The application and effect analysis of PDCA employed in painting appreciation class

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ABSTRACT

By employing PADCA in painting appreciation teaching, the traditional teacher-centered, non-interactive teaching method can be changed. It will show the appeal and inspiration of paintings in a more direct way and imbue the class with liveliness, so as to make students interested in the painting class. Producing the PowerPoint slides show needs to take teaching realities and subject features into consideration. By employing PDCA in a flexible way, it will achieve remarkable results. The actual practice has proved that PDCA will improve teaching qualities.

KEYWORDS

PDCA; Painting appreciation teaching; Teaching qualities.

INTRODUCTION

Painting appreciation is part of the humanities and used to introduce knowledge of arts and improve college students' art appreciation and aesthetic taste. Since the average net speed in colleges and universities are not fast enough and the Internet and servers cannot stand too much access at one time, colleges and universities that provide distant education usually have a number of distribution servers in other study centers. Most of them use B/S model and the general structure is shown in Figure 1. The central server is in the main campus and different study centers have their own servers.   All the background servers have stored learning materials, including files and video clips and users have free access to all of them. It can be employed in multimedia teaching and improves teaching effects of appreciation classes.

Currently, judging from the effects of system's application, the modern multimedia teaching has two major weaknesses in the sharing of education information: (1) Due to the large amount of learning materials stored in education system and the inability of transferring these data caused by slow net speed, the materials in some servers cannot be shared with other servers and it prevents students to have access to completed, updated materials; (2) This combo requires multiple registration because a certain account will not be shared by different serves, which means a registered account cannot access or download materials from other servers. Therefore, every single time a student changes a server, he will need to register a new account, which is very annoying. To allow students to have a direct conception about arts, PDCA, proved by practice, serves a viable method for painting appreciation teaching.

PDCA USED IN PAINTING APPRECIATION CLASS

PDCA (Plan-Do-Check-Action), was created by W• Edwards Deming, American quality control expert, in 1950s. Therefore it is also known as the Deming circle.

When modern PDCA is employed in painting appreciation teaching, new education platforms use the advantages of the Internet, saving the materials of all servers on the cloud, and the platform of distant education provides auto-search, selects the optimal path for data transmission, therefore servers can be each other's alternation and able to switch to each other. Once there was a breakdown in one server, the platform would automatically switch to the nearest server and everything goes unnoticed. It saves students' trouble of multiple registrations and enables one account to have access to all servers' materials, achieving the sharing of learning materials at the maximum extent. It also largely improved the reliability of the whole platform system. The structure is clearer by putting everything in different modules. The employment of the Internet has improved the service abilities of the system and allows students to adjust usage methods and interface of the system according to their own conditions. It's flexible and practical. The single media only provides limited function, not inclusive enough. The PDCA circle is shown as Figure 1.
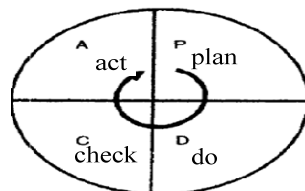

Figure 1 : PDCA circle

Comparing with traditional teaching methods, the painting appreciation teaching system employed with PDCA has major improvements and breakthroughs. Its structure includes basic layer, service layer and application layer, all of which are separated into 5 modules: data processing, monitoring, processing procedure, decision making and basic module. The resource library of basic layer requires hardware, software and virtual technology to secure its reliability and stability. The basic

layer provides basic support for servers and the application layer, such as providing processing capability and memory function. It's fair to say that the basic layer is the resource library for the platform system. The application layer constitutes the core of the platform system because the business processing module is in the application layer. The business processing module can be further divided into comprehensive supervision, permission assignment, business processing procedure, automatic checking by the system, document processing, information research and collection and search. The application layer provides students with interactive interface. The service layer includes various functions of the platform system, such as file transfer and data query. The design of the system's core modules is presented in the next section. In other words, it allows full interaction between the teacher, media, and the students.

THE TEACHING OF PAINTING APPRECIATION EMPLOYED WITH PDCA

To use the functions of PDCA in the teaching of painting appreciation, the teacher should focus on the guidelines and the characteristics of the subject and make an overall plan and put efforts while creating PowerPoint slides, so as to achieve good effects. The design features of slides will be introduced in following 5 aspects.

The pictures

Painting appreciation teaching aims to improving appreciation and aesthetic taste and the specific and perceptible objects serve as the important means. The core module can be further divided into comprehensive supervision, user-privilege control, business processing procedure, automatic checking by the system, document processing, information collecting, searching for sub-modules. As the structure of modules of the system shown in Figure 2, every renter has their own module and be activated with the renter's sign, and the sign uses metadata channel to reach every module. Then the module combines with the metadata domain to gain access to the needed materials. Comprehensive monitoring serves as the installing platform system for PDCA users and provides relative parameters and allocates user privileges. There are 3 ways in user-privilege control module to recognize renters. PDCA and relative staff members, judging from the identity signs, allocate the privileges through the system and allow them to access the specific materials. To serve different users in a better and more efficient way, the use of PDCA should fit any requirements of working procedure. The functions of the working procedure module temporarily support only the working procedures within the platform system. Automatic checking by the system is achieved by signature and watermark. The file processing module is mainly about adding and deleting or transferring the files on the servers. All these files will be saved in a list in the database. Unlike the renters, they are separated. It's also able to manage some files, like expired files, temporary files, or activates the relative files. The searching module is about collecting the relative information of used files to make the search easier for the users. Students can use this to freely search for materials they need in education platform's database.
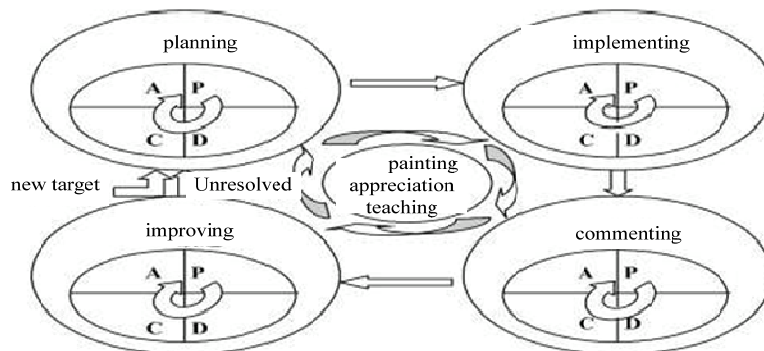

Figure 2 : Painting appreciation teaching employed with PDCA

Sentimentality and perceptiveness

As a saying goes, "A writer writes with feelings." Many paintings have been passed to and interpreted by many generations because these works are full of the painters' feelings and efforts, even lives. According to the features of cloud computing, it can be divided into 3 layers. The basic layer includes hardware, such as CPU, memory bank and hard drive, all of which are called "basic hardware and services". The system is based on B/S model and PDCA is supported by web browser. There are 4 layers in platform PDCA: interaction layer, comprehensive processing layer, business layer and information storage layer. The renter logs in with the interaction layer in the browser and comprehensive processing layer handles all kinds of requirements from users, making the system even better. The business layer is about business security, providing user-friendly interface and allocating information. The information storage layer usually uses data sharing and data isolation to improve the security of data. The platform system offers scheduling mechanism open for requirements in order to make the interface and functions of the system configurable and the allocation of education resources efficient and flexible. The renters usually have 3 kinds of requirements. The first one is about the interface and the relative module will answer for it. This kind of requirements needs PDCA to show the required information without changing the status of business. The second one is about system configuration. This kind of requirements needs PDCA to change the configuration because the design of the module was drawn from the business module. Therefore, similar to business module, the requirement for configuration process doesn't need to change the status. The third one is about requiring for education resources and it needs to change the status.

Independence

Painting appreciation is about aesthetic taste and it requires everything concerning independent thinking—observation, judgment and imagination more than more than any other activities. The protection system of sensitive information usually encrypts the identity of the user instead of the data in the system. Given that database management system has their own data security access mechanism and the operators run the database of distant education system, it's necessary to encrypt some private data and keep them from being illegally made public and stolen. This thesis aims at working out a new cloud storage and PDCA to secure the safety of data. During the process of the development of the system, the data of users are usually taken out of the system and put to background system. If the data of users and the position of data storage can be updated simultaneously, which means the new data will be saved on a new position, the private data can be protected. When the system is creating and running data, the database will be encrypted in the regular way. Sometimes some small adjustments will be made to allow the system update the position to store new data. The spiral improvement of PDCA is shown as Figure 3.
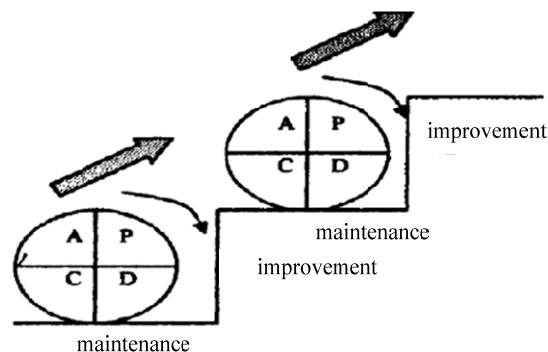

Figure 3: The spiral improvement of PDCA

Imagination

Students' appreciation to certain paintings are not mechanic responses, but affected by their previous thinking patterns or "pre-structure", which includes life experience, thinking, cultural background. There are 3 ways of data isolation in education platform. The first one is database isolation,

which means the data of one user are separated from others and one account has its exclusive database. This isolation is the most absolute one, with the highest level of security, but it costs large capital investment. The second one is the data are separated but the base is shared. There is only one database in the whole education platform and every account has its independent pattern. It provides abstract isolation for each user but not the actual physical isolation. Besides, one database can support many users, which lowers the cost of the system. However, since it provides abstract isolation and its relations are complicated, it's difficult to manage. The third one is the data and the base are both shared. There is only one database and one data pattern in the whole education platform. So the business that requires isolation must be labeled (the user's ID) to make it isolated. This kind of database will have the highest-level of sharing, the lowest costs, but the isolation is not good enough. It will increase the developer's burdens. Codes on reliability and security will be largely increased and the data in the platform are also easy to lose. Considering the costs and the security, the second one is advised to take because it reaches high-level security with lower costs, which fits China's situation on distant education.

Knowledge

There are 3 steps in the teaching of painting appreciation: direct perception, understanding and rational knowledge. Using background server and database management system to manage the database frees labor work of colleges and universities. The maintenance and upgrading will be finished by professional operators and students won't have to do the work themselves. The Internet is crucial to cloud PDCA circle and allows the transmission of all requirements and data from students. So it's difficult assure the absolute security of data. Distant education platform's requirement for security is not lower than business systems, especially financial systems. The personal information of teachers and students, especially the encrypted files, such as answers of examinations and teaching files, cannot be randomly open to public. The teaching steps and tools of painting appreciation employed with PDCA is shown as TABLE 1.

TABLE 1 : The teaching steps and tools of painting appreciation employed with PDCA

phases	specific steps	accessible tools
plan	analyzing the situation and finding out all hazards that may damage the quality analyzing the causes of the problems getting to the key of guaranteeing the quality making quality control measures that address the key	arrangement diagram, histogram, control chart diagram of causes arrangement diagram and relative diagram "5W1H" method
do	carry out the measures by the plan	
check	checking the results of the plan	arrangement diagram, histogram, control chart
act	turning the successful experience into the standards turn the unsolved or hidden problems into the next PDCA circle	revising the regulations and standards

ATTENTIONS IN THE PDCA CIRCLE FOR PAINTING APPRECIATION

Instrumental reason and humanistic reason are 2 important aspects. PDCA circle is characterized with high technology and in constant improvement. To fully employ PDCA in the teaching of painting appreciation, the teacher is required to take following aspects into consideration. It needs to be noted that the teacher needs to be careful with the negative influences of multimedia and avoid them.

The teacher needs to be in constant learning and update teaching concepts but does not necessarily follow them

It's no doubt that multimedia teaching has developed fast and been widely used with the advancement of modern science and technology. PDCA's advantages in service, storage and calculation of difficult questions have enabled it to largely increase the ability of resource sharing and calculation.

The system has made it possible to build a nationwide unified education platform. It may arrange and create resources of all distant education centers and therefore reduces the costs of education. It's also able to flexibly allocate learning resources according to the various requirements from users. It allows the user to make his or her own study system without changing codes and it doesn't need independent arrangement by the system.

While being able to handle the multimedia, the teacher mustn't neglect the subjective initiative

Modern media plays an important role in the spread of education information. However, given that applying multimedia into traditional teaching patterns has many shortcomings, including incomplete data, difficulty in recovering data, insufficiency privacy, this thesis proposes to use online education platform by employing cloud computing in distant education platform. This new platform will efficiently sort out teaching information and greatly improve the utility of educational resources. According to the analysis of the features of online multimedia teaching, also proved by practice, this platform has made great progress in improving teaching quality, resource sharing, cutting education costs and flexibility. It's fair to say that the impressive calculation capabilities and large storage of cloud computing has been shown in the distant education platform and improved China's education quality. The teacher should not forget his role in the class and avoid simply becoming a projector operator.

The teacher should have a thorough understanding about the textbook of painting appreciation and use some good commercial slides in the class

The employment of PDCA circle aims at improving teaching quality. In order to have better results, using computer-based PDCA in painting appreciation teaching can change the traditional teacher-centered, non-interactive teaching method. It will show the appeal and inspiration of paintings in a more direct way and imbue the class with liveliness, so as to make students interested in the painting class. Producing the PowerPoint slides show needs to take teaching realities and subject features into consideration. By employing PDCA in a flexible way, it will achieve remarkable results. The actual practice has proved that PDCA will improve teaching qualities.

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