Research on the Mode of Innovative Talent Cultivation in the Multi-synergy Integrated Circuit Industry Based on the PDCA Cycle Theory

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Abstract. Based on the PDCA cycle theory, the technology in the research of the innovative talent training mode of the multi-collaborative integrated circuit industry has effectively solved the cultivation of innovative talents. Other solutions for the cultivation of innovative talents in the integrated circuit industry cannot effectively solve the innovation model. The successful development of the research on the innovative talent training model of the multi-collaborative integrated circuit industry based on the PDCA cycle theory will lead to the interaction of educational innovation, which is omnidirectionally related, thus benefiting everyone in the world.

Keywords: PDCA Cycle, New Engineering, Innovative Talents, Multi-functional Integrated Circuit Industry

1. Introduction

The new industrial technology reforms have made more demanding innovative talents in the diversified collaborative integrated circuit industry, and have also put forward new ideas\textsuperscript{[1-3]}. With the renewal of science and technology, the demand for the cultivation of innovative talents is constantly updated. For the development needs of the engineering industry, the training of innovative talents is constantly changing and innovating. The introduction of the new innovative talent training concept ushered in the development of new emerging industries. In order to adapt to the new innovative fields, it is necessary to change the inherent engineering system, so the new innovative project will change the talent training plan\textsuperscript{[4-6]}.

From the perspective of innovative engineering, Coslight has very little research on the training of innovative talents. In the context of new engineering, this article uses the PDCA cycle theory to discuss the diversified collaborative integrated circuit industry innovative talent training model, and uses the teaching of talent training to cultivate traditional talents. The curriculum is upgraded and updated to improve the curriculum and combine the cultivation of new engineering talents with innovation.
2. "PDCA cycle" new engineering multi-collaborative integrated circuit industry talent training

"PDCA cycle" is a general model of quality management theory in management, also called quality circle. "PDCA" stands for Plan, Do, Check, and Adjust respectively. It divides the quality management activities into 4 phases. The "PDCA cycle" is to carry out quality management in the order of planning, execution, inspection, and adjustment. The problems that can be solved are solved, and the problems that cannot be solved are solved in the next cycle. Successful experience is incorporated into the standard, and effective quality management of the project is carried out, as shown in Figure 1. In the field of quality management, the "PDCA cycle" theory is widely used and has significant effects. This management mode embodies a specific management method of scientific epistemology and a set of scientific working procedures. The "PDCA cycle" workflow is suitable for the improvement of corporate quality management. In view of the rapid response requirements of new engineering innovative talent training to industrial changes, this theory brings different ideas to innovative talent training models in terms of adaptation, adjustment and innovation.

![Figure 1. "PDCA cycle" innovative talent training model.](image)

Under the concept of "PDCA cycle", colleges and universities new engineering innovation education can be carried out in the following 4 steps:

Plan: Efficient innovation education comes from sufficient investigation preparation and effective communication and cooperation between departments. Through the investigation of the government, society, universities and students, we can understand the requirements of innovative education subjects for the quality of education, and determine innovative education policies, goals, plans, etc. The implementation of innovative education is based on the premise of the needs of the government, society, universities, students and other subjects, with the implementation of innovative education as
the goal, and a reasonable plan based on existing resources.

Execution: Implement the content of the plan, design a specific implementation plan for innovative education according to the plan and make a layout, and take effective actions. Execution is an important part of innovation education. No matter how good the plan is, actions are needed to support it, and the responsibility is in place to avoid unclear instructions and unclear responsibilities.

After completing the previous cycle, enter the "PDCA cycle" of the next cycle with a higher goal.

3. Strategies for training innovative talents

3.1. Model construction of innovative talent training under the theory of "PDCA cycle"

In the exploration period of the construction of new engineering disciplines, it is particularly important to use secondary colleges as pilots to build an innovative talent training system. It is particularly important to constantly explore, improve and accumulate experience in practice.

3.1.1. Plan

Multiple subjects participate in the formulation. The top-down education model restricts the sustainable development of innovative education in new engineering. How to motivate social forces and students to participate in innovative education, and truly build an innovative education model in which the government, universities, society, and students work together to promote innovative education. The key to effect. First of all, the government should give full play to its leading role and assume long-term planning, overall coordination, target adjustment, effect accountability and other responsibilities. More importantly, it is necessary to innovate multiple subjects to participate in the innovation education system and mechanism, and build a diversified and collaborative innovation education pattern. Society and enterprises urgently need truly innovative talents. College students think that classroom teaching is boring, and it's not surprising to play with mobile phones and skip classes. However, the voices of college graduates' difficulty in obtaining employment are higher than one year. What is lacking in these contradictions is effective communication. How to change the current situation of college talent training being out of touch with social needs? First, carry out in-depth school-enterprise cooperation, design problems that enterprises urgently need to solve as projects, and let teachers and students participate in the project solution. Real-time update and adjustment of training direction through school-enterprise cooperation education. Establish the relationship between disciplines and industries, industries, and enterprises, and recruit industry experts through school-enterprise cooperation to enrich the discipline construction. Secondly, use flipped classrooms flexibly to carry out differentiated training for different student needs, which can be divided into top-notch innovative talent training, innovative elite training, and innovative education popularization training, etc., to change the previous "water flooding" teaching and integrate existing resources, Serve innovative education reform with refined concepts.

3.1.2. Implementation

Build an interactive mechanism between professional education and innovative education. Education and teaching reform guided by the needs of the new economy and new industries (multiple collaborative integrated circuit industry) is an inevitable trend in the cultivation of innovative talents.

3.1.3. Inspection

Discover problems and improve the effectiveness of key links. Under the dual pressure of limited resources and arduous tasks of innovative education, finding the key links of innovative education, integrating existing resources, and improving the effectiveness of key links has become the top priority. For innovative education, the two most critical links are "personnel" and "site". The education industry is a knowledge-intensive industry, and human resources are always the core competitiveness, and innovative education is no exception. Therefore, to improve the effectiveness of key links, we should first build an interactive mechanism between professional education and
innovative education, and comprehensively improve the level of innovative education teachers. The undertaker of innovative education should not only be specialized in employment and entrepreneurship, but should also include professional teachers. Employment and entrepreneurship professionals popularize the basic knowledge of entrepreneurship, and professional teachers combine the characteristics of engineering disciplines and rely on projects to provide professional and personalized innovation guidance to students.

3.1.4. Adjustment

Perfect the new engineering innovation education system. Innovate the education system with the adjustment links in the "PDCA cycle", realize the spiral and virtuous circle of new engineering education, and finally build a long-term mechanism for new engineering innovation education. In the repeated "PDCA cycle", accumulate and accumulate good experience, standardize good practices, and steadily improve the level of innovative education in new engineering; analyze problems, learn lessons, summarize experience, and constantly revise standards.

It is necessary to classify the "PDCA cycle" multi-collaborative integrated circuit industry courses, and then perform classification evaluation. The precise range of x is \([a, b]\), then the number \(x\) in \([a, b]\) is changed to fuzzy domain \([E, E]\). The fuzzy number \(y\) in the interval, as shown in formula (1):

\[y = \frac{2E}{b-a} \left( x - \frac{a+b}{2} \right)\]

The lower approximation set of \(X\) course set on \(R\), as shown in formula (2):

\[R_\text{l}(X) \{ X \subseteq U : R(X) \subseteq X \}\]

That is, if and only if \(R(X) \subseteq X\) has \(x \in R^*(X)\), \(R^*(X)\) represents the largest set consisting of certain elements belonging to \(X\) based on existing knowledge.

3.2. Implementation path

With the goal of adapting to or even leading the development of the new economy, highlighting the unique characteristics of multi- and collaborative integrated circuit industry teaching. The secondary colleges of engineering superior universities, comprehensive universities, and local universities should follow the principle of exploring their own characteristics when cultivating new engineering innovative talents. For example, superior engineering universities conduct interdisciplinary research within engineering majors, and comprehensive universities intervene in different disciplines of liberal arts, sciences, medicine and engineering. The integration of the industry, the construction of new engineering disciplines by local colleges and universities in accordance with the needs of local economic development, etc., to give play to their comparative advantages. At the same time, we will advance scientific research reforms and remove institutional barriers. To meet the needs of emerging industries, strengthen cooperation between academies and enterprises. Strengthen the construction of new engineering scientific research teams, and set up a new engineering team under the responsibility of chief experts.

Based on discipline construction, innovate discipline organization mode. The development of new industries has given birth to a large number of emerging disciplines. According to the needs of economic development, the development of disciplines is condensed and the direction of reconstruction, combined with the university's own resources to carry out pilot reorganization of some disciplines has become a new path for discipline development. One of the criteria of subject evaluation is its practicality, that is, to meet certain social needs. In the construction environment of new engineering disciplines, the discipline organization of engineering disciplines should meet the development needs of engineering industry. Secondary colleges can combine the needs of emerging industries, start with the construction of pilot classes, and open up special zones for the training and reform of new engineering talents. The construction of the pilot class should be guided by the needs of emerging industries, with the training of innovative talents as the goal, based on interdisciplinary,
strengthen inter-departmental coordination and linkage, and increase school-enterprise cooperation. Continue to accumulate experience in the pilot class and spread the experience as soon as possible.

Use performance as a lever to continuously stimulate the endogenous motivation for the training and reform of new engineering talents. The "Double First Class" plan proposes to "establish and improve a performance evaluation mechanism, actively adopt third-party evaluations, and improve scientificity and credibility. According to the relevant evaluation results, fund use management, etc., dynamic adjustment of support strength, and enhance the effectiveness of construction "The country is gradually adopting performance overall education, and colleges and universities should also follow the trend of performance management, use performance management as a lever, give secondary colleges full voice in performance management, and fully mobilize the enthusiasm of secondary colleges in engineering reform.

4. Conclusion

The Internet economy drives a large amount of demand for engineering talents in emerging industries. Based on the PDCA cycle theory, this article proposes a new training and education system for the cultivation of innovative talents in the multi-collaborative integrated circuit industry with a new engineering background. Traditional education and innovative teaching are integrated to achieve compound talents. Cultivation creates conditions for the collection of excellent talents, and also drives the continuous innovation and development of new industries.

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