THE IMPROVEMENTS OF SYSTEM MANAGEMENT IN CONTINUING EDUCATION AND TRAINING

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Abstract

The information management system for Continuing Education in Tsinghua University has been successfully on line for 6 years. It has significantly enhanced the daily routine management work and improved work efficiency. Due to the organization reconstruction, not only the training types increased but also the review procedures changed, online registration and payment has been completed, teaching process has been under control and supervision to ensure the education quality.

The new frame of work is to adapted to the requirements of new situation, including implementing different trainings types, normalizing teaching processes, collecting students feedbacks extensively and timely, and constructing data relationships with other offices in campus for data sharing purposes.

This article introduces the new features and functions of the information system and how it faciliates the continuing education management work and assists the construction of learning-society.

Keywords: CET: continuing education and training program, project, contract, course, quality evaluation, supervision, running pattern

1 INTRODUCTION

The Office of Lifelong Education Administration in Tsinghua University was established in 2019, which was the combination of former Office of Continuing Education and Office Online Education of the university. Its management scope includes not only the normal training programs, but also the online programs and hybrid programs. These programs vary in fundamental data and control process[1]. The program review hierarchy is increased from 2-level to 3-level to address the need of university level review and to reduce program potential risks. Teaching processes must undertake supervision and evaluation to insure teaching quality. Online supervision and evaluation system provide a course selection mechanism, which allows supervisors to choose interested courses according to their own schedule. All students could participate course evaluation via QR code scanning, which enables quick feedbacks to system on a particular course. Rewarding mechanism is also added for annual distinguished personnel and project selection. The database of teachers and courses has been reconstructed and the data statistic protocols have been improved.

Due to these improvements, the system now is capable of undertaking the management work for all types of training programs, and provides related information to different departments. With the support of the new management system, the course teaching quality could be guaranteed, and the requirements for constructing a learning-society could be largely satisfied.

2 SYSTEM OVERVIEW

The Information Management System is an OA platform for Continuing Education management work in Tsinghua University. The upgrade of the system is based on the original business procedure and logic, the supporting data, the basic business data, the relationship among datum, and the data transfer sequence. However, the changes in training types, reviewing hierarchy, administrator authority, and process control nodes, have been embedded into the new system. Figure 1 shows the overview of the system function flow and its relationships with other departments in the University. The red font indicates the parts involved in modification or new development.
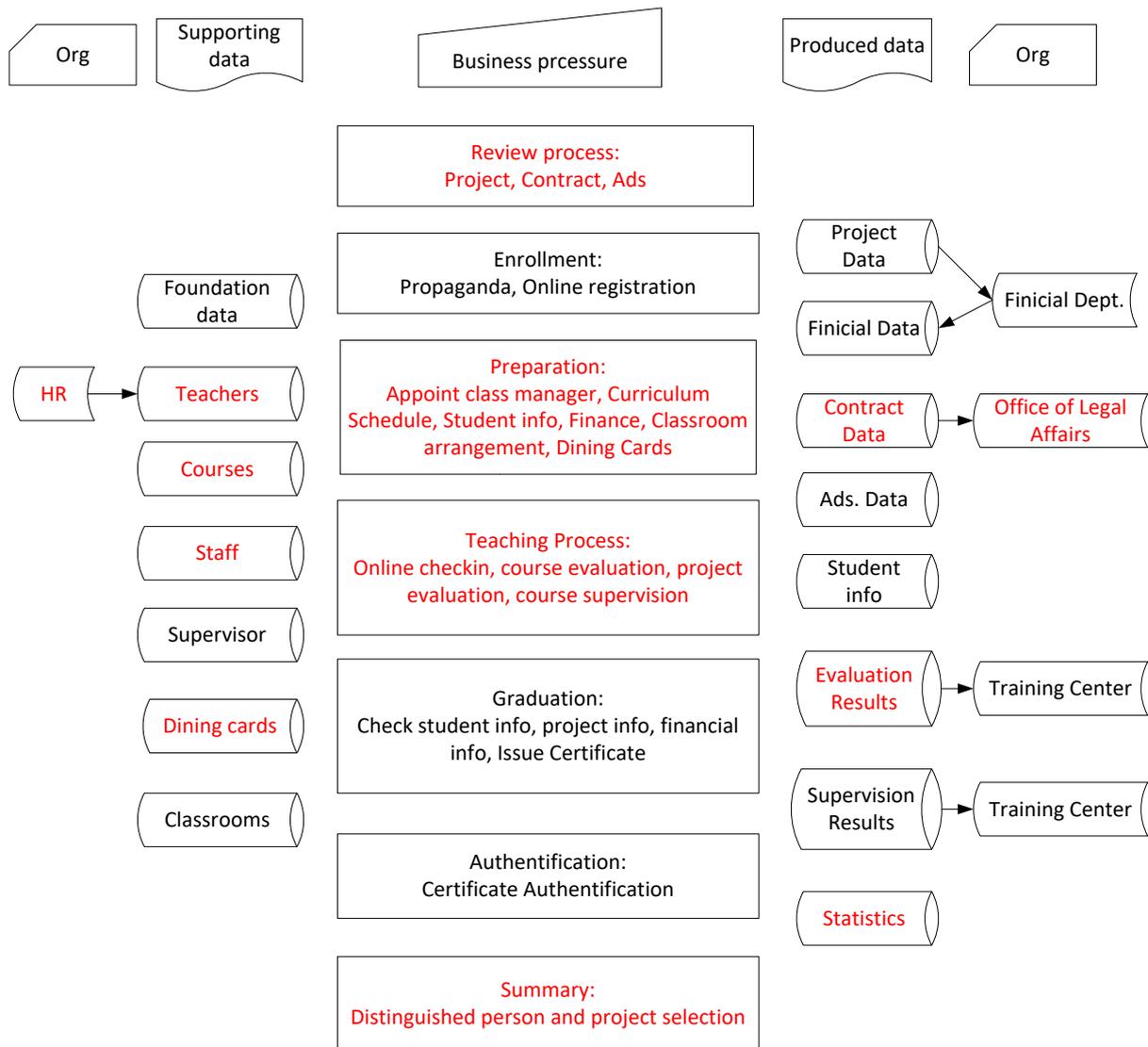
Org	Supporting data		Business prcessure		Produced data	Org

Review process:
Project, Contract, Ads

Enrollment:
Propaganda, Online registration

Foundation data

HR → Teachers

Preparation:
Appoint class manager, Curriculum Schedule, Student info, Finance, Classroom arrangement, Dining Cards

Courses

Staff

Teaching Process:
Online checkin, course evaluation, project evaluation, course supervision

Supervisor

Dining cards

Graduation:
Check student info, project info, financial info, Issue Certificate

Classrooms

Authentification:
Certificate Authentification

Summary:
Distinguished person and project selection

Project Data → Finicial Dept.
Finicial Data →

Contract Data → Office of Legal Affairs

Ads. Data

Student info

Evaluation Results → Training Center

Supervision Results → Training Center

Statistics

Fig1 overview of the system

3 IMPROVEMENTS

3.1 Increasing Training Types

Previously, the system has only one training type, i.e. face-to-face teaching. Now there are credit courses, online courses and mixed courses available in campus, which changes the program crucial data and process control in the system correspondingly.

For the credit programs, the students examination results is essential and must be collected, and for different types of teaching (face-to-face or online), the teaching hours must be separated accordingly. These programs usually provide multiple courses for students to choose. Before issuing certificate, each student must select and complete the courses required. These procedures are quite different from the normal training program.

Another important change in the system brought by different training types is that, the data administrators must be identified in different groups to access different programs. Previously, the system contains only one type of training program. Now there comes the credit programs that might belong to different departments or training units, the person in charge shall not share data with other members due to possible conflicts in benefit or disadvantages in management efficiency.

Figure 2 shows the differences between the old and new management hierarchy[2].
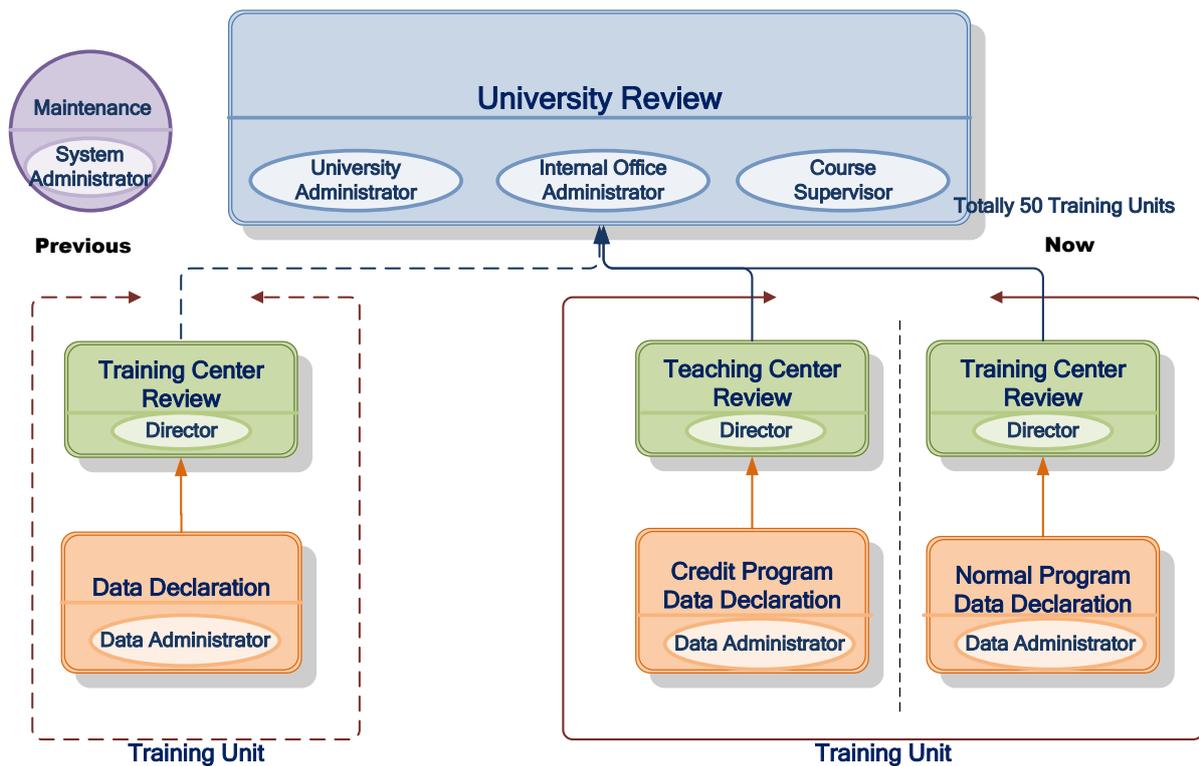

Fig2 management hierarchy

3.2 Improvements in Procedures

3.2.1 Changes in Review Procedure

The program review procedure has changed from 2-level to 3-level management hierarchy. Because of the legal and management requirements, the system increased one more review at the University level for program QA/QC purposes and to reduce potential risks.

3.2.2 Changes in Process Control

Process monitoring is of great importance in program quality control. Due to all kinds of uncertainties, the detailed program arrangement is subject to change at any time. In previous system, the program secretary often submitted the actual course schedule and student information at the last minute before applying certificates. Frequently, the actual schedule and student information significantly differ from the information stored when the program created in system. This repeatedly confuses administrator as no one can tell how many classes is on and how many student enrolled at certain time.

In the upgraded system, the actual course schedule and student information must be submitted before class starts. The system automatically scan these data at a fixed time per day, 7 days before the class begins. The system will remind the program secretary and administrator that the programs will begin in a week's time. If the supposed class starts time comes and there is no course schedule or student information, the system will automatically message them which program needs relevant data submission as soon as he or she logs into the system. He or she will be unable to create new programs until the required information is supplement. Simultaneously, the enrolment promotion will be withdrawn from the website. The program secretary or administrator could terminate or postpone the program, or supplement the required data. For the last two cases, the enrolment promotion would be resumed.

3.2.3 Evaluation Procedure

Course evaluation results are very important in judging a program's quality. The evaluation was previously done manually, and only about 400 courses could be evaluated in contrast to over 20,000 courses taught per annual. The overall evaluation result is far from convincing or representative.

In the upgraded system, the actual course schedule and student information must be submitted before any teaching activities, a class teacher is appointed to each program for the supervision work. The class teacher is responsible for checking the course schedule and student information, and providing 2-dementional QR codes to students. Each student is required to sign in for each course according to schedule, and evaluate it as soon as the course completed.

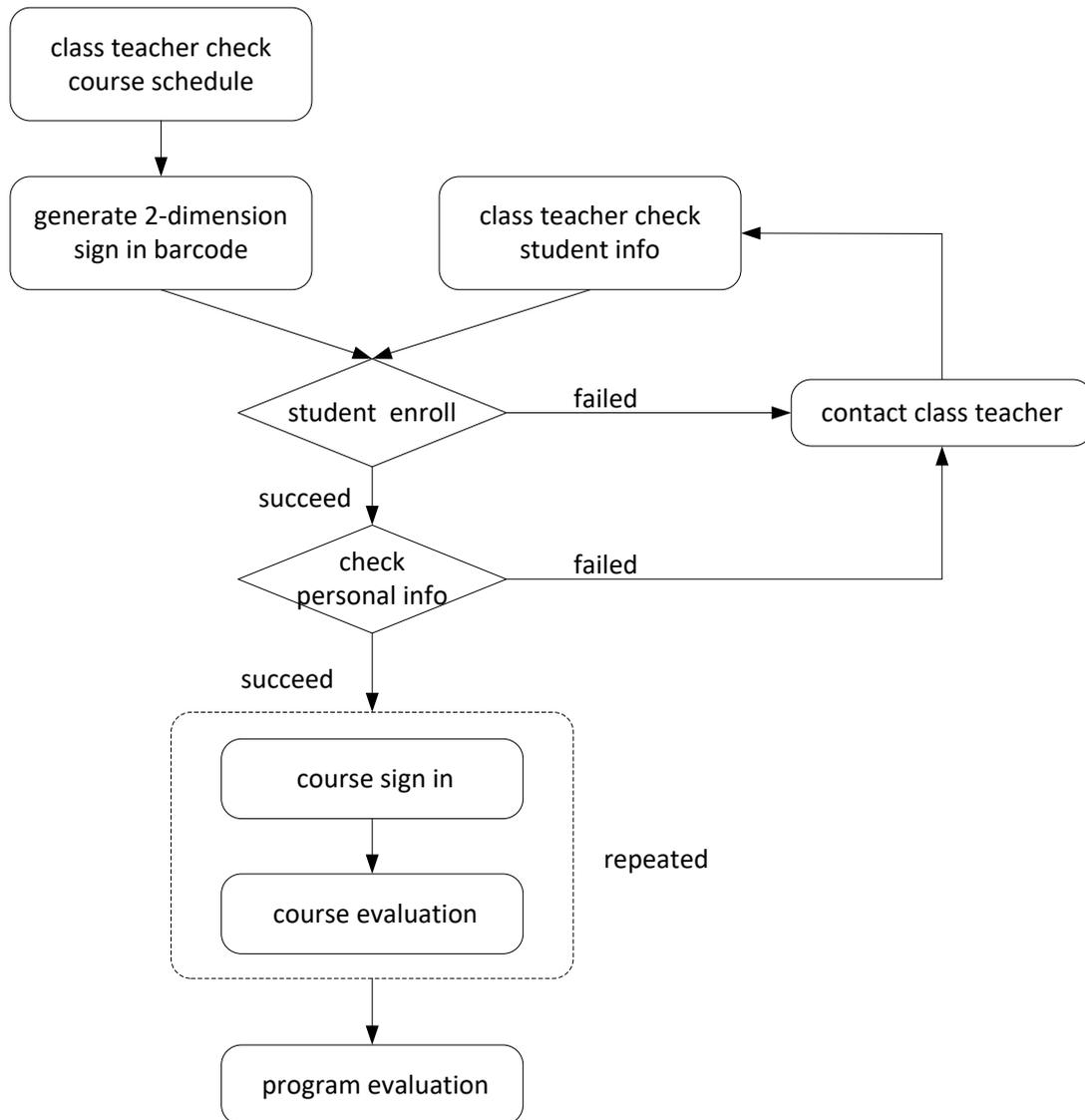Figure 3 shows the course evaluation procedure.

Fig3 course evaluation process

By this mechanism, the system can effectively provide statistical data of student enrolment, the ratio of being late or absent, the course evaluation results, and the program satisfaction degree. A specific teacher's course can be traced, a training unit's program evaluation can be examined. This provides administrators not only a microscopic view of a particular course or program, but also a macroscopic view to consider the quality of all the courses and programs.

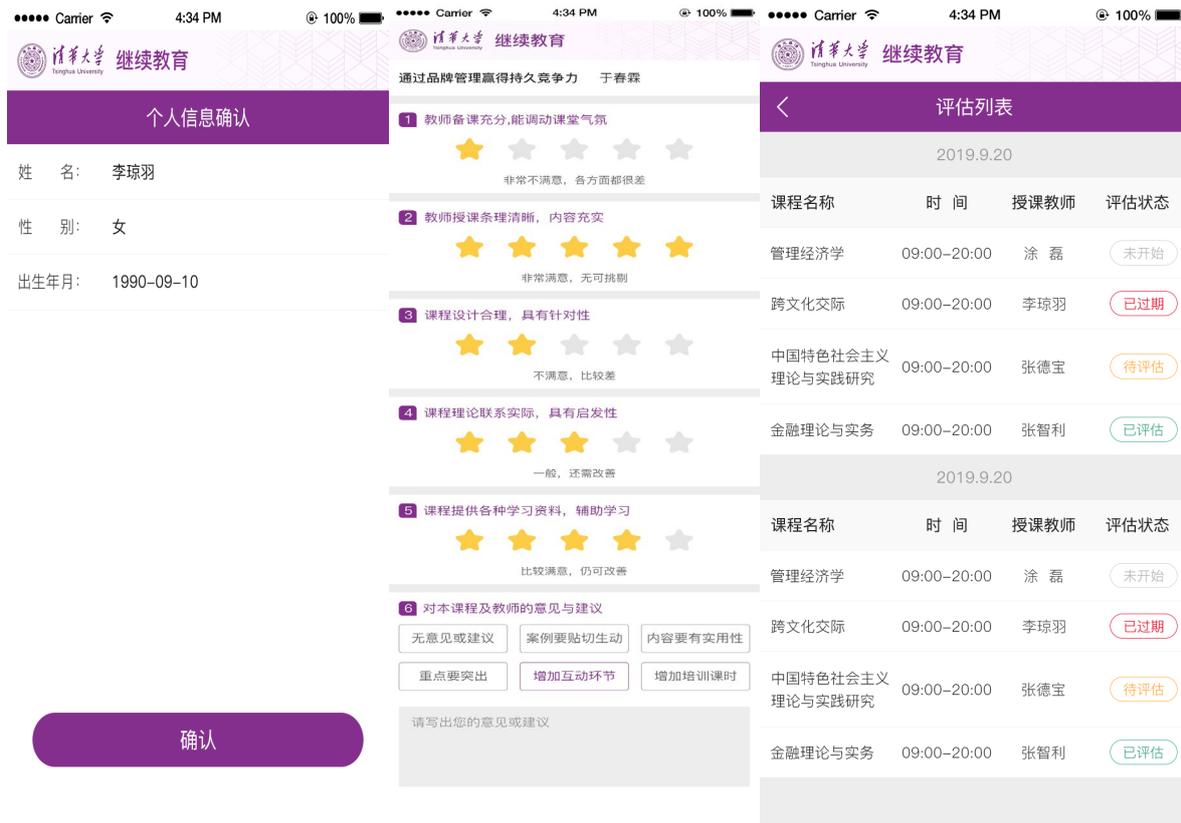The followings are some of the evaluation pages show on the students mobile.

Fig4 evaluation pages on students' mobile

Once the class teach logged in, he/she would find all the programs that he/she is responsible, which are divided by the completion status, i.e. not started, ongoing, and finished. He/she can check the student info, make correction if there is a mistake, view the detailed information of the signing in rate, late rate, evaluation rate and the specific grades about each project or course. Following are some pages on class teacher's mobile.
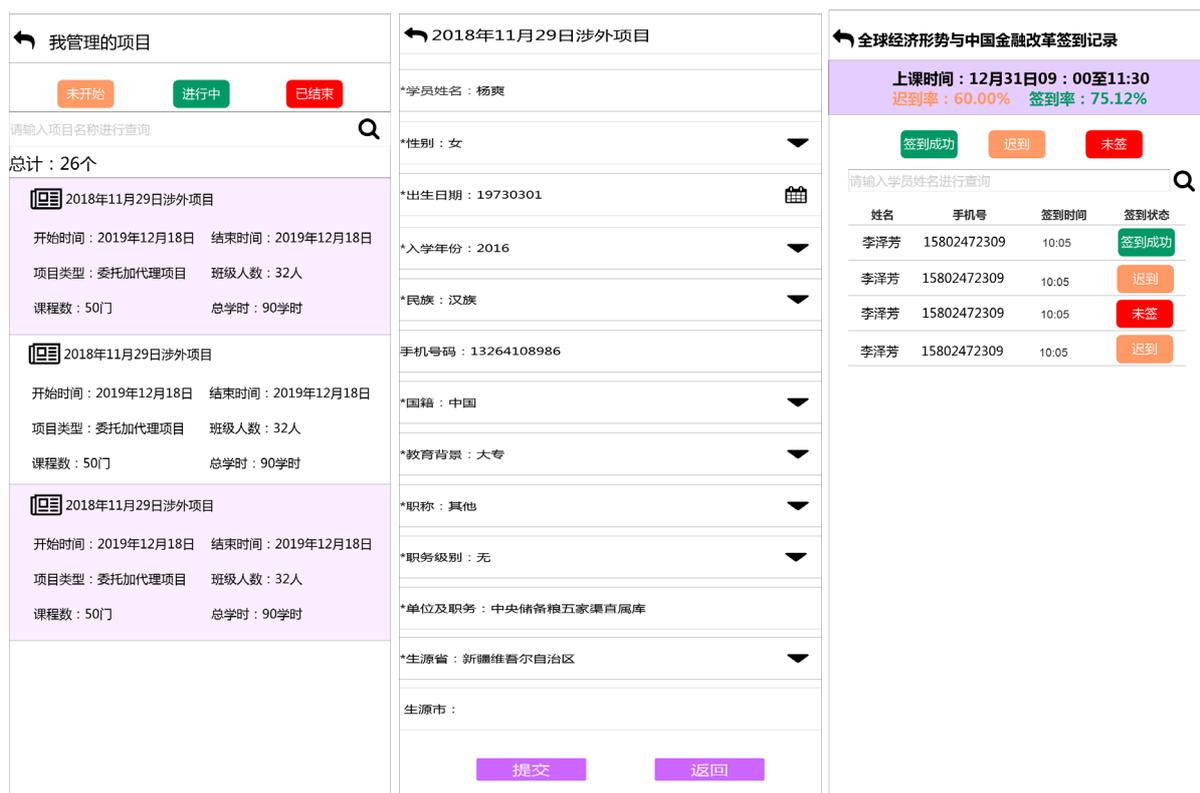
Fig5 evaluation pages on class teachers' mobile

3.2.4 Annually Summary

Annually summary is an important role at the beginning of each school year to identify the distinguished programs for their creative ideas and outstanding services, which shows the training trend. The excellent personnel in training program will also be selected and rewarded. The selected program and personnel will get corresponding merits or benefits in next year's programs.

Previously, this work is manually done, i.e. administrators report their programs in paper work. Frequently, the material submitted is different from time to time and person to person. The selection criteria are difficult to apply as it might involve courses, teachers, contracts, finances, and many other factors. The administrator at university level had to repetitively check the information in system, which were often subject to changed programs or delayed submissions.

In the improved system, this process is completely done by the system itself. Figure 6 shows this flow.

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        ┌─────────────────────┐
        │  Univ. administrator set │
        │      conditions      │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │  Programs are filtered │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │  Data administrator   │
        │   choose program      │
        └─────────────────────┘
                  │
                  ▼
             ◇ College leader ◇
               consider
                  │        Yes
                  ▼
             ◇ Univ.      ◇
              administrator
                check
                  │        Yes
                  ▼
             ◇ Experts review ◇
                  │
                  │        Yes
                  ▼
        ┌─────────────────────┐
        │  Distinguished programs │
        └─────────────────────┘
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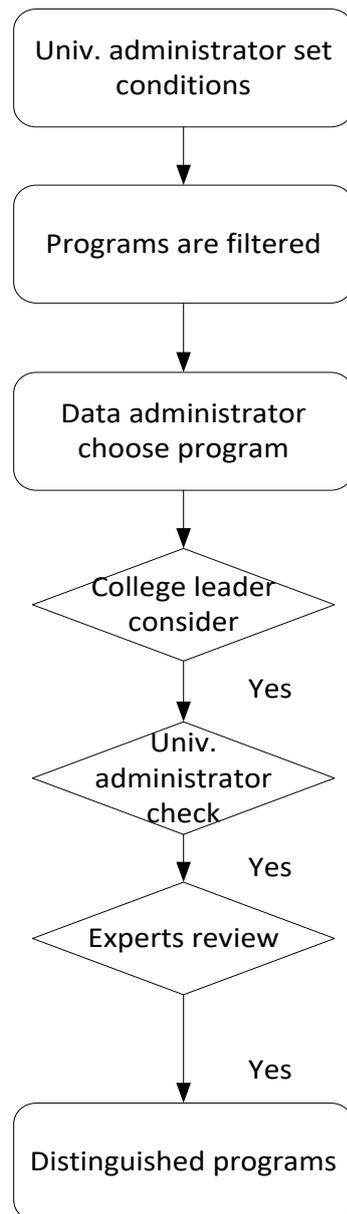
Fig6 distinguished program and personnel selecting procedure

Once the university administrator has set the conditions for distinguished programs, the programs satisfied will be filtered out automatically with the corresponding program administrators listed. This information will also be sent to the department managing the program. After the department leader's approval, the program details will be sent to university level. The administrator who is in charge of the relevant field will double check the corresponding data in the sequence of program general info, contract info, financial info, course info, and teacher info. If all the information is correct, the details of programs would be nominated to a review committee for its final decision.

The upgraded system has competently reduced probability of mistakes and relieved people from hard manual work.

3.2.5   Reconstruction of teachers' database

The management system contains about 36000 items of teachers' info, among which 8000 are from Tsinghua University and 28000 are from external sources. There are a lot of redundancies among these data due to different inputs. Previously, the training team did not share the teaching information. Each team established their own teacher and course database, which are invisible to other teams. This means that, if a teacher has been invited by several training teams, the database would contains several

information items of the same teacher. Even for the same training team, it might create several information items for the same teacher as he/she might be involved in different programs of the team. The following figure shows the old database structure with redundant teachers. It is impossible to obtain a general information on a particular teacher's courses under this circumstance, and thus impossible to give an overall comments on that teacher.
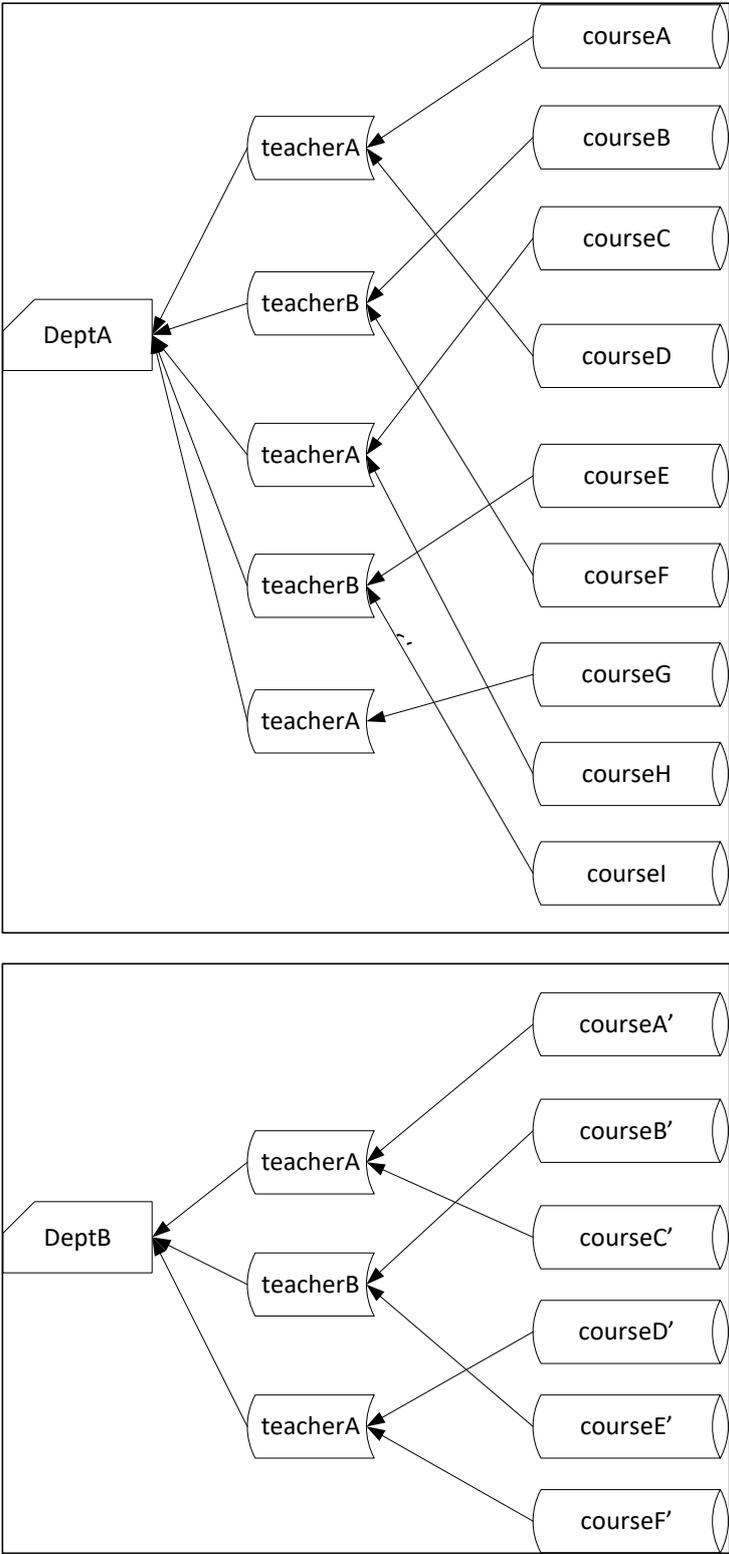

Fig7 previous teacher management system

In the improved this situation, with the help from the HR department of the university, the upgraded system adopted teachers' ID number as the only key to recognize each teacher. For the teachers from

external, the system require the national ID Number as a compulsory input when he/she is invited to teach a course. The database structure has changed, with the ID numbers as the primary key, all the training unit will share the same teachers' information in database, all the redundant data will be removed. This involves another complicated work: 140000 courses on this case, need to be re-associated to each qualified teacher ID. Figure 8 shows the result of this work.
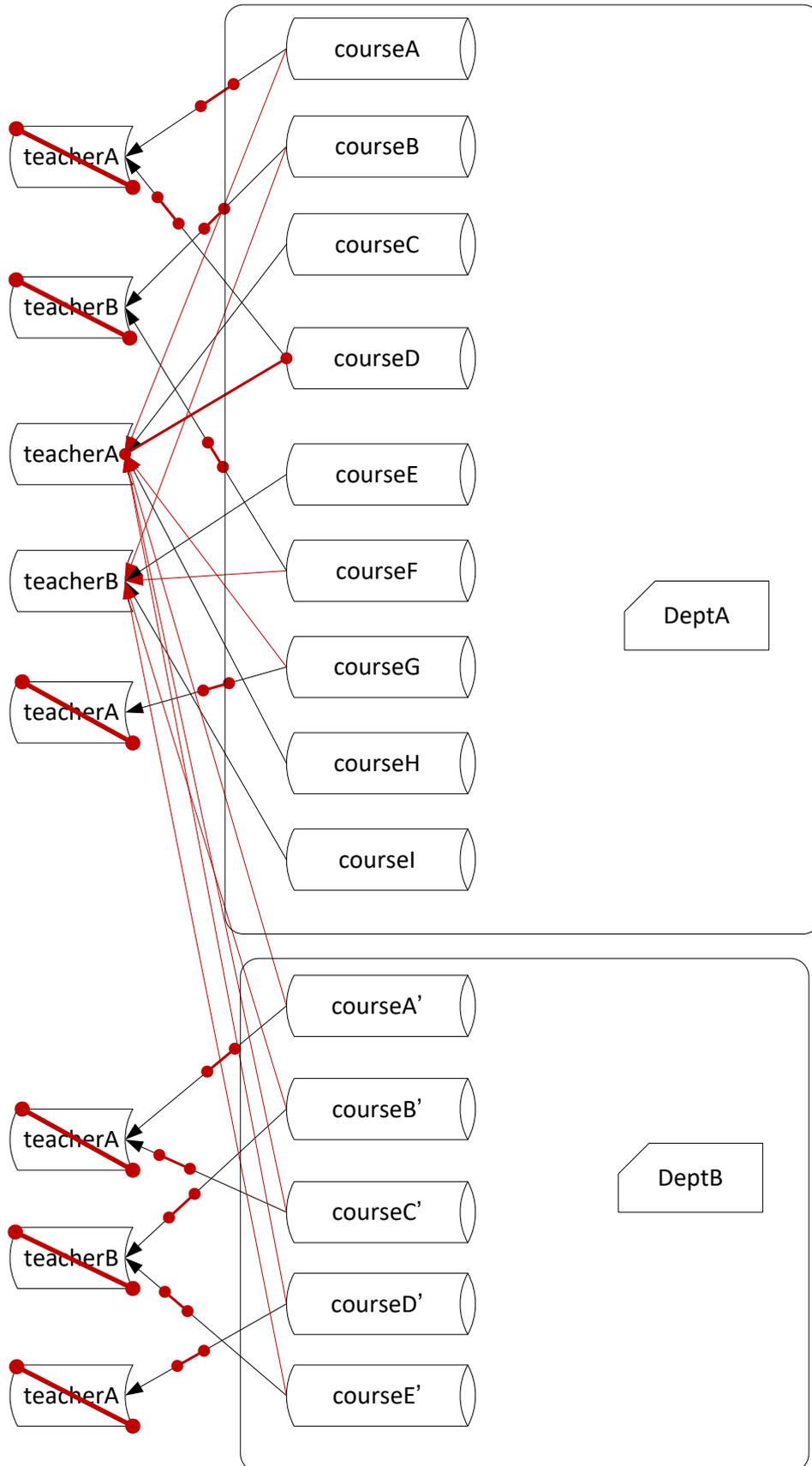
Fig8 newly designed teacher management system

After this upgrade, it is much easier for administrators to find the courses a particular teacher taught, and all the evaluations results linked to that teacher.

4   SUMMARY

The management system for Continuing Education in Tsinghua University has been successfully upgraded to satisfy the most recent requirements in university administrations. With the deep reconstruction in system frame and data structure, the system now contains good compatibility and extensibility in business management as well as in technic frame of work, and provides friendly user experience with well-formed interfaces. The data transferred among HR, Legal Affairs and Financial departments has established a information share network, which has improved data transparency, information accuracy, and working efficiency. The upgraded management system not only performs as a platform for training business management and quality control, but also enables our university to provide high-end training programs to public and to undertake the responsibility to construct a lifelong-learning society.

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[1]   *The Classification for Continuing Education Courses, Tsinghua University, 2019*

[2]   *Xiaotong Huang,Dayong Guo, Lei Wang, The Application of Information Technology in Continuing Education and Training, the 15th World Conference on Continuing Engineering Education, Porto, Portugal, 2016*