

# EFFICIENT MANAGEMENT SYSTEM OF TEACHING TECHNICAL MEANS AT CENTRAL KINDERGARTEN PEDAGOGY COLLEGE IN INDUSTRIAL REVOLUTION 4.0

**Vu Xuan Hung**

Learning Resource Center, Central Kindergarten Pedagogy College  
Email: [vuvietminhdang@gmail.com](mailto:vuvietminhdang@gmail.com)

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*In the process of teaching, technical teaching facilities are both a content and a means of conveying information, they help the lecturer organize and control the students' cognitive activities, in addition, they also help students be interested in learning, practice practical skills from which to form active and creative learning methods. Teaching technology is one of the necessary conditions to help teachers carry out their related work of educating, teaching and bringing up, and intellectual development, arouse the inherent intelligence qualities of students. Currently, the management of technical teaching facilities at the Central Kindergartens College has been carried out on a regular basis and achieved certain results, but in fact, there are still many inadequacies. Finding a number of limitations in the management of teaching technical facilities, thereby proposing solutions to overcome those limitations, improve the efficiency of investment, preservation and use of teaching technical facilities in the trend of Industry Revolution 4.0, improving the quality of teaching at Central Kindergarten Pedagogy colleges in the current period is a very important and urgent task.*

**Keywords:** Management solution; Effective management; Teaching technology; Central Kindergarten Pedagogy College; Industrial Revolution 4.0

## 1. Introduction

Teaching technology means playing a large role in the teaching and learning process, it contributes to innovating teaching methods, improving teaching quality and innovating methods of assessing student learning results in schools. In the process of using the teaching technology facilities, it is both a content and a means of conveying information and helping the lecturer organize and control the students' cognitive activities, in addition to helping them have a learning spirit, train practical skills and then form active and creative learning methods. Means of teaching techniques are one of the necessary conditions to help lecturers perform their tasks related to educating, teaching and bringing up and intellectual development, arouse the inherent intelligence qualities of students.

Currently, the management of technical teaching facilities at the Central Kindergarten College has been carried out on a regular basis and achieved certain results, but in fact, there are still many shortcomings such as asynchronous teaching technical means, the management of teaching facilities has not been given adequate attention, has

not fully covered the management content and has not brought high efficiency in renovating teaching methods to improve training quality. Finding some limitations in the management of teaching technical facilities, thereby proposing solutions to overcome such limitations, improving the efficiency of investment, preserving and using teaching technical equipments in teaching in the period of Industrial Revolution 4.0, improving the teaching quality of Central Kindergarten Pedagogical Colleges in the current period is a very important and urgent task.

## 2. Research methods

Theoretical research, Practical research, Mathematical statistics and modeling

## 3. Overview of the problem

### 3.1. Researches in the world

In the world, from the sixteenth century, there were studies on teaching techniques such as Komenski, educator of Czechoslovakia. The Soviet school with prominent educators such as Usinski, A.N.Leontiev and the Swedish school with eminent educator J.H.Pestalossi, developed the view of intuitive teaching with high efficiency.

During the Renaissance, many pioneering educators made their views on positive teaching methods. They have helped students master academic issues through the use of visual media.

J.A.Komenxki (1592-1670), a prominent Czech educator who highly appreciated the role of teaching technology, he also said that “visualization is the golden rule”. Since then, he asked teachers to regularly use visual means so that students can develop all their senses into material perception, so that students can improve their cognitive ability.

The theory of visual teaching has developed along with other fields, thereby helping us identify the role of teaching techniques in the teaching process, helping learners to grasp the nature of things with easier phenomenon.

A.N.Leotiev (1903-1979), an outstanding representative psychologist of the modern Soviet Psychology school, said: “Technical means of teaching are an external support for students’ inner actions under the leadership of the instructor during student awareness.” He emphasized the need to use visual aids appropriate for the age of students and with the content of the subjects, which will bring good educational results.

In the presentation: “Management of teaching technical facilities: promotion of resources” at the Moscow International Education Exhibition (2001), Ms. Yulia Olegovna Krasilnikova of the National University of Technology Research of the Russian Federation “Management of teaching technical facilities is a part of managing the educational and training process, playing an important role in improving the training quality of educational institutions. The management processes to ensure the operation of teaching technical facilities need to be fully automated. The management of teaching technical facilities needs to be conducted according to the governance model: it is necessary to clearly define the purpose of the management, build performance evaluation criteria, and assign responsibility for the completion or failed to achieve the set goal”. At the same time A.V. Zafievsky (2010) published in the journal “Achievements of modern natural science” stated: “Managing teaching technology is one of the most important tasks of every institution operating in the field of education ... In order to improve management efficiency, it is necessary to automate the process and develop evaluation criteria”.

### **3.2. Researches in Vietnam**

Inheriting and promoting the theories of world education, Vietnam also has many researchers on teaching technology facilities and the management of teaching technology facilities.

These studies can include typical scientists who have developed and spread theories about visual teaching principles such as To Xuan Giap, Vu Trong Ry, Tran Duc Vuong, Ngo Quang Son ... (Vuong, 2005), (Son, 2005), (Giap, 1997).

Author Nguyen Duc Thang with the topic “Management of training equipment of technical universities in the Army under the approach of quality assurance” has focused on researching and managing training equipment of universities, training military technical disciplines in the Army, including: Military Technical Academy, Naval Academy, Air-Air Defense Academy, Military Technical Officer School. Since then, the author has proposed solutions for training equipment management of technical universities in the Army according to the quality assurance approach, in accordance with the requirements of the Army’s higher education reform in the context of current scene.

In the study of the topic “Current situation and some solutions to improve the effectiveness of the management of teaching technical facilities at Hanoi National University of Education”, Pham Viet Hung evaluated the situation of procurement, use, preserving and proposing a number of solutions to improve the effectiveness of the management of teaching technical facilities in universities.

Ministry-level project “A number of management solutions to improve the effectiveness of using teaching technology, at Continuing Education Centers and Community Learning Centers” (Son, 2005). The author, Ngo Quang Son, has clarified the theoretical and practical basis of equipping, using and preserving teaching techniques at continuing education centers and community education centers. Based on the analysis of that situation, the author has proposed a system of solutions to improve the efficiency of using teaching technology facilities in the Continuing Education Centers and Community Learning Centers.

So far there have been a few research projects on the management of technical teaching facilities at schools of colleges and universities, but the analysis has not been profound. Especially, there has not been any research topic on the management of technical facilities for teaching at College of Medicine and Pharmacy in the midst of the trend of Industry Revolution 4.0. This research topic is important and urgent, meeting the needs of theory and practice of teaching technology management at universities in the period of Industry Revolution 4.0, meeting the needs of innovation higher education in the current period.

### **4. Research content**

#### **4.1. The reality of solutions for managing technical teaching facilities at Central Kindergarten Pedagogical Colleges.**

The author of the article asked the question: "How do you assess the level of responsiveness of the management solutions for teaching technology available at the Central College of Pedagogy?" And obtained the following evaluation results for management solutions: Regarding "Solutions for effective use of teaching technical facilities", most managers and lecturers rated it at a relatively good level, 47.1% rated it as very good, 22.1% rated it at a good level, the rest rated at an average level. Regarding "Solutions to improve teaching technical facilities", most managers and lecturers rated it at 54.7% on average, 10.0% rated it at a very good level, 19.5% rated at a good level, however 15.8% rated at a poor level.

Regarding "Solutions to manage teaching technical facilities in accordance with the content of the program, curriculum, teaching methods at the College" were assessed at a fairly good level, only 30.9% rated at average, the rest rated at very good level of 26.9% and good at 42.2%

Regarding "Solutions for preserving and safely using technical teaching facilities." The majority of managers and lecturers rated at an average of 57.6%, even 11.3% rated it at a poor level.

Regarding "The solution of using teaching technology in accordance with the characteristics of cognitive psychology and thinking ability of students", only 8.7% rated it at a very good level and 27.8% rated Good prices, most rated at 50% average, the rest rated weak.

Advantages and disadvantages in the management of teaching technical facilities at Central Kindergarten Pedagogical Colleges

##### **\* Advantages**

100% of managers and lecturers are equipped with minimum teaching facilities such as computers, even handheld microphones, this is a very favorable condition for the management of technical facilities taught. study at the Central Kindergarten Pedagogy College because it reduces the burden of investment on the school

School leaders pay attention to the quality of technical teaching facilities

Users of teaching techniques (managers, lecturers) are aware and comply with regulations on using teaching technical devices

The majority of lecturers and managers are highly creative, able to implement modern training methods based on Information and Communication Technology.

##### **\* Disadvantages**

Technical facilities for practical training and practice are not yet comprehensive and have not been effectively exploited. The regular and periodical refresher course in management of teaching technical facilities has not been implemented well, so sometimes it leads to the situation that the staff of technical teaching facilities cannot keep up with the development and require of training needs. The inspection and supervision work of the management level has not been regular and timely, in the evaluation, it has not really considered the issue of exploitation, use and preservation. The procurement of investment in teaching technical facilities and funding for the maintenance and maintenance of teaching teaching equipment are also passive depending on administrative procedures and financial resources of the school.

#### **4.2 Solutions to manage teaching technology facilities at Central Kindergartens Colleges in the trend of Industry Revolution 4.0**

**4.2.1. Solution 1:** Raising the awareness of educational management managers, lecturers and staff about the role of managing teaching technology facilities in educational reform, in the trend of the Industrial Revolution 4.0 Helping the teaching staff with lecturing skills, effectively improving the effectiveness of technical teaching methods, helping teachers realize the important role of teaching technology means such as: attaching lessons to real life, learning with practice, and schools associated with society.

Help managers and lecturers have the ability to organize the effective implementation of the management of teaching technical devices. Helping teachers in realizing the important role of teaching technology means such as: attaching lessons to real life, learning with practice, and schools associated with society.

Awareness raising for educational administrators and lecturers in the management of teaching technical facilities through training and retraining of staff and training courses are conducted in short courses, training programs of the Ministry of Education and Training.

In order to effectively implement the refresher course, the school must be responsible for developing a separate training program for management staff, lecturers on the use and preservation of teaching technical facilities.

The content of the training course focused on improving the ability to test and assess the technical means of teaching about the use status, the state of damage and the ability to coordinate with the

departments in the use of technical facilities. teaching according to the frequency plan of using teaching technical equipment.

In addition, the training courses need to pay attention to the training forms, the training courses must be diversified and suitable to the actual situation of educational managers and lecturers such as: Training under the training programs regular Ministry of Education and Training; self-training of lecturers through reading, exploiting information online; or organize study tours to learn from other schools....

Conducting a survey to collect opinions about the needs and conditions of participation of lecturers and educational management officers before organizing training courses to select subjects and forms of training appropriately and effectively.

*4.2.2. Solution 2:* Develop a plan to manage the investment, preservation and effective use of teaching facilities to meet the school's development strategy

To achieve a complete system of teaching techniques that meet the requirements of the teaching work, improve the quality of training.

School leaders must be familiar with current legal documents and regulations on the management of teaching technical facilities.

Need to investigate the status of teaching facilities of their units (condition, technical facilities for teaching are insufficient, sufficient, quality, consistency between books, teacher qualifications ...) use, the reality of teaching and learning.

Developing a plan to manage the use of teaching technology facilities must coordinate with activities in the school.

In the current trend, we have been conducting a synchronous renovation of curriculum materials, teaching methods ... therefore, a system of teaching techniques and facilities must be built commensurate with the requirements of the public. Current teaching activities, the plan of procurement, supplementation and repair of teaching technical facilities must focus on specific contents.

However, the content of the plan must be flexible and must be appropriate to the changes of the school. Therefore different situations and solutions must be built When procuring teaching facilities, it is required to research the samples and select the items of teaching technical equipment to be procured. There must be rooms for teaching technical facilities, teaching technical facilities must be arranged in science, easy to use, with solutions and technical facilities for teaching and learning (cabinets, shelves, boxes...) covering, moisture-

proof, termite-proof, tools, fire-fighting equipment. - The school should regularly organize seminars at the department level on the effective use of teaching technology in teaching.

*4.2.3. Solution 3:* Develop standards, criteria and complete the process of managing teaching technical facilities. This is the most important solution to implement the management of school teaching technical facilities in the trend of Industry Revolution 4.0. Because only building standards, criteria and perfecting the process of managing good teaching technical facilities can ensure the implementation of management of teaching technical facilities in the trend of industrial revolution 4.0.

Firstly, Developing criteria for evaluating the quality of the organization of teaching technical management apparatus:

In order to improve the capacity and create motivation in the use of teaching technology facilities, special attention must be paid to the human factor, which is knowledge, psychosocial qualities, skills, and techniques. the use of teaching technology facilities. In order to manage the use of effective teaching technology in schools, in addition to human factors, managers need to institutionalize in writing.

Secondly, Establish criteria for evaluating investment quality and procurement of teaching technical facilities:

The criteria for the quality of teaching techniques must be formulated in connection with the training purposes to guide the procurement, supplementation of training equipment as well as the development of teaching-learning facilities themselves. associated with specific training activities.

Thirdly, Develop criteria to evaluate the use of teaching technology facilities

The criteria developed should be associated with promoting the efficiency and effectiveness of technical teaching facilities in the process of using teaching technical equipment in the school's training activities.

Fourthly, Develop criteria for evaluating the quality of maintenance and preservation of teaching technical devices:

The criteria for this activity need to formulate the norms and frequency of the use of PTZ, in addition, it must also be noted in association with the process of preservation, maintenance and tracking statistics to have an additional plan. supplement teaching techniques to expand training activities according to the needs of modernization and integration of the school in the trend of Industry Revolution 4.0

*4.2.4. Solution 4:* Enhancing the professional training in management of teaching technical facilities

Technical teaching facilities help students acquire knowledge proactively and quickly. If managers know how to foster knowledge and instruct teachers on how to choose and effectively use teaching techniques, if teachers actively select and use teaching technology facilities, they will improve the effectiveness of teaching hours, contributing to innovating the content of methods and organizational forms, creating excitement for students.

It is necessary to foster informatics knowledge, guide the use of teaching software so that teachers can exploit and teach it in order to renovate teaching techniques.

The school should have a plan to send education managers to lecturers to train and improve the effectiveness of the management of teaching technical facilities. The refresher courses and training courses need to be organized flexibly, which can be divided into several courses with appropriate purposes for each participant.

For managers: It is necessary to foster the work of making plans on the management of teaching technical facilities in stages and each school year in accordance with the development plans of the school; fostering skills in building regulations on preservation and use of teaching technical equipment; information technology application skills in managing teaching technical facilities using office applications, proceeding to use teaching media management software; counseling skills, guidance for the team on the selection and use of teaching technology; skills of inspection and supervision to improve the effectiveness and efficiency of the management of teaching technical devices.

For lecturers: Fostering the work of developing a plan to use teaching technical equipment integrated with the educational plan for each week and month of the year of leadership approval; fostering informatics knowledge, using teaching software; skills to choose teaching technical facilities for fields, educational activities; flexible use skills, combining traditional teaching techniques and modern teaching techniques; skills of inventory, review and preservation of teaching technical facilities.

*4.2.5. Solution 5:* Increase investment in technical teaching facilities according to the structure of sufficient quantity, quality assurance to meet the requirements of improving teaching quality

Regularly inspect, repair, and procure teaching techniques to meet all teaching activities for educational managers and lecturers, and organize training for administrative staff. education management and lecturers n raise awareness and implement effective management of teaching technical facilities

To achieve this goal, the school must appropriately use the state budget to invest in facilities in general and teaching technology in particular, and call for funding from businesses, , donors at home and abroad to purchase new teaching technology facilities as well as funding for the repair and repair of unusable teaching technical facilities, contributing to meet the demand of users. and safety in the process of using teaching techniques

At the beginning of the school year, the school administration needs to investigate the school's current facilities of teaching facilities, make plans to purchase from existing funding and call for funding. In addition, the management staff is responsible for monitoring the progress of the plan implementation and proposing to the Rector any arising and corrected issues when implementing.

There is the advice of the department heads, department heads and leaders at all levels to seek funding for procurement and repair of teaching technical facilities to meet the teaching quality requirements.

School leaders coordinate with organizations, mass organizations, as well as professional groups to enhance education awareness of preserving school assets.

*4.2.6. Solution 6:* Develop a system of documents and regulations on investment, preservation and use of teaching technology

Fully, synchronously and promptly issue a system of guiding documents and create mechanisms and policies to promote the exploitation and use of teaching techniques at schools to have a uniform management technical facilities for teaching right from the stage of supplementing, preserving and using teaching facilities throughout the school.

In addition, the formulation of documents and regulations on investment, preservation and use of teaching technology facilities also helps improve the autonomy of units and management of teaching technical facilities. open and clear training activities.

To implement the purpose of the solution, the school administrators need to build a system of documents and manuals, as well as exploit and preserve effective teaching technical facilities.

Documents and materials must be uniform and scientific, contribute to improving the usability, and strictly comply with the process and safety of teaching techniques for teachers' use capacity.

In addition, it is necessary to check and monitor the use of teaching technology facilities by teaching staff to promptly adjust and improve training in the management of teaching technical facilities and capabilities. Use for school administrators and lecturers.

### 5. Discussion

The school leaders were well aware of the important role of teaching technical equipment and the management of teaching technology facilities to ensure the best teaching and learning process. The planning of investment in teaching technical facilities is concerned by the school leaders and is relatively close to the content of the training program, approaching the training method towards modernization. In addition, the quality criteria have been mentioned in the content of the plan. The organization of procurement of teaching facilities for the majority of departments, faculties, institutes and centers completes on schedule and the rule of law also ensures quality in procurement. However, the management mechanism has inappropriate content, has not promoted the initiative and creativity of the units in planning investment, storage, maintenance, repair ... Management capacity The comprehensiveness of the units in the management of teaching technical facilities is weak, not really attaching the importance to the principles of ensuring quality in the decision to invest in teaching technical devices. A part of lecturers and professional managers have not been trained in management skills in general, management of teaching technical equipment in particular; less modern science and technology should manage in the process of using teaching techniques is weak. The system of regulations and regulations on technical teaching facilities has not kept pace with the development of equipment. The specific guiding documents are not sufficient to force or encourage managers and lecturers in the management of equipment, use and maintenance of teaching technical facilities. The implementation is not frequent, sometimes even formal. The application of modern and advanced technologies in teaching technology management is limited. The idea and principles of quality assurance have not been put into activities at the school in general and in the management of teaching technical facilities, so the effectiveness is not high and the timeliness is limited. The assessment is still heavy,

according to the report, has not considered the evidence and followed the evaluation process of quality management in the development of teaching technical facilities to contribute to improving the quality of teaching and training. in charge of the management of teaching technical facilities has not promoted the active role as a focal point to coordinate the development of annual teaching technology facilities under the motto of gradually modernizing schools in the period of Industrial Revolution 4.0.

Six management solutions need to be implemented synchronously in order to improve the efficiency of managing the equipment, use and preservation of teaching and learning facilities at the Central Kindergarten Pedagogical College in the period Industrial Revolution 4.0. These six management solutions have a dialectic relationship with each other, interact with and dominate each other. The six solutions proposed by the author are all important solutions that have close relationship with each other and it is indispensable if one wants to ensure the feasibility and effective implementation.

The Central Kindergarten Teachers' College should develop short-term and long-term plans on facilities, teaching facilities, and have an annual survey plan to know the number of technical facilities existing teaching, supplementary capacity, repair funding, qualifications and skills of using teaching technical means of teaching managers to take the initiative in management and direction. Promote socialization in management of teaching technical facilities, mobilize funding from various sources in society to continue investing in teaching technical facilities such as calling for enterprises to sponsor and seek. funding for teaching technical facilities of foreign organizations

### 6. Conclusion

The paper has analyzed the factors affecting the management of teaching technology facilities at colleges and universities in the period of Industry Revolution 4.0. The systematic study of the management of teaching technical facilities in the period of Industry Revolution 4.0 has helped the author of the article have a basis to study the situation of management of teaching technical facilities. learn by giving a system of survey questions, then propose six solutions for effective management of teaching technology facilities at Central Pedagogical Colleges in the period of Industry Revolution 4.0. Six management solutions have been meticulously and scientifically tested and show that all six solutions are necessary and highly feasible.

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**HỆ THỐNG GIẢI PHÁP QUẢN LÝ HIỆU QUẢ PHƯƠNG TIỆN KỸ THUẬT DẠY HỌC TẠI CÁC TRƯỜNG CAO ĐẲNG SƯ PHẠM MẪU GIÁO TRUNG ƯƠNG TRONG XU THẾ CÁCH MẠNG CÔNG NGHIỆP 4.0 HIỆN NAY**

**Vũ Xuân Hùng**

Trung tâm Nguồn học liệu, trường Cao đẳng Sư phạm Mẫu giáo Trung ương  
 Email: [vuvietminhdang@gmail.com](mailto:vuvietminhdang@gmail.com)

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**Tóm tắt**

Trong quá trình giảng dạy phương tiện kỹ thuật dạy học vừa là nội dung vừa là phương tiện chuyên tải thông tin đồng thời giúp giảng viên tổ chức và điều khiển hoạt động nhận thức của sinh viên, ngoài ra nó còn giúp sinh viên có hứng thú học tập, rèn luyện kỹ năng thực hành từ đó hình thành phương pháp học tập chủ động tích cực và sáng tạo. Phương tiện kỹ thuật dạy học là một trong những điều kiện cần thiết để giúp giảng viên thực hiện được các công việc liên quan đến giáo dục, giáo dưỡng và phát triển trí tuệ, khơi dậy những tố chất thông minh vốn có của sinh viên. Hiện nay công tác quản lý phương tiện kỹ thuật dạy học ở các trường Cao đẳng sư phạm Mẫu giáo Trung ương đã và đang được thực hiện một cách thường xuyên và đạt được một số thành quả nhất định, nhưng trên thực tế vẫn còn nhiều bất cập. Việc tìm ra một số mặt còn hạn chế trong quản lý phương tiện kỹ thuật dạy học, từ đó đề xuất những giải pháp nhằm khắc phục những mặt hạn chế đó, nâng cao hiệu quả đầu tư, bảo quản và sử dụng phương tiện kỹ thuật dạy học trong xu thế Cách mạng Công nghiệp 4.0, nâng cao chất lượng dạy học ở các trường Cao đẳng Sư phạm Mẫu giáo Trung ương trong giai đoạn hiện nay là một nhiệm vụ hết sức quan trọng và cấp thiết.

**Từ khóa**

Giải pháp quản lý; Quản lý hiệu quả; Phương tiện kỹ thuật dạy học; Cao đẳng Sư phạm Mẫu giáo Trung ương; Cách mạng Công nghiệp 4.0.