Actively Support the education in Western China to Promote the Cooperation and Sharing of Basic Education Resource

An Introduction to the National Basic Education Resource Cooperation and Sharing Platform

May, 2008
Content

- Background
- Explore the New Resource Sharing Pattern
- Basic Education Grid Platform
- An Introduction to the Activity
Content

☑  Background
☐  Explore the New Resource Sharing Pattern
☐  Basic Education Grid Platform
☐  An Introduction to the Activity
Background

11th Five-Year-Plan for education development issued by China Ministry of Education has outlined the needs for education informationization. The plan point out we’ll:

- modernize the education by the informationization of education
- develop distance educational systems
- popularize the information technology education
- speed up the informationization process of educational management
- strengthen the infrastructure construction for education informationization
- quicken the development on educational information and resource
- establish and perfect the technological support system for educational information
Background

- **Achievements**
  - With years' exploration and practice we’ve make great progress in the construction of campus net, the integration of information technology with curriculum, the construction information resources, and personnel training. We’ve accumulated experience and successfully utilized the information technology in many schools.

- **Challenge**
  - In spite of the great development, the service efficiency, the application results and investment benefits of educational informationization are lower than people anticipated.
Background

Hardware Environment

The internets cannot burden massive data flows and large-scale cooperative distance teaching. The limited speed of networks which based on IPV4 has decrease the efficiency of the educational resource sharing and cooperative distance teaching.

- IPv4 address will be used up by 2010. The IP address are not enough for the Peer-To-Peer (School-to-Shool) communication.
Background

- Application
  - Few User
    - Few resources
    - Challenge
      - Hard to maintain
      - Hard to share
Background

Focus: Western China Assistance, resource construction, and information sharing

Achievements

- Kinds of basic educational resource database have been applied in many schools
- Some schools have constructed their own educational resource database
- The information resources have been enriched

Still some problems
Background

- urgent problems
  - Schools in Western China are generally short of resources
  - those schools are hard to collect, accumulate and manage the educational information
  - There are few standards for educational information. As a result, those information can hardly be shared. Information island and resource island are often found in Western China.
Content

- Background
- **Explore the New Resource Sharing Pattern**
- Basic Education Grid Platform
- An Introduction to the Activity
Explore the New Resource Sharing Pattern

Mechanism Innovation

Technical Innovation
Explore the New Resource Sharing Pattern

- Technical innovation:
  sufficiently take advantage of present basic facilities and take part in the construction of new generation internet and grid; strengthen resource integration; construct public service system in educational information; construct the public service platform of hardware and software sharing.
Explore the New Resource Sharing Pattern

- Mechanism innovation: to solve the problem on the mechanism of commonweal development in the basic educational information.

- With the support of the government, the model effects given out by the famous schools, the first-class schools will be stimulated to devote to the construction of public educational information. The effects of high quality educational information resources will be doubled by resources integration. And the multi-level, multi-function basic educational information service systems will be constructed by this way.
Explore the New Resource Sharing Pattern

The two supplement each other.

Mechanism innovation

Technical innovation
Explore the New Resource Sharing Pattern

Technology innovation: realize the resources sharing by grid technology

Mechanism innovation: plan on "league of cooperative and sharing national basic educational resources"
1. Technology innovation: realize the resources sharing by grid technology

- Take part in the construction of new generation network and grids
- Key problem of the technology: the plan on the application of the national educational grids based on IPV6
1. Technology innovation: realize the resources sharing by grid technology

- The development, industrialization, and application experiment of CNGI model projects in 2005 -- the projects on the application of the national educational grids based on IPV6, had been distributed by National Development and Reform Commission. This project are carried out by the High School Affiliated to Remin University of China, Tsinghua University, Beijing Institute of Technology, National Library and NO. 1 High School of Changsha.
CNGI project

- Sponsor: National Development and Reform Commission
- Name: the application of the national educational grids based on IPV6
- Chief manager: Liu Peng-zhi
- Charged by: High School Affiliated to Remin University of China.
- Other Charged: Tsinghua University, Beijing Institute of Technology, National Library and NO. 1 High School of Changsha
- time: Oct, 2005 to Dec, 2006
The first meeting of the project was held at High School Affiliated to Remin University of China in Dec, 19, 2005.
1. Technology innovation: realize the resources sharing by grid technology

- The National basic educational grid is an application grid on which each school is a node. And the resources of each school are saved on the local node.
- The integration and sharing of the high quality educational resources can be realized by grid technology.
- The basic support of the distance cooperative training are offered.
1. Technology innovation: realize the resources sharing by grid technology

- The concepts of the construction of basic education grid are: every one serve me and I serve every one; schools communicate each other and develop side-by side.

- Each school is a “center” and “main node” of the grid. Other schools are “common nodes”.

- With the environment of the grid, each school can construct and maintain the resources with their way.
基础教育网格示范
国家基础教育网格平台
节点分布图
More than 200 grid nodes has been settled and the number of users have overpassed 300,000.

There are other 100 schools who are ready for service and settlement of grid nodes.
The National basic education grid platform was opened in Dec, 26, 2006.
2. Mechanism innovation: league of cooperative and sharing national basic educational resources

To achieve the project and promote the application, the Science and Technology Department of National Education Ministry decided to initiate “league of cooperative and sharing national basic educational resources” on Dec, 19, 2005.
一、重要意义

推进教育改革与发展的实施取得了重大成就，2005年不言而喻地显著

教育部司局函件

关于依托“中国下一代互联网示范工程 CNGI”应用试验专项

实施“国家基础教育资源共建共享联盟计划”的指导意见

各省、自治区、直辖市、新疆建设兵团的教育局:

“基于IPv6的国家基础教育资源应用示范”项目是由国家

发展改革委立项的中央投资项目，我司负责组织。项目依托

的“中国下一代互联网示范工程 CNGI”2005年应用试点项目

将建设基于下一代互联网示范网络，探索国家基础教育资源

的高水平共享和远程协同教学，面向中小学生和家长提供

高品质的网络服务，形成基础教育资源网络化服务体系，推

进教育均衡发展。

为提高项目实施水平，扩大服务范围，探索优质教育资源大

规模共享的有效机制和服务模式，促进教育均衡发展，我司

与中国人民大学附属中学、国家图书馆、清华大学计算机系等单

位共同发起实施“国家基础教育资源共建共享联盟计划”（以下简称“资源联盟计划”），现就组织实

施资源联盟计划的有关问题提出如下指导意见：

选教育均衡发展做出贡献。

国家基础教育资源共建共享联盟计划

的指导意见

教育部司局函件

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施资源联盟计划的有关问题提出如下指导意见：
the start to fulfill the league plan

- To ensure the organization of the spread and application of basic education grid, the union and cooperation between the schools should be strengthened.

- Explore the stimulation mechanism for the resource cooperation and sharing to fulfill the sustainable development.

- Give more attention to the junior schools
Help by other schools or help by school itself

☐ the external resources are not always suit to the local school

☐ But the experience of other schools can be referenced

☐ The most suitable resources are always created by local school itself

☐ This kinds of creation should be accumulated

☐ We’d better explore, create and accumulate these valuable resources, and saved on the nodes of local school according to the given standards.
the start to fulfill the league plan

- The above problems could be solved through the fulfill of the league plan. Mechanism innovation could be realized by this way.
  - With newly designed sharing model, we'll record, classify, exchange, and apply the high quality courseware, teaching plan
  - With the help of national-level publish companies, the web publish system of the union will be construct the. And the first-class educational information of the union can be published formally and the copyrights can be ensured by this way.
  - To construct perfect reward mechanism and make sure all the schools, teachers who has donated to this work can be reward.
Service of the league

- Grid service
- Integration and sharing
- Evaluate, compete, and communication
- Edit and publish
Service of the league

Platform Support
Resource Sharing
Training
Publish
Some Tips

- Make detail design of the construction of resources of local school.
- Build local grid node or virtual grid node. Connect to the national basic education grid. Exchange information with other schools and share the national information resource.
- More support to Western China. Donate to cooperative and sharing of national basic information.
Content

☐ BackGround
☐ Explore the New Resource Sharing Pattern
✓ Basic Education Grid Platform
☐ An Introduction to the Activity
What is grid?

- Grid is a group of new technology based on internet.
- To make full use of idle processing resources on the internet, reduce the input costs of equipment upgrade and purchase, and realize the comprehensive utilization and sharing of computing resources, storage resources, data resources, information resources, knowledge resources, expert resources among different organizations.
- To make users regard the whole network as a large computer, and enjoy the integrative, dynamically changing, flexible controlled, intelligent, cooperative information services.
What is basic education grid?

- The national basic education grid is an application grid, each school has one grid node. Resources of each school have been put on local nodes.
- To realize the integration and sharing of high quality basic education resources from different regions by grid computing technology.
- To provide the basic support for open distance cooperative teaching.
Why to build basic education grid?

- Grid can realize from the hardware connection to resources connection
- Grid is a basic point to realize the direct exchange among different schools
  - Hand-in-Hand school on internet can realize the sharing of resources
  - Friendly group established by school, staff room and class not only can realize the resources sharing of each group, but also can carry out daily interactive communication.
  - the more high-level interaction among schools on internet will be based on this.
Why to build basic education grid?

- To verify the availability, reliability, practicality of the existing IPv6 in large range and on a large-scale and promote the rapid development and maturation of IPv6

- Basic education grid has enormous potential user groups. Combining it with IPv6 can verify the availability, reliability, practicality of the existing IPv6 to largest extent and promote the rapid development and maturation of IPv6 and open an application situation for IPv6 and the next generation internet.
Frameworks for National Basic educational grid
Open Grid Service Architecture, OGSA
系统结构图
Characteristics of System structure

- Multiple domain centers in whole country
- Multiple domain nodes below every domain
- Every domain can exist alone, or be joined into the whole grid environment
- Every domain node can access to the whole grid or node resources of itself
- Every domain center can access to all resources in the domain
Major function and core technologies

- Courseware/resources management
- Grid security
- Key function point of Knowledge grid
- Grid user management
- Knowledge grid users management
- Data management
- Guide
- Application system monitoring
- Knowledge metadata
- Courseware metadata
- Integral logic
- Grid monitoring
- Information center
- Knowledge courseware making

Grid core technologies
- Soft bodies of Application level
- Knowledge courseware making
- Data management
- Knowledge metadata
Function modules of knowledge grid system of basic education
The System takes resources sharing as a clue and has following functions

- Application level user management — to ensure application level users multiple rights and encourage users to share the resources
- Resource processing — metadata input. to describe resources uniformly according to national standard
- Resource management — to realize the multiply management and sustainable maintenance according to user right,
- Status monitoring — collect running status of all kinds of resources in analysis system and provide service for system maintenance( node administrator), management and decision making (schoolmaster and educational administration Department)
**IPv4/IPv6 protocol conversion**

- The program has established application demonstration nodes in high school affiliated to Renmin University of China, main node of IPv6 experiment grid, the Changsha first middle school and national library.

- Schools which uses the IPv4 use dual stack network. In this way, teachers and students can visit resources on IPv6 or IPv4 network of alliance schools.
Center node

- provide user account uniformly
- manage G-point system uniformly
- Monitor every node server
- Gather resource metadata
- As a single node
provide user account uniformly

☐ batch import
☐ Single register

User information was produced in center node uniformly and distributed to relevant nodes
manage G-point system uniformly

- One user, one account
- Management G-point uniformly
- User can browse one's own history of G-point
Monitor every node server

Examine the node server's connection and service condition
Gather resource metadata

- Facilitate search uniformly
- Resource positioning rapidly
As a single node

☐ Manage user of the node
☐ Manage resources of the node
Project implementation

- Nodes in all schools
- Groups in all classes
- Everybody Participation
- Macroscopic management
Nodes in all schools

- Grid node structure
Nodes in all schools

- Schools with good conditions can be a node of grid system and store resources in their own servers.
- Otherwise, schools can be a virtual grid node and store resources in their own domain center server first and don’t transfer to their actual node until these schools have good conditions.
- All the two ways have the same interface and resources provider have own administration right.
Nodes in all schools

External web page on school node
Nodes in all schools

Mangement interface of school node

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Groups in all classes

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群组简介

这个群组很好的，来加入吧，同事们！

群组成员最新博文

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群组讨论

学校节点建立之后，将师生的信息导入到用户管理系统。
Groups in all classes

- The system establishes groups for every grade and class by initial setup.
Everybody Participation

- Easy to use
- Every teacher or student can establish a new group, such as educational research group, discipline group, association group and so on
Everybody Participation

Teachers and students can manage their own groups and discuss or share resources in own groups.
Everybody Participation

Teachers and students can upload resources to the node.
Everybody Participation

☐ Resources provider can select sharing scope by pricing
  - Class group
  - Own group
  - The school
  - The domain
  - All grid
Everybody Participation

Search resources and download by grid

- 全部课程
- 艺术
- 综合实践活动
- 跨领域的学习活动

- 语言与文字
- 自然科学
- 数学
- 体育与健康
- 人文与社会科学
- 技术

【资源标题】 中考物理
【资源作者】 张继泰
【上传人】 zhangjitai
【资源学科】 自然科学 => 物理
【关键词】 中考物理
【来源类型】 原创
【年级水平】 1年级
【创建日期】 2008-05-14
【资源描述】 中考物理

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注意：资源在 3 天之内重复下载或播放不会再次扣除评分
The school can authorize some teachers or students to examine, maintain, modify and improve the resources and metadata on the node of the school.

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<th>化学反应类型及其规律</th>
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提交 返回
Everybody Participation

- All teachers or students can make some advices on the whole resources and metadata.
Macroscopic management

- Back-stage management at school level
- Verification, shield, deletion function
- Resources statistics, rank, report form function
  - rank by teachers’ contribution
  - Rank by distribution of discipline
  - Rank by distribution of grade
  - Rank by the liveness of class
  - Other ranks
Macroscopic management

Back-stage management at school level

Verification, shield, deletion
## Macroscopic management

### Back-stage management at school level

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### 合计

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首 页 上一页 下一页 尾页 跳至第 1 页 Go 1/482 页； 共 7219 条记录； 15 条/页
Macroscopic management

- Back-stage management of administrative department on education
  - Verification, shield, deletion function
  - Resources statistics, rank, report form function
    - rank by of teachers’ contribution
    - Rank by distribution of discipline
    - Rank by distribution of grade
    - Rank by the liveness of class
    - Other ranks
Macroscopic management

Back-stage management of administrative department on education

Verification, shield, deletion
Macroscopic management

Back-stage management of administrative department on education

Resources statistics, rank, report form
contents

- Background
- Explore new resource sharing pattern
- Basic education grid platform

✓ Introduction of activities
The first China basic education resources sharing forum

2006, July 15—16, Beijing
The first China basic education resources sharing forum
Program of on-line service of National basic education resources for Western China

June, 2006-December, 2006, public activity “on-line service of National basic education resources for Western China” was held by the alliance and China Internet Association wide band P2P application advance alliance.
Program of on-line service of National basic education resources for Western China
Program of on-line service of National basic education resources for Western China

activity launching ceremony was held in June 2
Program of on-line service of National basic education resources for Western China
National basic education resources on-line service for Western China

Live for elementary school
Live for Junior middle school
Live for high school

活动简介：
“国家基础教育资源网上西部行活动”，由国家基础教育资源共建共享联盟和中国互联网协会宽带P2P应用推进联盟共同发起并联合举办。此项公益活动，利用P2P流媒体技术重点面向宁夏、内蒙古、新疆、贵州、甘肃、青海等西部地区中小学，提供基础教育优秀课程及公共教育资源。

此项活动为期七个月，从2006年6月2日开始，至2006年12月25日结束。活动中播出的优秀教学课程主要由中国人民大学附属中学无偿提供，分为小学、初中、高中三个部分。国家图书馆等文化机构也将在活动期间播放一定数量的公共教育资源。流媒体播放技术平台由中国互联网协会宽带P2P应用推进联盟成员单位无偿提供。

本次活动旨在利用互联网新技术缩小数字鸿沟，在推动互联网技术应用创新的同时，积极进行远程网络教学模式的创新和尝试。活动得到了教育部、信息产业部的肯定和大力支持。

本次活动是2006年互联网公益日活动的重要内容之一。互联网公益日活动由中国互联网协会于2005年发起，旨在推动人人受益的信息社会，消除数字鸿沟，帮助贫困、弱势群体获取网络资源，共享信息文明，促进互联网以及中国社会经济的可持续、和谐发展。

主办单位：
国家基础教育资源共建共享联盟
中国互联网协会宽带P2P应用推进联盟

支持单位：
中国人民大学附属中学
国家图书馆
世纪互联数据中心有限公司
光芒（北京）国际传媒网络技术有限公司
北京千橡互联网科技发展有限公司
上海聚力传媒技术有限公司
北京博客网信息技术有限公司
北京瑞迪科鑫信息技术有限公司
National basic education resources on-line service for Western China
Application Demonstration

- long-distance interactive teaching demonstration was held, first in Beijing and Ningxia two places two schools, and then in Beijing, Ningxia and Henan three places three schools
Beijing, Ningxia, Henan three places three schools Long-distance interactive teaching demonstration
unity and cooperation
progress together

Thanks