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Research on the Reform and Innovation of College English Teaching Based on OBE

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Abstract: *The OBE educational philosophy originates from the disconnection between industry demand and college education, and it emphasizes capability-oriented educational outcomes. Its core includes capability-oriented outcome definition, reverse curriculum design, multi-dimensional evaluation mechanism, and continuous improvement cycle. OBE is widely used in higher education worldwide, significantly improving the quality of higher education and the competitiveness of graduates in employment. In college English teaching, the OBE educational philosophy has promoted the shift of teaching objectives from imparting linguistic knowledge to application-oriented cultivation of abilities. Therefore, course design of college English emphasizes deep integration with students' majors, and the evaluation system adopts a diversified evaluation mechanism. These reforms and innovations have made college English teaching more focused on language practicality and students' professional needs. As a result, college English education based on OBE is able to improve teaching effectiveness and students' comprehensive abilities, and thus the fundamental role of language teaching can meet students' needs of exploiting English as an important auxiliary tool for their academic and occupational prosperity.*

Keywords: *OBE, College English Teaching, Reform and Innovation*

1. Introduction

The rise of Outcome Based Education (OBE) is a direct response to the structural problems of the global education system in the mid to late 20th century. The global popularization of OBE reflects a fundamental shift in the educational paradigm from "content input" to "ability output". Its core value lies in ensuring seamless integration between educational outcomes and social needs, becoming an important theoretical cornerstone of contemporary education reform [1]. English is an important auxiliary tool for students' academic improvement and career development. College English teaching should fully implement the OBE educational philosophy, attach importance to the reflection of "English plus Major" education achievements in teaching, and continuously adjust the college English teaching objectives and cultivating system according to students' professional learning needs, continuously enhance the output effect of "English plus Major" teaching, and lay a good language foundation for students' academic and career development.

2. OBE Educational Philosophy

The proposal of OBE educational philosophy has put forward targeted requirements for higher education teaching and talent cultivation. The teaching and talent cultivation of universities are no longer detached from the needs of society and enterprises, but place the needs of enterprises and society at the center of talent cultivation in universities, so that graduates can quickly adapt to future careers.

2.1 Background of OBE Educational Philosophy

The background of the OBE educational philosophy can be traced back to three key factors: firstly, the serious disconnection between industry demand and educational output. The report "Countries in Crisis (1984)" released by the National Council for Excellence in Education in the United States pointed out that only 29% of engineering graduates could meet the actual job demands of enterprises in 1984, which triggered a profound reflection on the effectiveness of education in the whole society[2]. Secondly, the intensification of international competition pressure, with the rise of Japan and Germany

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in the manufacturing industry, has led the American engineering education community to realize the need to establish new standards centered on capability output. This demand directly led to the signing of the 1989 Washington Accord, which for the first time used "graduate competency achievement" as the benchmark for international recognition of engineering education [3]. The third breakthrough is in the research of educational psychology. Spady's "Results-Oriented Theory" proposed in 1994 confirmed that when learning objectives are clearly defined as observable ability indicators, students' knowledge retention rates can be improved by more than 40% compared to traditional teaching[4]. This theory was quickly adopted in the field of engineering education, and in the 1998 reform, MIT first applied OBE to the curriculum system of aerospace majors, causing the employment rate of graduates in this major to jump from 51% to 78% at Boeing [5].

After entering the 21st century, with the advancement of the Bologna Process in Europe and the Sydney Agreement, OBE gradually expanded from engineering education to fields such as medicine and business, becoming a universal paradigm for quality assurance in global higher education. After China officially joined the Washington Accord in 2016, the OBE education concept was incorporated into the Engineering Education Accreditation Standards, promoting the transformation of domestic universities from "teacher-centered" to "student-centered". OBE has become the core guiding ideology for educational reforms such as new engineering and new medicine. In recent years, OBE has been combined with technologies such as artificial intelligence(AI) and big data to form a new model of dynamic evaluation and personalized learning.

2.2 Core Content of OBE Educational Philosophy

The OBE educational philosophy constructs a closed-loop system of "Definition, Design, Evaluation, Improvement", which includes four interrelated elements as its core content.

Firstly, there is a definition of achievement orientation towards abilities. The OBE educational philosophy requires breaking down the training objectives into measurable and evaluative specific indicators. For example, the China Engineering Education Certification Standards (2023 Edition) subdivides the graduation requirements for mechanical engineering majors into 32 observation points, including "Complex Engineering Problem Analysis (Indicator Point 3.1)", each corresponding to a clear evaluation standard[6]. Therefore, teachers should purposefully cultivate students' corresponding abilities based on these indicators in teaching, and carry out teaching work with output orientation, achieving targeted teaching.

Secondly, there is a reverse curriculum design. The OBE educational philosophy requires the reverse construction of a curriculum system based on expected learning outcomes. The OBE educational philosophy changes the traditional step-by-step approach to education, setting expected teaching outcomes in the early stages of education and conducting teaching in an orderly manner guided by goals. The practice of the University of Waterloo in Canada has shown that after using the "Vocational Competence Matrix" for reverse course mapping, the matching degree between teaching content and industry demand has increased from 62% to 89%[7]. Therefore, teachers should continuously adjust their teaching methods and tools based on the degree of goal achievement in teaching, to ensure the timely realization of teaching goals and educational outcomes.

The third is a diversified evaluation mechanism, with the OBE educational philosophy emphasizing the combination of formative evaluation and summative evaluation. The OBE educational philosophy changes the traditional once-and-for-all educational philosophy of final examination. Teachers yet pay more attention to process evaluation and students' daily learning performance. Some universities even increase the proportion of formative evaluation in students' overall grades to 60% or 70%. This way, students will pay more attention to their daily learning process, their learning participation will be greatly improved, and their initiative and ability for self-directed learning will accordingly be significantly enhanced. A typical case is the "Three-Dimensional Evaluation System" of the Hong Kong University of Science and Technology: the school divides students' evaluation criteria into three parts: classroom performance (30%), project achievements (40%), and industry certification (30%). Research data from the school shows that this system increases the transparency of students' abilities by 53%[8].

Finally, there is a continuous improvement cycle, with the OBE education philosophy emphasizing the establishment of a dynamic adjustment mechanism for education and teaching through graduate tracking surveys, enterprise feedback, and other means. For example, the "OBE Intelligent Monitoring System" developed by Tianjin University can analyze the achievement of 12 ability indicators in real time, and adjust 15%-20% of the course content annually based on this, so that the overall achievement rate of the training objectives remains stable at over 90%[9]. The OBE educational philosophy emphasizes the continuous improvement of education, constantly adjusting educational methods based

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on students' learning and employment situations, so that learners can adapt to social and business needs as soon as possible, making clearer the training objectives of universities, greatly improving the quality of education and training, accurately anchoring employment goals for students, and enhancing their employment rate.

The above elements together constitute the "Plan, Do, Check, Act" (PDCA) loop of OBE, which essentially transforms the traditional teacher-centered teaching model into a new paradigm centered on student ability development.

2.3 Practical Significance of OBE Educational Philosophy

The global practice of OBE education philosophy is profoundly reshaping the quality connotation and development path of higher education, and its significance is reflected in three strategic levels. In terms of improving the quality of education, according to research data from 47 countries by the OECD (Organisation for Economic Cooperation and Development) in 2023, the average Employment Competitiveness Index (ECI) for graduates from universities that fully implement OBE education is 85.7 points, which is 22.3 points higher than traditional model universities; the job adaptation period for these graduates after joining the company has been shortened from an average of 6.2 months to 2.8 months[10]. It can be seen that the OBE educational philosophy is of great help in improving the quality of education, enabling universities to cultivate corresponding talents according to the needs of enterprises and society, enabling graduates to adapt to future positions as soon as possible, improving the quality of graduate training, and thus saving social resources.

In the dimension of industry education integration, OBE has established a direct mechanism between the education chain and the industry chain. According to the "OBE-ICT Talent Development Program" participated by Huawei, the course system aligned with competency standards has reduced student development costs by 37% and reduced enterprise retraining investment by 42 million yuan per year[11]. More profoundly, OBE has promoted substantial equivalence of global education standards. As of 2023, member countries of the Washington Accord have achieved mutual recognition of engineering degrees through the OBE certification system, covering 76% of the world's economies. As a result, the pass rate of Chinese graduates in the International Engineer Registration Examination has increased from 41% in 2016 to 79% in 2023[12]. From the perspective of educational philosophy, OBE has brought about a paradigm revolution centered on students. A 10-year tracking study conducted by Stanford University showed that under OBE mode, students' deep learning time increased by 8.5 hours per week, and the students' probability of proposing original solutions increased by 2.4 times [13].

These OBE teaching practices have proven that OBE is not only an optimization at the methodological level, but also a fundamental transformation of the higher education paradigm in the Industry 4.0 era, providing key institutional tools for addressing global talent competition.

3. OBE Educational Philosophy and College English Teaching

The OBE educational philosophy provides a systematic reform framework for college English teaching, with its core relevance reflected in the deep reconstruction of college English teaching goal setting, curriculum design, and evaluation system.

At the goal level, OBE educational philosophy requires college English teaching to shift from traditional language knowledge imparting to ability-oriented and application-oriented cultivation. For example, the 2020 version of the Guidelines for College English Teaching proposes improvement and development goals for teaching requirements: students should be able to understand professional courses taught in English or oral introductions related to future job positions, tasks, etc; students should be able to engage in discussions with others on familiar topics within the professional field, read papers and participate in discussions at international conferences and professional exchanges; students should be able to read English literature and materials related to the major studied; students should be able to write short reports or papers on professional topics; students should be able to use dictionaries and other tools to translate literature related to their majors or future job positions[14]. This transformation directly links teaching objectives with engineering certification standards, such as Beijing University of Aeronautics and Astronautics incorporating English proficiency into the "International Communication" indicator point of the Graduation Requirements for Aerospace Engineering, which promotes a 42% improvement in students' technical English application level[15]. This targeted "English plus Major" college English training objective makes college English teaching more practical and practical, and can truly achieve the instrumental role of English learning.

In terms of curriculum design, the OBE educational philosophy promotes the deep integration of

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English teaching and professional education. The "Engineering English Modular Course" developed by South China University of Technology, through reverse design, first determines 12 industry required abilities (such as patent application writing), and then constructs corresponding teaching units, and increases the matching degree between course content and professional needs from 58% to 86%[16]. In terms of curriculum design, English education is no longer purely language teaching, but closely integrated with students' majors, cultivating talents with "English plus Major" composite abilities, and making English a powerful tool for students' academic and career development.

In terms of evaluation system, the OBE educational philosophy advocates a diversified evaluation mechanism that is changing the single exam orientation, changing the traditional student evaluation standards based on summative evaluation, and adopting an evaluation system that deeply integrates formative evaluation and summative evaluation. Shanghai Jiao Tong University has introduced the "Portfolio Evaluation Method" to collect authentic language materials such as students' project reports and meeting minutes. Based on teaching evaluation, university English teachers cooperate with enterprise mentors to evaluate students' performances, and their research shows that this evaluation method improves the visualization level of learning outcomes by 65%[17]. The establishment of a diversified evaluation system has made English teaching more focused on process learning and practicality of English learning, and the evaluation results are more objective.

These teaching reforms and innovations indicate that the OBE educational philosophy is promoting the transformation of college English from an isolated subject to a professional supportive course by clarifying the logic of "learning what is useful", and promoting the transformation of college English teaching from isolated subject learning to students' professional needs, thus gradually establishing an "English plus Major" college English learning model. Under the guidance of the OBE educational philosophy, the practicality of college English teaching is becoming increasingly prominent, and the teaching effectiveness and results of college English teaching are gradually improving.

4. Reform and Innovation of College English Teaching Based on OBE Educational Philosophy

College English teaching, as a very important public course for college students, not only has the significance of liberal arts education, but also plays an auxiliary role in various aspects such as students' future career development, academic development, and even overall development. Therefore, college English teaching should practice the OBE educational philosophy, guided by students' learning needs and output goals, to successfully achieve the educational objectives of college English.

4.1 Redefining the Teaching Objectives of College English

The primary impact of OBE educational philosophy on the reform of college English teaching is reflected in the systematic redefinition of teaching objectives. Traditional college English teaching has long had the drawback of emphasizing language knowledge over professional application, while OBE requires defining learning outcomes from the beginning of teaching. According to the docking research between the China Standards of English(CSE) and the Washington Accord, English proficiency under the background of new engineering should focus on three core dimensions: professional literature processing ability (such as reading 8 pages of IEEE papers within 1 hour), technical communication ability (writing engineering reports according to ISO standards), and cross-cultural collaboration ability (hosting cross-border project meetings)[18]. This transformation has prompted universities to revise their college English curriculum outlines, redefine the goals of college English teaching and student development. Beijing Institute of Technology has refined the English language objectives for mechanical engineering majors into 12 observable indicators, including the ability to accurately translate the assembly specifications for crankshaft and connecting rod mechanisms. After implementation, the excellent rate of students' technical document writing has increased from 43% to 82%[19]. The OBE educational philosophy requires that the development of curriculum outlines, teaching objectives, and training objectives should be based on the characteristics of students' learning situations, truly achieving individualized teaching and changing the traditional practice of defining English curriculum outlines with uniformity.

The redefinition of teaching objectives is also reflected in the deep binding with professional certification, which reflects students' professional abilities, especially their professional practice and application abilities. The case study of the electronics major at Southeast University shows that after incorporating English proficiency into the "International Perspective" indicator point of the Engineering Education Certification Graduation Requirements, the proportion of students' participation in overseas internships increased from 9% to 34%[20]. As an important support for cross-cultural competence in professional certification, English should be prominently reflected in students'

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professional abilities, so as to reflect the internationalization and universality of talent cultivation.

Redefining the teaching objectives of university English is essentially transforming English from an isolated subject into a supportive tool for students' professional development, as emphasized in the EU's Bologna Process: "Language proficiency must be embedded in the framework of professional competence, rather than independent assessment"[21].

4.2 Reconstructing College English Curriculum System

The OBE educational philosophy promotes the reconstruction of the university English curriculum system from "universal" to "professional embedded", and its innovative path includes three key breakthroughs.

Firstly, the modular curriculum design divides the curriculum system into interconnected and progressive modules. The "Three Level Competency Model" of Harbin Institute of Technology divides engineering English into basic modules (technical grammar system), core modules (disciplinary discourse analysis), and expansion modules (expression of innovative achievements), each corresponding to different requirements levels. Data shows that this system reduces language errors in SCI paper abstract writing by 57% for students[22]. This practice will enable students to gradually move from pure language learning towards "English plus Major" and "Major plus International Communication", and make their English learning serve professional learning, international communication, and academic development.

Next is the update of teaching content driven by "real projects", integrating project-based learning (PBL) into the university English curriculum system, and designing real "English plus Major" practical projects for students based on their professional learning. The course Computer Vision English jointly developed by Shanghai Jiao Tong University and SenseTime Technology directly uses undisclosed technical documents from enterprises as teaching materials, and achieves zero-time integration between teaching and industry through the signing of confidentiality agreements. The adoption rate of student project achievements by enterprises has reached 21%[23]. Only in this way can students be exposed to real work situations for future career development in school, and the classroom learning outcomes of "English plus Major" can be put into practice in the project.

The third is the smart adaptation of digital teaching resources. In the era of artificial intelligence, college English teachers need to be proficient in digital teaching methods and be capable of using artificial intelligence to serve students' English learning needs. The "English Ability Portrait System" constructed by Zhejiang University based on learning analysis technology can automatically recommend personalized learning paths (such as prioritizing skimming skills for those who have difficulty reading literature), improving learning efficiency by 40%[24]. Under the OBE educational philosophy, college English teaching is anchored to the learning needs of students in the information age, constantly updating digital teaching resources and capabilities, keeping up with the development of the times, and paving the way for students to learn college English in the digital education era.

These innovative practices and explorations in the college English curriculum system are in line with the OBE educational philosophy of teaching content adjustment in terms of professional needs and individual development, meet the learning needs of students, and satisfy the constantly growing and changing learning styles and environments of students. The reconstructed college English curriculum system helps achieve precise matching to students' needs and conforms to the dialectical unity requirements of "demand orientation" and "individual development" emphasized by the OBE educational philosophy.

4.3 Reforming the Evaluation Mechanism for College English Teaching

The reform of college English evaluation driven by the OBE education philosophy is moving from a "final evaluation" system to a "multiple evidence" one, and its innovative practice is reflected in three dimensions.

The first is the development of evaluation tools and methods. College English teachers should design corresponding and appropriate evaluation tools and methods based on the learning characteristics of the students they teach. The "Engineering English Ability Radar Chart" designed by Tianjin University visualizes the development trajectory of students' abilities by collecting 12 types of data, including classroom speeches, project reports, and peer evaluations. The school's 2023 evaluation showed that the tool improved teacher intervention accuracy by 38% and increased students' self-directed learning time by 25%[25]. College English teachers should constantly update their educational technology skills in the information age, constantly use various information tools, data tools, statistical

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tools, algorithm tools, AI tools, etc., to provide students with timely, accurate, and targeted evaluation standards and results. The teachers should closely integrate process evaluation and final evaluation to make students' English learning evaluation results objective, accurate, and detailed.

The second is the deep integration of industry certification and course assessment. The new engineering discipline requires engineering majors to not only integrate with other disciplines, but also put forward specific requirements for students' English proficiency and internationalization ability. Students have higher demands for engineering English proficiency. In June 2016, China became a member of the Washington Accord of the International Engineering Federation, and engineering industry certification has become an important part of the quality assessment of higher education. Therefore, enhancing students' internationalization ability and level in engineering certification has become an important part of university English education. For example, South China University of Technology used the TOEIC Engineering exam as the final evaluation of the Mechanical and Electrical English course, and jointly developed a "650 point passing line" with companies. After implementation, the pass rate of graduates in Caterpillar's technical communication assessment reached 92%[26]. Therefore, the evaluation of college English teaching should be combined with engineering certification and industry certification in order to highlight the close relationship between college English teaching and students' professional learning and internationalization ability enhancement.

The third is the application of smart evaluation technology. With the continuous maturity of AI technology, the smart evaluation technology for education and teaching is becoming more and more mature. Many universities have used AI to develop language models for English learning evaluation. These targeted language models have played a good role in promoting students' language ability, thinking ability, independent learning ability, and other abilities. For example, the "Academic English Writing Smart Review System" developed by Beihang University can automatically detect logical coherence, terminology accuracy, and academic compliance in students' writing. Its evaluation results have a consistency of 89% with the opinions of international journal reviewers[27].

As emphasized in the General Standards for Accreditation of Engineering Education, "Evaluation must focus on proving what students can do, not what they know[28]". The reform of these English teaching evaluation systems has jointly constructed a new evaluation paradigm of "formative plus summative evaluation", "artificial plus smart evaluation", and 'campus plus industry evaluation". Its essence is the concrete practice of the "evidence-based" approach proposed by the OBE educational philosophy in language education.

5. Conclusion

The OBE educational philosophy provides systematic guidance for the reform of college English teaching, promoting the shift of teaching from knowledge imparting to ability cultivation. By redefining teaching objectives, reconstructing curriculum systems, and reforming evaluation mechanisms, college English teaching places greater emphasis on integrating with professional needs, enhancing students' language application abilities and professional competitiveness. The application of modular curriculum design, real project, and smart evaluation technology makes teaching more targeted and effective. Practice has proven that reforms and innovations based on the OBE educational philosophy have significantly improved students' "English plus Major" abilities and cross-cultural communication skills. In the future, with the development of educational technology, college English teaching will further evolve towards personalization and smartness.

In short, the OBE educational philosophy has pointed out the direction for college English teaching. Only by adhering to student-centered and ability-oriented approaches can the teachers cultivate high-quality "English plus Major" talents that meet the needs of society and achieve continuous improvement in educational quality.

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