An Exploration on Undertaking Commercial Projects in School-Enterprise Cooperation from the Perspective of Applied Talents Cultivation

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Abstract: With the vibrant growth of IT and strong encouragement from the "Internet Plus" policy, China's craving for high-end IT talents has been aroused to another high level. With norms in IT talents requirement become more diverse and demanding, IT talents are pushed to embody both solid theoretical software knowledge and high capability in practice. All of these make it an extremely urgent task for strengthening applied talents with their practice capability in commercial projects. This paper, based on cultivating applied talents and by exemplifying the applied IT major in one university in H province, reinforced educational and cultivating reform, explored the undertaking of commercial projects in school-enterprise cooperation and contemplated the mode construction of applied talents cultivation to raise the cultivation quality and employment of applied talents in universities, effectively enhance the commercial value of education as well as its capability in serving local economy and finally achieve the goal of intensifying the link of talents cultivation through practice.

Keywords: Commercial project; Talents cultivation practice; Cultivation of applied talents; School-Enterprise cooperation

1. Introduction

University transformation, market demand targeting and applied talents cultivation oriented for market demand have gradually been in the lead of theoretical studies and school-running practice of China's higher education. Besides, under the national call of "mass entrepreneurship and innovation", the school-running goal of "accelerating to build applied technology universities from all sides" has become the common aspiration of numerous universities. Despite the rapid development of IT industry, China is still lacking in millions of its talents. And the "Internet Plus" further stimulates such demand; and that the need for IT talents have diversified and become stricter, which pushes the talents to embody both solid theoretical software knowledge and high capability in practice, making it an extremely urgent task for cultivating applied talents with their practice capability in commercial projects. This paper will research from the angle of applied talents cultivation and take the applied IT major of one university in H Province as an example, explore the undertaking of commercial projects

in school-enterprise cooperation and contemplate the construction of cultivation mode for applied talents.[1]

2. Reform Background and Implications

The applied talents cultivation in computer specialty of the university in H province has developed into software development and software test. The education process spurred by projects has laid the solid technique foundation and built up a certain capability of practice in the students. However, the education, though stimulating enterprise's front-line mode, cannot go beyond the "simulation", which is not entirely the same as working in a real enterprise. From another perspective, universities should step up the introduction of companies onto the campus or excavate more commercial cooperation between universities and companies, strengthen exploration in undertaking commercial projects, establish research centers for IT commercial projects, reinforce the development of a more diverse and continuous student entrepreneur team, advance the "practice in commercial project" which is normally available during students' internship to on-campus education link, upgrade the capability of students and faculties in undertaking commercial projects, so as to realize the cooperation between student-faculty and enterprise project team for the common goal of implementation of commercial projects. Above-mentioned reforms by directing students in practice in commercial projects will enhance applied talents cultivation, intensify the talent-cultivating link and also better universities capability in serving local economy and boost their reputations.

The implementation of such reforms will somewhat achieve a "four-win among students, universities, faculties and enterprises". Firstly, the implementation helps the cultivating system of universities for applied talents to become more well-covered and profession-oriented and upgrades talents' practice capability and competitiveness in their future careers; the undertaking of commercial projects will improve universities' reputation and influence in IT society, furthering commercial value and service in local economy of the education; secondly, the participation of school-led team in enterprises can ease their staff shortage and speed up project progress with better quality; thirdly, the cooperation and exchange with enterprises awakens faculties' desire for skills improvement. The undertaking will remind teachers constantly to keep up with the leading knowledge in the industry, thus promoting the building of "double-position" faculty team of teachers and realizing no-gap connectivity between university major and the industry. Lastly and most im-portantly, studies based on projects embracing theoretical knowledge, practice skills and especially in the process of the accomplishing commercial projects with enterprise engineer teams can make students feel the real situations in project running, accumulate job-related skills and experience and speed up their transformation into professional workers. This delivers students with sense of overall quality of products, sense of responsibility and teamwork, and equally enhances their overall ability in communication skills, problem-solving, etc., shortening apparently the transformation from an amateur to a professional, basically achieving the goal of enhancing practice-based cultivation and leveling up universities training quality and employment delivery of applied talents.[2]

3. Reform Actions and Implementation

3.1 Establishment of IT Commercial Project Research Center and Make More Efforts in Undertaking "Commercial Projects" and Building Entrepreneur Teams

In order to explore the "undertaking of commercial projects", the university in H Province established IT commercial projects research center, appointed professional teachers to guide students to participate in such projects. Concerned teachers can apply theories in the actual projects, lift up their project practice capability, transform from a "teacher" to a "double-position" teacher, or even a high-profile talent for enterprise such as a "project manager, developing and testing manager"; students can also intensify their learning from project practice to uncover problems and better their skills in solving problems; the practice substantially upscale student-teacher team's capability in undertaking commercial projects. Through their joint cooperation and coordination with enterprises, the project can be implemented in actions. Accumulated projects fermented several entrepreneur teams within the university with the focus on multilevel and continuity cultivation, laying groundwork for student entrepreneurship in school-enterprise cooperation for many successful projects, such as E hospital projects, case library platform for mechanics of materials, alumni website, cinema management system, inquiry website for weighted average scores, topic selection system for thesis, ordering system for barreled water, application surrogating system for CET 4 and 6, filling and submitting page for internship information, etc. These successes draw more students in and promote their practice capability, enhance cultivation quality of applied talents, further strengthen the building of feature majors in applied technology universities and better servicing local economy.

3.2 Combination of Theories and Practice in Education and Linkage between Commercial Projects and Classes

In education, the university managed to improve and optimize current computer major syllabus, make it more linked to careers, introduce first-front projects into the original class sessions and progress to enhance student's power in conducting projects and employment competitiveness as well as underlying the capability of upgrading educational value and serving local economy. Firstly, the university introduced multiple projects like Beidaihe accommodation managing system, Jiujiudu supply information website, subway station project program, Sugar sugar hut project, etc. with different modules, strong business features and complex technology requirements. They presented more demanding requirements than previous projects on students. Secondly, the unfolding of projects utilized mainstream project implementation process. Taking software test sessions as an example, the project covers introduction to project implementation methods, test demand extraction, test plan drawing, test environment establishment, test samples design, testing and defects submitting, user manual drafting and test summary report writing. Third, during the implementation, interpretation and application of several managing tools such as Testlink, QualityCenter, Chandao, etc. were given in to cultivate students through practice.

3.3 School-Enterprise Synergy for Commercial Project Practice in Class and Bettering Practice-Based Talents Cultivation

By shifting teacher-dominated project education mode to three-party-teacher, enterprise engineer and student team cooperation in commercial projects practice, the campus IT instructors established long-term communicating mechanism with enterprise project teams with high efficiency and effective communication for the sake of project demand and progress. This mode of implementation allowed students to converse directly with front-line engineers. Assisted by OSChina (open source China) project coordination platform, the shoulder-to-shoulder work between engineers and students was realized to enrich their practice experience. In safeguarding an orderly progress of the concerned project conducted with students' participation in the class session, tons of preparation and exploration were made in the primary stage and whole-process promotion of school-enterprise cooperation. The main efforts include understanding requirements of enterprise projects, building up student teams based on different smartphone types and computer models, providing students with demand training, applying for OSChina platform accounts

and authorities, communicating enterprise evaluation and feedback, guiding and following the whole project progress, etc. By promoting practice process of "school-enterprise class project", things have gone beyond expectation. The enterprise highly praised students' performance so that it extended the original plan, which only involved students in testing project on Wechat terminal, to provide more exercise chances by enlarging backstage authorities.

3.4 Emphasis on Workplace Process and Engineering Norms

Modeling enterprise standardized test process of software project R&D, the university paid much attention to nursing capability of writing standardized engineering documents. The education was unfolded by completely modeling the project implementation process in mainstream enterprises and intensified the writing and submitting of standardized engineering documents in the whole process; a team-based practice mode was used in which a leader was appointed for project progress catching, coordination, project developing, test implementing, etc. team members conducted individual R&D and test strategy planning, R&D and test design and report writing, etc. By role exchange, students would eventually enhance profession quality and teamwork spirit. Using software test sessions as an example, their practices can be described as follows: firstly, in education, enterprise-level test process documents were taught. Based on enterprise standardized test process and mainstream test technologies, students were guided to conduct test work throughout the process with participation in formulating various engineering documents including Project Test Plan Document, Case Design Document of Software Test, Test Environment Deployment Document, Defects Reporting Table, Test Summary Report, User Operation Manual, Acceptance Test Report, etc. Secondly, an "innovative project driven mode based on school-enterprise cooperation" was adopted. Promoting "stage work reporting and review" during project implementation to conduct various projects review work in different stages, including: Test plan review, test case review, defects review, etc. Afterward, review report and problem suggestion table were submitted, indicating the importance of both reviewing and examination. Thirdly, the implementation of project in class was based on teamwork, which imitates multiple roles in enterprise project processes such as test manager, test leader and team members. The test leader and test manager were recommended by each team. In the process, the students in each team would report by sending emails "test manager and test leader" enterprise standardization project schedule through compiling "Daily Report" and combining with project progress.[3] This could synchronize the test leader and manager with the progress and help them

in quality control.

3.5 Parallel Projects Defense Test and Various Methods for Assessment

Apart from normal assessment and check before the end of teaching or completion of one stage project, project defense was also used in parallel to check team achievement and personal performance. Such implementation not only strengthened mutual learning and technique sharing among team members, but also improved students' summarizing capability, PPT making capability, expression, demonstration and adaption capabilities in Q&A process, etc.

Involved key links are: firstly, reporting project implementation and achievements in team defense and personal accomplishment demonstration, which involved team description, achievement display, personal description and accomplishment, Q&A, teacher valuing and summarizing, etc. A smooth debate would require a coordinated teamwork, thorough review and summary of the whole project on both personal and team levels and make defense PPT along with achievement material demonstration. Thirdly, the defense process welcomed a judge representative from each team for participation in the Q&A link, thus enhancing inter-team communication and sharing.

3.6 Emphasis on Special Employment Fair and Improving Assessment System for Applied Talents

Universities should step up to introduce famous IT enterprises on campuses, collect feedbacks from enterprises on recruitment, internship and employment and further check the effect of "undertaking commercial projects in school-enterprise cooperation"; meanwhile, make sure elite students are introduced to "project cooperation enterprises", so that their employment channels and platforms can be expanded. For the university in H province, it has established broad ties with many companies renowned in IT industry, organized many special recruitments for internship and employment of junior and senior students. Those enterprises use presentation, written examinations and interviews to choose what they want and effectively assess the quality of talents cultivation as well as practice achievement.[4]

The university also improved educational assessment system and effect checking system of internship and employment, established talent cultivation, scientific research quality standards, classroom teaching quality assessment, teaching supervision and students' evaluation on teachers, mid-term feedback session, spot check of graduation thesis, internship effect checking by visiting involved enterprises, etc. These efforts regarded students' practice capability, employment quality and practice capability in entrepreneurship projects as main criteria in assessing educational quality and fully exercising effective assessment on the transformation of applied majors.

It also initiated internship managing platform to solve difficult managing problems due to disperse distribution of internship practice and integrated management and supervision by standardizing management in the process. Firstly, the APP socializing function enabled students to be guided by many professional teachers and enterprise hardcore beyond geographic and time limits as well as to help and learn from each other. Above all, their instructors and school department could conduct whole-process management and real-time tracing. Secondly, by resorting to excavating internship process data and assessment data, internship quality could be guaranteed and improved. The "big data" was used to propel department educational reform and enhance overall teaching quality.

4. Conclusion

In summary, the writer suggests all universities should grasp the development opportunity offered by the 13th Five-year Plan to cultivate IT company-adapted talents, actively push forward commercial project practice, step up undertaking commercial projects and implementing practice-based project education, cultivate teachers and student entrepreneur teams with diversity and continuity and enhance their teams' ability in undertaking commercial projects. Meanwhile, universities should create favorable policies and environment for scientific and technology translation, establish market-based operation mechanism for the commercialization of research findings and effectively scale up teacher-student team with their regional service capability.

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