

Educational Technology Network Cooperation Model and Architecture Based on Task Allocation

Zou Gang, Yi Fan, Ao Yonghong, Qian Cen, and Zhou Gangxin

Abstract—This article put forward a design of educational technology network cooperation based on task according to actual situation of some institute educational technology development actual situation. The purpose is to study how to balance resources in different institutes or from different educational technology works, and how to common develop by resource sharing or network cooperation. The model and architecture of educational technology network cooperation are discussed in this paper. We give a description of technology platform features and core module function. Educational technology network cooperating, has made beneficial trial to solve the problem of regional information resources sharing and irrational allocation of Educational technology resources.

Index Terms—educational technology cooperation, cooperation model, platform Architecture.

I. INTRODUCTION

The modern information technology such as multimedia technology, computer technology and network communication technology are widely applied in educational technology fields, lead to huge changes in Educational technology fields.

The mission of institutes educational technology center is to promote and deepen teaching reform with the forerunner of teaching design, the basis of audio-visual technology, the core of computer technology, and the tie of network.. Great progresses have been made in many fields such as construction of equipment, software system development, construction of teaching information resource and discipline building. Digital campus construction including campus portal web, office automation system, educational administration management, network teaching system, general campus card system and mail system, are the most widely used in institute teaching. Network multimedia classroom and model teaching resources have great development. Educational technology cooperation are limited to partial resources sharing and meeting communication, is a kind cooperation lock of dynamic real-time communication. Educational technology cooperation research is developing the teaching innovation activities through making full use of every institute's advantages resources by way of synergistic and combined to improve the development and application of Educational technology. So educational technology network cooperation objective is improving educational technology level by way of combining computer network technology and large-scale data storage processing technology, and solve the problem

of educational technology works real-time communication and educational technology subject cross development [1].

The Study of educational technology network cooperation should be intensified because facing increasingly complex wide research fields which need specialized knowledge and integration technology. Some educational technology tasks require integrating speciality resources of each institute to complete through comprehensive integrated thoughts and views. In addition, everyone has his own research field and research interest and the fields involved in educational technology are comprehensive and crossed, all kinds of professionals can not complete it but by educational technology network cooperation. We can say this cooperation may further push the education research forward [2]. The educational technology cooperation is base on a research group, not limited in a isolated unit, or a college. The IT development not only further educational technology and offer better conditions to educational technology cooperation, also innovate the cooperative modes.

II. CURRENT SITUATION AT HOME AND ABROAD

In 1965, in order to strengthen the cooperation of educational technology specialities in colleges, U.S. established University Consortium for Instructional Development and Technology (UCIDT) to get the support of the public and the government to further the educational technology in its R & D and in the discipline construction. In 1986, UCIDT became Society for Professors of Instructional Design and Technology (PIDT) [3]; its missions are as follow: encourage PIDT members do more in information exchange, outstanding discipline construction and farther research and exploration, offer the leadership in its application and practice of this field.

In China, China Educational Technology Consortium aims to serve for the administrative department; develop the educational technology; promote educational informatization, the education research and deepen the teaching reform by the means of subject research, annual conference and works magagames etc. The current cooperation acts only in the information and conference sharing, however lack of the communication models base on a task. In it a single way is often used such as email, BBS, QQ, MSN and Feiqu etc.

III. COOPERATION MODEL AND ARCHITECTURE

A. Cooperation Model

The cooperation model is based on the synergetics [4],

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The authors are with Educational Technology Center, National University of Defense Technology, Changsha 410073, China (mydjzx@163.com).

which was created by German physicist Herman Haken, and the model has offered the theoretical support for CSCW. The computer-support cooperation is that a group people in different locations finish a task by cooperation relying on computers and the network technology. It consists of system construction, research of group work ways and its technology and the development of the application system. In this cooperative environment, the traditional communication way has been changed; the separation in time and space has no longer existed, so that people can save their time and energy, and promote their group work quality and efficiency. The traditional single cooperation model of educational technology could not fit rapidly development actuality of educational technology which is the embodiment of more cross subject.

Multi-level cooperation model is Suitable for educational technology network cooperation, which could dynamic regulate cooperation object or cooperation group structure in task progress. The predesigned cooperation structured liquid could be broken according to task request. Part cooperation structure could be regulated to optimize whole cooperation

liquid from actually situation.

B. Design of Educational Technology Network Cooperation Architecture

Educational technology network cooperation platform is a distribution heterogeneous integration system, which process loose coupling high reconstruction ability, integration ability, and extension ability [5]. System frame include user layer and business layer. User layer provide human-computer interaction between users and network cooperation service platform, which could meet users request such as information retrieval, information sharing, information acquisition and information publishing. Business layer treats user layer’s application request through business treatment, logic judgement and data processing, then back processed result to user layer. The whole system provide function component such as data exchange, data access, information management, information storage, information query, speech service, video session and information display it. The architecture is described as Fig.1.

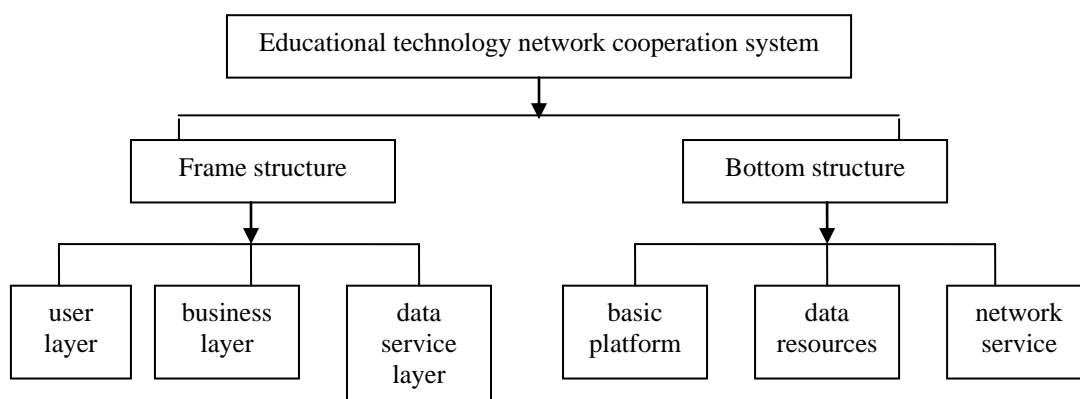


Fig. 1. Educational technology network cooperation architecture

C. System Cure Function Module

Central idea of educational technology network cooperation platform is to complete specific task. The design and application of cooperation platform should start from the angle of user to meet general request in cooperation processing , such as cooperating team establishing, managing team and real-time Communication each other [6]. The purpose is to increase work efficiency by cooperating from different research direction and from cross regional groups. System systematic stability and expansibility is also important. Educational technology works’ Scientific Research ability innovation ability and solving problems ability could improve through cooperation mechanism each other.

Special task are divided into some subtasks in the cooperation frames. Cooperation team or group develop job according to respective cooperation subtask with communication each other during work. The cooperation process is completed through task aggregation. System cure function research contents include [7]: (1) educational technology cooperation theory model. (2) Multimedia Communication. (3) Implementation method of human-computer interaction. (4) Group decision support system. (5)

Cooperation system. (6) Distributed processing units. (7) Research of cooperation working method. (8) Research of artificial intelligence method supporting cooperation task. So the system use case diagram is described as Fig.2.

Three key problems of educational technology network cooperation system are computer communication, cooperation and coordination [8]. Real-time communication ensures the smooth implementation of cooperation task. Cooperation means resources sharing and propagation including information, equipment and Members experience. Coordination ensures effectiveness of communication and Cooperation with a kind of coordination mechanism.

System has some general functions such as user management, group management, space management and data sharing et. The most important part is instant messaging which could meet groups’ communication demand including voice, character and video. Members in cooperation group could send communication request to others for a special task, then go into cooperation discussion by way of instant messaging. Web page and document could display synchronously to improve communication efficiency, which could add tagging by cooperation members.

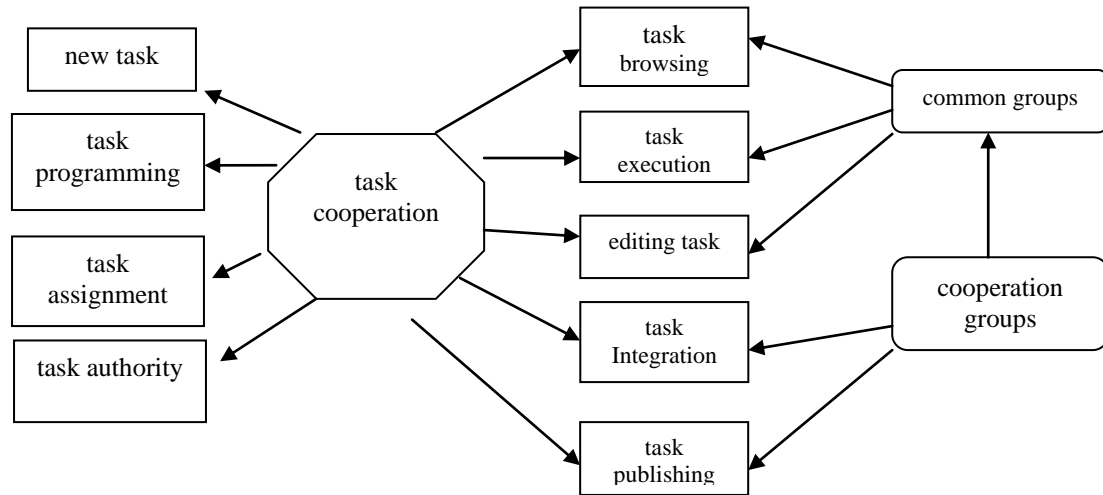


Fig. 2. Cooperation system use case diagram.

IV. SUMMARIZE

The demand of educational technology network cooperation would increase in the future as the improving research level of educational technology and difficulty of educational technology task which requires high capacity cooperation system platform. Cooperation model need do the thorough research which is the theoretical support of educational technology network cooperation platform. How to select adaptive technology from many new rapid developing information technology to construct educational technology network cooperation system is emphatically studied.

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