasonably orientate the guidance, define its responsibilities and powers, innovate the mechanism of selecting, encouraging and evaluating the effect of guidance, break through the bottleneck constraints such as excessive ratio of students to teachers, insufficient motivation of tutors, unclear objectives and responsibilities, and promote the standardization and institutionalization of undergraduate guidance system. (4) The two-track system of professional course teaching. “Dual-track teaching” can be understood as: in the course group of “professional core and major professional courses”, classes are held in parallel according to “application orientation” and “research orientation”. Two groups of teachers teach separately, students choose courses freely and take the learning team as the teaching object to realize “different learning in the same class” and “different classes in the same learning”. Credit system can allow students to choose courses freely, but they cannot choose the teaching methods, means and evaluation methods of courses. The purpose and pertinence of dual-track teaching are stronger, which can
better meet the requirements of students’ differentiated development and implement the demands of classified training.

2) Monitoring and evaluation system of diversified quality

Diversified quality evaluation is embodied by the diversification of evaluation subjects, evaluation criteria and evaluation methods. Diversification of evaluation subjects means that professional teachers, students, parents and employers jointly complete the evaluation of course learning effect and professional training quality. We should set up diversified quality evaluation criteria compatible with application-oriented, research-oriented, compound-oriented and innovative entrepreneurship-oriented, reflecting the requirements of multi-type training objectives; and diversification of evaluation methods can be realized through the combination of process evaluation and intensive evaluation, individual evaluation with team evaluation, and combination of written and oral examination to encourage independent thinking and make the examination a continuous learning process.

3) Teachers’ classified management and assessment system

The classified management of teachers is unavoidable in the process of classified training of talents, which has been gradually carried out in colleges and universities all over the country. It is feasible to classify the subject into three parts (teaching-oriented, teaching research-oriented, scientific research-oriented), four parts (teaching-oriented, teaching research-oriented, teaching research-oriented, scientific research-oriented) or other classification methods, but it must be in line with the objective reality of schools, majors and students so as to achieve classified training of talents as the central task.

V. CONCLUSION

Classified cultivation is an all-round, integrative teaching reform carried out under the popularization of higher education. It aims to correspond to students’ autonomy, differentiated and diversified social needs with multi-objective, multi-level, diversified and multi-type teaching methods. The classified training system subdivides talents into four categories: practical trade, innovative research, interdisciplinary and comprehensive, and innovative and entrepreneurial. It adheres to the vocational and social demand, takes the employability training of students as the standard, and the training of diversified talents as the realistic task. In the process of carrying out the training reform, we must focus on curriculum system reform, practice teaching reform, teaching mode and quality evaluation reform; strengthen the construction teaching team, scientific research team, innovation and entrepreneurship tutor team; realize school-enterprise combination, in-class and out-class combination, academic education and training combination. The classified training mode centers on “who to be cultivated” and “how to cultivate”. It is the inheritance and innovation of the original training mode, aiming to enhance students’ learning motivation, career choice ability and sustainable development ability.

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