

Application Research of PDCA Cycle Theory in the Improvement of Professional Teachers' Competency in Higher Vocational Colleges

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Abstract: Professional teachers in higher vocational colleges play an important role in the process of talent training in vocational education, but there are problems such as unreasonable structure, small number of part-time teachers and insufficient role in the management and construction of professional teachers. This research attempts to apply the PDCA cycle theory in management to the improvement of professional teachers' competency in higher vocational colleges, which is conducive to solving the problems existing in the process of improving the professional teaching team in higher vocational colleges, and satisfying teachers' theoretical knowledge and practical skills in the modern teaching process. The needs of skills, organization and coordination, management and communication, etc., promote the continuous spiral improvement of the quality of teachers and improve the management quality of teachers.

1. The Principle of PDCA Cycle

1.1. The Connotation of PDCA Cycle

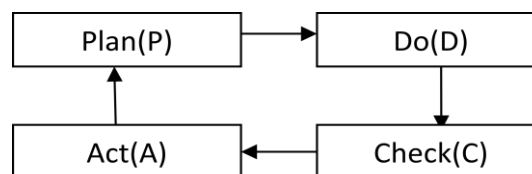


Figure 1: The connotation of PDCA cycle

The theory of the Deming ring was proposed by Shewhart, an American quality management expert. Later, it was adopted and promoted by the Deming ring, and was promoted under the adoption and promotion of the Deming ring, hence the name [1]. Deming ring theory is a procedure to be followed for all-round quality management. It is scientific and applicable to all step-by-step management work. PDCA cycle is a scientific management mode, which is characterized by considering quality improvement as a cycle in the order of Plan, Do, Check, and Action, as shown in Figure 1.

1.2. Features of the PDCA Cycle

The PDCA cycle is a large ring with a small ring inside, and a smaller ring inside the small ring. The small ring protects and pushes the large ring forward, which is a big guarantee, and the large ring is the basis for the small ring. The work is unified and combined to coordinate with each other to achieve the overall goal; the PDCA cycle is like a staircase, which continuously advances and improves. When one cycle ends, the quality of the work is improved, and then it enters the next PDCA cycle for further operation and improvement. The quality of work continues to improve (Figure 2); the PDCA cycle uses scientific and effective statistical processing methods, and is an effective statistical tool that can be applied to identify and solve problems [2].

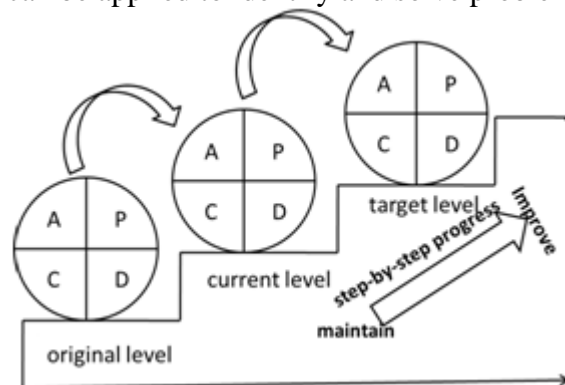


Figure 2: Features of PDCA Cycle

2. Problems Existing in the Improvement of Professional Teachers' Competency in Higher Vocational Colleges

2.1. Competency Improvement Environment is not Perfect

Generally speaking, the main reason for the lack of competence of professional teachers in higher vocational colleges lies in the lack of a complete institutional environment[3].As a kind of professional competence, its generation and development all depend on the support, stimulation and cultivation of the surrounding environment, rather than the professional psychological quality spontaneously generated by individual vocational teachers.

2.2. The Promotion Link is not Fulfilling

Judging from the current situation, there are still many problems in the promotion of professional teachers in higher vocational colleges, mainly as follows: there is no smooth channel for the improvement of educational levels; it is difficult to improve skills; the content of promotion is out of touch with the actual teaching; Focus on quality and efficiency, only focus on business improvement but not on overall quality improvement, only focus on expanding scale and not on optimizing structure.

2.3. Insufficient Personal Initiative

In the research and investigation, it can be found that in actual work, due to the lack of personal awareness or unclear personal career planning, or the occurrence of job burnout in personal work and the failure to eliminate it in time, the initiative to improve personal competency If they are not enough, they are accustomed to step by step and follow the trend, neglecting the improvement of

their theoretical literacy and practical ability, resulting in stagnant development of personal competence [4].

2.4. A Single Form of Improvement Effect Evaluation

At present, in the process of promotion of professional teachers in higher vocational colleges, either the promotion effect evaluation is not carried out, or the evaluation link is incomplete, and the evaluation should run through the whole process of promotion. Some promotions carry out a simple improvement effect evaluation [5]. After the promotion is completed, let the teacher representative tell a little about their learning experience. The limitations are relatively strong. Even if the professional teachers in higher vocational schools are required to participate in the evaluation, it is mostly carried out in the form of a questionnaire or improvement summary report. , which is not conducive to truly collecting the real situation and information of teachers' improvement effect.

3. Application of PDCA Cycle Theory in the Improvement of Professional Teachers' Competency in Higher Vocational Colleges

The improvement of the competence of full-time teachers in higher vocational colleges is a long-term, unique and developmental task. It is the requirement of the times to do a good job of improving the competence of full-time teachers in higher vocational colleges with high quality. It is an effective way to continuously improve the quality of teachers by introducing the modern enterprise quality management concept and integrating the PDCA cycle theory into the competency improvement project of full-time teachers in higher vocational colleges.

3.1. Planning Phase (P)

This stage is the first link of the whole cycle, which needs to excavate problems and propose solutions. In practical application, at least the following four tasks should be completed.

3.1.1. Clearly Improve the Purpose

Professional teachers in higher vocational colleges are highly specialized professions [6]. The purpose of improving their competence should be oriented to training high-quality professional teachers, serving the national vocational education development strategy and the school's development plan in the new era as the core, and strengthening teachers' moral cultivation, The goal is to establish professional spirit, cultivate professional quality, improve professional competence, meet the access standards for full-time teachers in higher vocational colleges, achieve professional identity, and promote career development.

3.1.2. Survey Competency Improvement Status

On the basis of theoretical analysis and quantitative research, firstly, the teacher's competence and PDCA cycle theory are carefully sorted out; secondly, the improvement plan is designed based on the investigation and analysis of the current situation of professional teachers' competence in higher vocational colleges.

3.1.3. Analyse Improvement Needs

Demand analysis is an important starting point for the development of the implementation plan, which provides the basis and support for the planning and implementation of the following tasks [7]. To improve the demand, we need to investigate three levels, namely schools, employing

departments, and full-time teachers. The improvement at the school level can be extracted from the school-level work plan of the human resources, development planning and other departments; the improvement needs at the employing department level can be obtained through interviews and exchanges with the leading group of the department; online questionnaires can be used at the new teacher level. Various research methods such as offline interviews and offline interviews are used to collect data and information on full-time teachers' educational background, work experience, gender, age, job position, learning style, career goals, and hot expectations. Vocational colleges can solve the existing problems more effectively by analyzing the information to clarify the gap between the current situation of the promotion object and the promotion goal.

3.1.4. Determine the Improvement Plan

The core of this part is to design higher vocational professional teachers' competency improvement plan. First of all, according to the survey results of the current situation and needs of professional teachers' competency improvement in higher vocational colleges, according to the requirements of competency characteristics and the overall principle of PDCA theory, innovatively construct a set of valuable improvement with certain feasibility and practicability that conforms to the actual situation [8]. Program. On the basis of completing the above three tasks, the improvement plan needs to determine the project improvement content, improvement method, and assessment plan. The design of the improvement plan can draw on a variety of effective models according to the actual situation and conditions of the school. The improvement content starts from actual combat, and implements improvement plans through offline teaching ability competitions, corporate practices, workshops and online learning platforms, using various forms of improvement methods, and appropriately using modern information technology means.

3.2. Do Phase (D)

This stage is the implementation stage in the cyclic structure, which implements the plan in the planning stage into practical application. There are two aspects to consider during the execution phase

3.2.1. Digging the Lifting Form

3.2.1.1. Participate in Teaching Ability Competition

Through the selection of teaching plans in the preliminary competition and on-site trial lectures, the participating teams are selected, and the improvement plan in the planning stage is used, and the general idea of "promoting teaching through competition, research through competition, construction through competition, and reform through competition" is carried out to carry out teaching. Improve the preparation of the ability competition, guide professional teachers in higher vocational schools to continue to deepen the "three education reforms", vigorously promote the construction of teachers' teaching innovation teams, and improve the professional teachers' ability to practice morality, professional teaching ability, comprehensive education ability and independent development.

3.2.1.2. Use Online Learning Resources

Teachers can push typical cases through the "Superstar" learning platform for higher vocational majors to learn and broaden their horizons. For the content that is still questionable offline, professional teachers in higher vocational colleges use the resources provided by the online learning

platform to consolidate and review. Setting homework options in the platform for teachers and providing a platform for higher vocational teachers to share their work cases is also an important part of the assessment.

3.2.1.3. Conduct Textbook "Workshops"

According to the selection and recommendation of the secondary colleges in the early stage, organize higher vocational teachers to participate in the three "14th Five-Year Plan" period planning textbook compilation "workshops", and comprehensively strengthen our school's new loose-leaf textbooks and workbooks during the "14th Five-Year Plan" period. The construction of teaching materials, deepen the reform of "three teachings", cultivate and incubate a batch of teaching achievements, and promote the professional growth of teachers.

3.2.2. Organization and Implementation Management

Higher vocational colleges should establish an improvement executive department, set up a project management team, focus on learners, and build a management model of "promotion subject 4 + 1" (Figure 3), implement the improvement plan, make overall plans, integrate resources, and grasp the progress of improvement. , to ensure the smooth implementation of the program. In the process of improving the implementation of the project, the management team is also a service team. While controlling the implementation progress of the project, it maintains communication and communication with professional teachers in higher vocational colleges, collects feedback information, adjusts and improves the implementation progress of the plan in a timely manner, and removes possible problems in the implementation process. Obstacles or problems. The organization and implementation management link is an important part of the entire improvement project execution process. At the end of each module or course unit, the PDCA cycle of this link can be carried out multiple times to ensure the dynamic improvement of the project implementation quality.

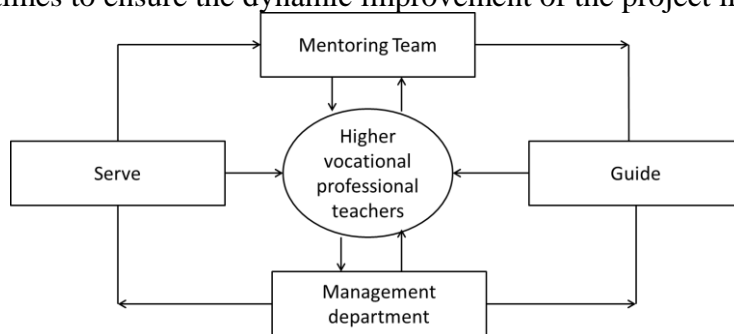


Figure 3: "Promoting the main body 4+1"

3.3. Check Phase (C)

The improvement evaluation is mainly the evaluation of the effect and execution, which can be carried out from the following four aspects using the Korotkoff evaluation (Table 1):

Table 1: Elevation effect evaluation form

Evaluation level	Assessment level	Evaluation content	Specific indicators
First level	Response level	Higher Vocational Professional Teachers' Satisfaction with Improvement Projects	Ways to improve satisfaction survey, improve content interest, etc.
Second level	Learning level	Learned knowledge, skills and attitudes	By testing whether they have really learned the theoretical knowledge they want to learn, test their professional skills according to standards, and whether their attitude towards teaching and students has changed in a better direction after the improvement.
Third level	Application level	The working situation of applying the knowledge and skills learned	Can you seriously think about teaching work and actively participate in teaching competitions and scientific research? Behavioral display of in-depth enterprise practice
Fourth level	Benefit level	Improve the actual effect	Awards, scientific research projects, guiding students to participate in awards, students' academic performance, students' comprehensive quality, and students' employment quality

3.3.1. Evaluate the Effect of Improvement

After a promotion cycle is completed, the effective way to organize teachers' improvement effect evaluation is to "take the test instead of the competition", that is, focus on the improvement goal, set up different competition items according to the modules and units in the plan, build a competition platform, and focus on displaying learning. Results, using the competition standard to evaluate the gap, the competition process is also the process of learning and practice, self-summarization and improvement process. Professional teachers in higher vocational colleges complete the self-assessment of job competencies through competitions; the management team finds out common deficiencies, typical problems and excellent cases by analyzing the competition data, and in accordance with the improvement management system, retains competition materials and improvement summary materials, and establishes teacher development files.

3.3.2. Project Execution Evaluation

In response to the improvement needs analysis and investigation in the planning stage, the evaluation of project execution efficiency also requires feedback and evaluation from the participating teachers and the employing department. Scientifically produce questionnaires and evaluation indicators, and obtain evaluation data, including instructors, course content, teaching methods, organizational arrangements, learning feelings, evaluation suggestions, etc. The management team conducts project self-assessment analysis, including budget execution, course attendance ratio, student satisfaction, handling of emergencies, improvement of achievement transformation, brand influence, etc.

3.4. ActStage (A)

Professional teachers in higher vocational colleges can independently improve the competency

improvement process and complete the next round of PDCA cycle. If the improvement plan does not achieve the expected teaching effect, or there are problems in the process of implementing the improvement plan, it is necessary to summarize in time to provide a reliable basis for the next round of PDCA cycle [9].

The main goal of this stage is to provide feedback, rectification and processing based on the evaluation data, and it is also the endpoint to connect the formulation of the next improvement plan. The management team must explore and solve problems through multiple cycles, so as to continuously improve the improvement project, improve the quality of improvement, and strengthen and enhance the brand effect. It should be noted that the improvement stage cannot only be rectified for the planning stage, but also feedback and deal with the execution and evaluation stages. In view of the difficulties in improvement, higher vocational colleges can also carry out research on projects, and regard the improvement stage as an upgrade stage combining theoretical research with practical operations[10].The subjects participating in the improvement stage should not be limited to the improvement subject, but need to coordinate and implement with relevant agencies and units according to the problems found in the assessment stage and the levels involved, so as to form an organic whole of the various parts of the improvement subject.

4. Application Analysis of PDCA Cycle Theory in the Improvement of Professional Teachers' Competency in Higher Vocational Colleges

4.1. The Effectiveness of professional teachers' competency improvement in Higher Vocational Colleges Based on PDCA Cycle Theory

In this process, the PDCA cycle theory is used to find problems at any time, and to adjust and improve in time, so that the entire promotion process can be carried out in an orderly manner, so that omissions can be checked and filled, and the effect of promotion can be improved. It is proved through practical application and investigation and analysis that this model has enriched the form of teacher promotion, supplemented the theory of promotion projects, and has a certain operability in real life. It has been unanimously recognized by the participating teachers and the organizers, and the overall satisfaction rate has reached 97%.

4.2. Improve the competency of professional teachers in all aspects of Higher Vocational Education

Through the application and assessment analysis of the Koch evaluation model, it can be seen that professional teachers in higher vocational colleges have been improved to varying degrees in teaching, scientific research, and social services, and have achieved the expected improvement goals. According to the investigation, through the mixed learning mode of online and offline, the teaching knowledge and other abilities of professional teachers in higher vocational colleges have been greatly improved.

4.3. Strengthening the Concept of Independent Study of Professional Teachers in Higher Vocational Colleges

According to the background data of the online learning platform, most professional teachers in higher vocational colleges can carry out self-learning activities in a targeted manner according to their own situation and weak points of knowledge outside the classroom. The effect of sub-uplift has been significantly improved.

5. Conclusions

Applying the PDCA cycle theory to the higher vocational professional teachers' competency improvement system can better give play to the enthusiasm of higher vocational professional teachers to participate in the improvement and meet their needs for improvement, so that the great cycle of higher vocational professional teachers' team construction is tightly bound. The small cycle of each higher vocational professional teacher and organization manager is conducive to solving the problems existing in the process of improving the teaching staff of higher vocational professional teachers. It is a new exploration and new way to improve the ability of higher vocational teachers. The level and quality are continuously improved in a spiral, thereby improving the students' ability and literacy level.

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