

**Title of program-project:** Using of Innovative ICT to Improve Quality of Education in Small Schools in Rural Area

**Name of implementing organization:** Central China Normal University

## Published research results

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# 1 Published Research Paper

Table 1 List of Research Paper Published by the Project Team in the Past 3 Years

No.	Title	Author	Journal	Date
1	<i>Observation and Evaluation of Student Development in Small Rural Schools Promoted by Information Technology: Taking Xian'an Experimental Area as an Example</i>	Wang Jixin et al.	<i>China Educational Technology</i>	2018.03
2	<i>Research on Balanced Development Model of Regional Basic Education from the Perspective of Community</i>	Wang Jixin et al.	<i>e-Education Research</i>	2018.03
3	<i>Research on Informatization Promoting Balanced Development of Education Quality in County Area</i>	Wang Jixin et al.	<i>China Educational Technology</i>	2018.02
4	<i>Problems, Models, and Suggestions for Promoting a Balanced Development of Compulsory Education in Rural Areas through Educational Informatization: Based on the Survey of 20 Counties (districts) in 8 Chinese Provinces</i>	Wang Jixin et al.	<i>Open Education Research</i>	2018.01
5	<i>Internet Plus Rural Small-schools: Practice Research on the Balanced Development of Compulsory Education in the Process of New Urbanization</i>	Wang Jixin et al.	<i>China Educational Technology</i>	2016.01
6	<i>Research Perspective Forecast on Basic Education Public Service Equalization through Information Technology</i>	Yang Zongkai et al.	<i>China Educational Technolog</i>	2015.01
6	<i>The Innovation of Synergy Propulsion Mechanism: A Possible Path Improving the Depth-integration between Information Technology and Education</i>	Zuo Mingzhang et al.	<i>Modern Education Technology</i>	2017.04
7	<i>The Innovation and Practice of Regional Education Informationization Synergy Propulsion Mechanism</i>	Zuo Mingzhang et al.	<i>China Educational Technology</i>	2017.01

8	<i>Research on the Model of the Construction Process of Regional Basic Education Informatization from the Perspective of Coordination</i>	Zuo Mingzhang et al.	<i>e-Education Research</i>	2016.07
9	<i>Bewilderment and Breakthrough: The Practice and Research of Training Informationized Teaching Ability for Regional Teachers</i>	Zuo Mingzhang et al.	<i>China Educational Technology</i>	2016.05
10	<i>On the Supporting Project of Rural Teachers: Effect, Problems and Measures</i>	Fu Weidong et al.	<i>Journal of Central China Normal University (Humanities and Social Sciences)</i>	2018.01
11	<i>Informatization and the Development of Small Schools in Rural Areas: Effects, Problems and Countermeasures</i>	Fu Weidong et al.	<i>Journal of Central China Normal University (Humanities and Social Sciences)</i>	2016.09
12	<i>To Narrow the Gap in Education in Use of Information Technology: Experience, Lesson and Enlightenment in Developing Countries</i>	Fu Weidong et al.	<i>Modern Distance Education</i>	2016.02

You can download the full text of the above papers in China Knowledge Network (<http://epub.cnki.net/kns/brief/result.aspx?dbPrefix=CJFD>) .

The summary of the papers above are attached as follows:

## **Observation and Evaluation of Student Development in Small Rural Schools Promoted by Information Technology**

— Taking Xian'an Experimental Area as an Example

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**Abstract:** In order to solve the important but difficult problem in small rural schools during the balanced development of compulsory education, the Collaborative Innovation Center for Information Technology and the Balanced Development of Elementary Education of Hubei Province has carried out the experimental practice of promoting the balanced development of compulsory education in multiple provinces and districts. To examine the effect, based on the perspective of the development of students, this article chooses Xian'an District in Hubei Province as the experimental area to carry out an empirical research. By comparing with students in central schools and non-experimental small rural schools, this paper discusses the impact of technical intervention on the development of students in experimental small rural schools. It is found that the learning methods, learning attitude, core self-evaluation, school satisfaction, positive emotion ability, interpersonal ability and interest development of the students in the experimental small schools are significantly positively impacted by technical intervention. The findings above are further explained and discussed, and the problems in the process of practice are summarized and reviewed. This article expects to bring some enlightenment to the current research and practice of promoting the balanced development of compulsory education with technology, so that rural children can get better and fairer education.

**Keywords:** Informatization; Small Rural School; Compulsory Education Balanced Development; Student Development

## **Research on Balanced Development Model of Regional Basic Education from the Perspective of Community**

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**[Abstract]** Based on high quality education resources sharing, how to promote the professional development of teachers and healthy growth of students in rural weak schools currently becomes an important task of balanced development of basic education. This paper starts from the key problems of basic education, introduces the concept of community, explains its basic ideas from three aspects --- shared vision, identity and multicultural construction. And then this paper summarizes the educational connotation of community and its significance for the balanced development of regional basic education, including promoting the construction and sharing of regional high -quality education resources and promoting transfer of tacit knowledge of teachers and students between urban and rural areas. Finally, this paper elaborates the overall structure of the community, covering the construction of teaching community, regional school community, teachers' community and students' community.

**[Keywords]** Balanced Development of Basic Education; Community; Resource Sharing; Tacit Knowledge

## **Research on Informatization Promoting Balanced Development of Education Quality in County Area**

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**Abstract:** Based on the investigation on 20 counties (area, city) region of 8 provinces, the author analysis the typical performance of unbalanced education development: the overall development of rural teaching points, the gap between urban and rural education development is obvious and worrying in remote mountainous areas of poverty education lags behind. On this basis, the author put forward four educational information practice models to promote balanced development of high quality education in the county. The four models are: double track digital school model, double teacher model of mutual assistance between urban and rural areas, organized and restrained MOOC model and appropriate digital resource model. From the perspective of educational equity, educational resource allocation and educational ecology, the author analyzes the theory value of the four models and the practice value to the balanced development of rural area education. Finally, the author puts forward the policy recommendations for the construction of county education informatization.

**Keywords:** Informatization; County Area; High quality and Balanced Development of Education; Policy

## **Problems, Models, and Suggestions for Promoting a Balanced Development of Compulsory Education in Rural Areas through Educational Informatization: Based on the Survey of 20 Counties (districts) in 8 Chinese Provinces**

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**Abstract:** Based on the survey of 20 counties in 8 Chinese provinces, this article summarizes the main problems existing in the basic education of counties in the rural area and puts forward the models and policy recommendations for the rural education informatization construction of counties. The existing problems are embodied in two aspects: the quality of education in small rural schools and the problems of education informatization construction in rural counties. The problems of education reflects in three aspects, which are teaching, teachers and left-behind children. The problems of education informationization construction are: emphasizing construction but ignoring application, paying attention to hardware but understating software, valuing things but understating people, emphasizing on teaching but ignoring learning. Three practical modes could be taken: community model, model of double teachers, and model of digital resources. Policy recommendations include: actively popularizing the three models, constructing resource sharing strategies and multi-party cooperation system.

**Key words:** informationization; balanced development of education; pattern; proposal

## **Internet Plus Rural Small-Schools: Practice Research on the Balanced Development of Compulsory Education in the Process of New Urbanization**

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**Abstract:** In the process of new urbanization, schools in the country is swelling, their pressure is increasing, whereas the phenomenon of carrying out sufficient and good courses in rural schools especially those rural small-schools is steal series, which becomes the key to balanced development of compulsory education in our country. Based on the background, this article expounds the exploration and achievement with the theme of internet plus rural small-schools in Xian'an, Enshi and other places in Hubei province, including the building of Dual-track digital school, the innovation of teaching model, hand in hand between urban and rural areas and the co-building of family and school, and the building of the pertinent resources with omnimedia, which formed the “Xian'an Model” of “one noumenon, dual-core, and four drive”, the “Enshi Model” of “three modes” to solve “three problems”, and other educational development models with local characteristics, promotes the high-level balanced development of regional compulsory education. At the same time, we also summarizes the problems we have found in practice ,like teachers professional development needs to be kept pace with the times, the concepts of education administrators need to be updated and their leadership skills need to be promoted, safeguard mechanism need to be constructed and completed. In the end, the author makes an summarization an expectation from two aspects: integrate informatization and urbanization and make them develop together, use the Multi-party collaborative mode of “UGBS”.

**Keywords:** the New Urbanization; Dual-track Digital School; Synchronous Interaction Hybrid Class; Synchronous Interaction Special Delivery Class

## **Research Perspective Forecast on Basic Education Public Service Equalization through Information Technology**

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**Abstract:**Educational public services equalization is the goal of educational equality research. Taking balanced allocation of information resources for basic education as a critical point of research on educational equality and taking the full advantages of network information technology, this study puts forward a network information technology based model for balanced allocation of basic education information resources. Using system dynamics modeling and computer simulation technology, this research provides an in-depth study of service equality mechanism for basic education information resources from the aspects of resource allocation efficiency, resource development quality and user efficiency. This research breaks through the dilemma of educational equality by improving educational resources quality via market competition and balancing educational resources allocation through information technology.

**Keywords:** Education Equalization; Public Service Equalization; Educational Resources Allocation; Educational Technology

## **The Innovation and Practice of Regional Education Informationization Synergy Propulsion Mechanism**

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**Abstract:** For a long time, in our country, we has always employed the method that “government plan and invest, and then middle and primary school use” to propel educational informationization. Although acquired a great of achievements, we suffer a bottleneck that to steadily boost and develop the informationization. So, obviously, it is difficult to achieve the goal that roundly propelling Educational informationization in China just with the effort of government. Therefore, combining the years of practical experience propelling regional Educational informationization, we build up a mechanism of cooperative propulsion to regional Educational informationization from the synergetic viewpoint of university, government, business and school. And then we elaborate the process, strategy and method of regional educational informationization from the aspects of innovation to mechanism of cooperative propulsion, optimization to information environment by the effort of all sides, cultivation to teachers’ informationization teaching ability and promotion to the daily-life of informationization teaching, so that expect to put forward some suggestions for steady promotion of the regional Educational informationization.

**Keywords:** Regional Education Informationization; Basic Education Informatization; Synergy Propulsion

## **Bewilderment and Breakthrough: The Practice and Research of Training Informationized Teaching Ability for Regional Teachers**

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**Abstract:** Insufficient informationized teaching ability is the key obstacle to change teaching by information technology. Our country has invested a lot of manpower and material resources on the training of primary and secondary school teachers’ educational technology ability for ten years. However, it has not brought forth a critical change in informationized teaching ability till today. With this confusion, this study examines the myth behind the bewilderment, inquires the nature and training demands of informationized teaching ability, and constructs a training method which could effectively connect the following items—“theoretical learning and teaching practice”, “centralized training” and “daily teaching and educational research”. It is hoped that it can provide some suggestions for future training research.

**Keywords:** Informationized Teaching Ability; Regional Teachers’ Training; Informationized Teaching

# Research on the Model of the Construction Process of Regional Basic Education Informatization from the Perspective of Coordination

ZUO Ming-zhang, LEI Li-hua

[Abstract] Promoting educational informatization at the county level is the key and strategic focus of the basic education informatization in China. To explore how to promote the basic education informatization at the county level, this paper first systematically analyzes the characteristics of the informatization of regional basic education. Then, it proposes a mechanism for collaboratively innovating the construction of the informatization of regional basic education based on the theory of coordination. Next, this paper presents a model of the construction process of the informatization of regional basic education based on the basic law and the element model of educational informatization. Continuously, this paper discusses on how to coordinate and innovatively construct the informatization of regional basic education. Finally, it validates the effectiveness of the construction process model by thoroughly describing its application in Xian'an District in Xian'ning City in Hubei Province.

[Keywords] Coordinative Innovation; Regional Basic Education Informatization; Model of Educational Informatization

## On *The Supporting Project of Rural Teachers (2015—2020)*: Effect, Problems and Measures

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**Abstract :** Based on the survey of the implementation of *The Supporting Project of Rural Teachers (2015—2020)* issued in 2015 in more than 120 rural primary-secondary schools in 6 provinces, this paper finds that, The policy has achieved positive results, but there are some problems in the implementation of the policy. It then suggests some measures, such as strengthening efforts to propaganda, building province-oriented salary guarantee mechanism for rural teachers, strictly carrying out the supplementary and withdrawal mechanism, improving the system of teacher positions management, and etc.

**Key words :** rural teachers; the supplement of teachers; material benefits ;professional development; teacher positions; honour system

**To Narrow the Gap in Education in Use of Information Technology:  
Experience, Lesson and Enlightenment in Developing Countries**

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**Abstract:** To narrow the gap in education in use of information technology, has important practical significance to promote education equality of opportunity and the balance development of Education, to realize the fair of Education. In the 20th century 50 s and 60 s, to the early 21st century, In some developing countries on the use of information technology to narrow the gap between Education, made a lot of successful experience, also has a lot of lessons of failure. There is enlightenment on our country: The one is adjusting measures to local conditions, the other is doing according to one's abilities. Otherwise, the loss outweighs the gain.

**Key words:** information technology; the gap in education; experience; lessons; enlightenment

**Informatization and the Development of Small Schools in Rural Areas:  
Effects, Problems and Countermeasures**

Fu Weidong      Wang Jixin      Zuo Mingzhang  
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**Abstract:** The role can't be underestimated that small schools in rural areas are convenient for rural students and important for the balanced development of compulsory education and social equity in China. The development of small schools in rural areas is facing serious trouble in the aspects of educational quality, school teachers and so on. Building rural digital schools by information technology can be an effective way to help small schools in rural areas, which can improve rural schools' quality, enhancing school teachers' information technology skills, and promoting the communication between rural left-behind children and their parents. In the course of educational informatization, there are still problems needing further study such as, the insufficiency of educational investment, the lack of coordination among university, government, business and schools, and the shortage of suitable digital educational resources for small schools. This paper makes suggestions: constructing multiple input mechanism with government taking the leading position, perfecting UGBS operation mechanism, increasing the strength in digital educational resources building, promoting the mechanism for teachers' incentive and intensifying the informational management of students of small schools in rural areas.

**Key words:** informatization; small schools in rural areas; measures; effects; problems

## 2 Master Theses and PhD Dissertations

Table 2 List of Master Theses and PhD Dissertations Published by the Project Team in Recent Three Years

No.	Title	Author	Tutor	Date	PhD/Master's Thesis
1	<i>Research on Informatization Promoting Rural Small-schools' Quality Improvement and Development of Teachers and Students: Focus on Community Building</i>	Wu Xiuyuan	Wang Jixin	2018	Doctor Dissertation
2	<i>Observation and Evaluation of Student Development in Small Rural Schools Promoted by Information Technology-Taking Xian'an Experimental Area as an Example</i>	Chen Wenzhu	Wang Jixin	2017	Doctor Dissertation
3	<i>Research of Teachers' Professional Development Ecology under Technological Diffusion</i>	Lei Lihua	Zuo Mingzhang	2017	Doctor Dissertation
4	<i>Current Situation Investigation of Teachers' Teaching Ability in Rural Small-schools and Promotion Strategy under Informatization-Take Xian'an Experimental Area as an Example</i>	Gao Yunge	Wang Jixin	2018	Master Thesis
5	<i>Promoting a Balanced Development of Compulsory Education in Rural Areas through Informatization: "Dual-teacher Teaching" Model Practice</i>	Han Rongrong	Wang Jixin	2018	Master Thesis
6	<i>Ridge Digital School: Teaching Organization and Management Practice Research of Synchronous Interactive Blended Class</i>	Jin Hong	Wang Jixin	2018	Master Thesis
7	<i>Applied Practice Research of Synchronous Interactive Specified Courier Class-Taking Congyang County as an Example</i>	Tian Manman	Wang Jixin	2018	Master Thesis
8	<i>Practice Research of Informatization Promoting Compulsory Education Resources Sharing in Towns-Taking Xian'an District as an Example</i>	Yang Zhuo	Wang Jixin	2018	Master Thesis
9	<i>Observe Teaching and Learning Behavior and Analysis Effect of Synchronous Interaction Hybrid Classroom-A Case of Xian'an Experimental Foreign Language Primary School Music Course</i>	Yin Tao	Wang Jixin	2017	Master Thesis

10	<i>Research on the Development of Teaching Community Based on Dual Track Digital School-Take "Guo Linlu Primary School -Panyuan and Gankeng" Teaching Community in Xian'an as an Example</i>	Zhang Lei	Wang Jixin	2017	Master Thesis
11	<i>The Space Design of Longshang Digital School Cloud Platform Teacher Network Training</i>	Dong Yuwei	Wang Jixin	2017	Master Thesis
12	<i>Students' E-learning Space Design in the Perspective of Blended Learning-Take the Longshang Digital School Cloud Platform Students Space as an Example</i>	Liu Saina	Wang Jixin	2017	Master Thesis
13	<i>Research on the Evaluation and Promote Research of District Primary and Secondary School Teachers' Informationized Teaching Ability under the TRACK Vision</i>	Li Xiao	Zuo Mingzhang	2017	Master Thesis
14	<i>Teacher's Classroom Teaching Behaviors in the Informatization Environment</i>	Luo Haiyan	Zuo Mingzhang	2017	Master Thesis
15	<i>The Design and Implementation of Learning Union Based on Online Learning Environment: In the Case of Longshang Digital School</i>	Xu Xiao	Wang Jixin	2016	Master Thesis
16	<i>Teachers' Informatization Space Design-Take the Longshang Digital School Cloud Platform Teachers Space as an Example</i>	Zhang Qi	Wang Jixin	2016	Master Thesis
17	<i>Research on Construction Practice and Promoting Strategies of Educational Information Resources with Regional Characteristics</i>	Sun Xinfang	Zuo Mingzhang	2016	Master Thesis
18	<i>Instructional Pattern Construction and Practice Research of the Synchronous Interactive Class</i>	Li Yang	Zuo Mingzhang	2016	Master Thesis
19	<i>The Study on Teacher's Community of Practice Between Urban and Rural Areas under the Background of Synchronous Classroom- A Case of Xian'an in Hubei Province</i>	Wu Xiuyuan	Wang Jixin	2015	Master Thesis
20	<i>The Teaching Practical Study on How the Technology Promoted Rural Teaching Points to Set up Complete and Quality Courses-Take Xian'an District in Hubei Province as an Example</i>	Gao Meng	Wang Jixin	2015	Master Thesis

21	<i>Study on the Design and Practice of the Wechat Public Platform Applied in Regional Instructional Research</i>	Ma Qian	Zuo Mingzhang	2015	Master Thesis
22	<i>Instructional Pattern Construction and Practice Research of the Synchronous Interactive Class</i>	Li Meng	Zuo Mingzhang	2015	Master Thesis
23	<i>The Case Study of Rural Teaching Points Development under the Background of Educational Informationization</i>	Huang Yujun	Zuo Mingzhang	2015	Master Thesis
24	<i>Research on Construction Practice and Promoting Strategies of Primary and Secondary School Teachers' Cyberspace</i>	Zhang Ruijie	Zuo Mingzhang	2015	Master Thesis
25	<i>The Construction and Practice of Online Teaching Study Activities for Area</i>	Zhang Pingping	Zuo Mingzhang	2015	Master Thesis
26	<i>Online Collective Lesson Preparation Practice Research of Primary and Secondary School Teachers</i>	Wu Liu	Zuo Mingzhang	2015	Master Thesis
27	<i>Practice Research of "General Technology" Teaching in the Environment of "Class in ICTs"</i>	Wang Boyang	Zuo Mingzhang	2015	Master Thesis
28	<i>Investigation on Development Status and Promotion Strategy of Principle's Information Technology Leadership In Primary and Secondary School</i>	Zhu Yue	Zuo Mingzhang	2015	Master Thesis

**You can download the full text of the above Master Theses and PhD Dissertations in China Knowledge Network**

(<http://epub.cnki.net/kns/brief/result.aspx?dbPrefix=CDMD>) .

**The summary of the papers above are attached as follows:**

- 1) Research on the Improvement of Small-scale Incomplete Schools' Teaching Quality and Development of Teachers and Students Promoted by Informatization: Focusing on Community Construction

## **Abstract**

Socialism with Chinese characteristics has entered a new era. The main contradictions of our society have been transformed into the contradiction between the people's ever-growing needs for a better life with the unbalanced and insufficiency development. Our yearning for better education has become the pursuit of building a strong educational country in the process of modernization. The balanced development of basic education is an important task in the development of education in our country. Because of geographical location, teaching scale and other reasons, small-scale incomplete schools are short of excellent teachers, have the serious problem of implementing all courses and maintaining high quality, become the "last mile" in the balanced development of basic education in our country.

In the context of the balanced development of basic education in the new era, this study aims at the problems of insufficient teaching resources and the problem of implementing all courses and maintaining high quality, relying on the experiment plot in Xianan established by the Collaborative Innovation Center for Balanced Development of Informatization and Basic Education, centers on the development of teachers and students and the improvement of teaching quality, supported by modern information technology, introduces the idea of community and builds a community of teaching between urban and rural school, explores methods and paths for the construction of urban and rural teaching communities based on information technology through specific cases in experimental areas.

First of all, the author conducts in-depth investigation and analysis of the practical difficulties and causes of the small-scale incomplete schools as the "last mile" of the balanced development of basic education in our country, proposes the basic ideas for the teaching quality improvement of small-scale incomplete schools in the context of informationization—the urban-rural teaching community, to build a destiny education community of urban and rural, help small-scale incomplete schools realize the normal implementation of weak courses through better teachers from urban schools, promote in-depth communication and the transmission and accumulation of tacit knowledge through long-term continuous interpersonal interactions between urban and rural teachers and students, then help them realizing the mutual learning and common growth.

Secondly, this study carries out an overall framework for the urban-rural teaching community supported by information technology that aims to promote the improvement of teaching quality and the development of teachers and students based on a series of basic theoretical principles of community. Realizing the interconnection between urban and rural schools as well as teachers and students based on information technology. Taking the construction of regional school community as a basic organizational guarantee, building a teaching community between urban and rural schools,

focusing on the innovative application of teaching models, achieving the flow and sharing of better teachers and quality resources, improving the teaching quality of small-scale incomplete schools, cultivating urban and rural student community and teacher community by the evolution and development of urban and rural teaching communities, promote the development of teachers and students of small-scale incomplete schools.

Thirdly, this study summarizes the overall organizational structure of the urban-rural teaching community and the specific innovative teaching model based on the practice and exploring in the experimental area of Xianan by the Collaborative Innovation Center for Balanced Development of Informatization and Basic Education. The urban-rural teaching community constructed using information technology is represented in the organizational structure as a urban-centered school drives peripheral M (the value of M takes 1-3) small-scale incomplete schools. The N (1+M) teaching communities in the region constitute a community network, namely the school community. The teaching model innovation based on the urban-rural teaching community includes synchronous and interactive blended classrooms and synchronous interactive delivery classrooms.

Fourth, through investigations, research, and interviews, the author assesses the effect of the construction of urban-rural teaching communities on the teaching quality of small-scale incomplete schools and the development of teachers and students there, analyzes the influence of urban and rural teaching interaction under the framework of the community to the deep interaction and learning between urban and rural teachers and students. The results show that in the process of urban-rural teaching community construction, interaction between urban and rural teachers and interactive activities between urban and rural students has made some progress, but deep-level interactions still relatively weak. In comparison, activities under the framework of community have a positive effect on student learning, and the positive impact of students from small-scale incomplete schools is significantly higher than that of students in urban schools.

This study believes that the construction of urban-rural teaching communities supported by information technology is a practical and effective way of using information technology to improve teaching quality of small-scale incomplete schools and promote the development of teachers and students there. The future development needs to be more focused on the innovation application of teaching models, promotes deep interaction between urban and rural teachers and students in the framework of teaching community. Only in this way can the urban-rural teaching community built supported by information technology become able to obtain a steady stream of endogenous development motive force, and continue to evolve, develop and improve in the implementation of various new educational concepts and innovative applications of emerging information technologies, link urban and rural schools together to form a true educational destiny community, let the education of urban and rural areas share the same breathe and fate, create a better future for education!

## 2) Research of Teachers' Professional Development Ecology under Technological Diffusion

### Abstract

In the context of our country's commitment to building a strong country in education, the construction of the teaching team has great significance for improving the quality of education in China. However, the quality of education in teaching points, which are an important part of rural education in China, is still poor and restricts the development of basic education in our country. Moreover, due to the continuous development of society and the continuous advancement of education informatization, people are more eager for fair and quality education, and the requirements for teachers' teaching ability are also increasing gradually. Therefore, improving the teaching ability of teachers in rural teaching points has become the main demand for improving the teaching quality of teaching points. The rapid development of education information not only brings challenges for teachers, but also provides new ideas and opportunities for the improvement of teachers' teaching ability and the educational quality. For this reason, the author conducted an investigation and practice on the teachers' teaching ability of urban central schools and rural teaching points with the example of the Xian'an, Hubei province, in order to provide some reference for improving the teachers' teaching ability and the teaching quality of rural teaching points.

Firstly, the author investigates and analyzes the status quo of the teachers' teaching ability in central schools and teaching points of the Xian'an. And finds that there are still great differences between them in information skills, selection and use of teaching resources, application of teaching methods, teaching reflection and so on. Through in-depth analysis combined with interviews and field observations, it is found that the problems in the development of teachers' teaching ability in teaching points are mainly reflected in four aspects: First, there are problems in the development environment of teaching points teachers, such as the lack of timely management of informatization teaching facilities, and the imperfect teaching evaluation system; Second, although teachers already have the informatization teaching awareness, the role migration is not in place, and lack of initiative and continuity in action; Third, teachers' teaching skills are poor in information skills, low integration with teaching, conservative teaching models and so on; Fourth, the development path of teachers is single, participation is low, and results are not good.

Secondly, combining the investigations of the previous status quo and the analysis of the problems, the actual development needs of teachers in teaching points were clarified, and the countermeasures and suggestions for improving the teachers' teaching

ability were put forward, which mainly included four aspects: The first is to optimize teachers' development environment, synchronize the development of soft and hard resources, optimize the allocation of teachers, and improve the incentive mechanism for teachers; The second is to carry out multi-level teacher trainings of "awareness-ability-practice-reflection" to guide to realize the full transformation; The third is to encourage teachers to explore independently in practical teaching, carry out action research, strengthen collaboration with colleagues, and promote self-reflection; The forth is to strengthen the combination of urban and rural areas, strengthen the combination of virtual and reality, and build a community of urban and rural teachers to promote the common development of urban and rural teachers.

At last, the author participated in the practical exploration of teachers' teaching ability improvement in Xian'an following the tutor, and conducted in-depth interviews and follow-up observations with teachers to understand the effect and deficiency of practice. The practical activities for the improvement of teachers' teaching ability mainly include the following three parts: The first is the implementation of multi-level rotation training, paying attention to the different needs of teachers at different levels, conducting phased training and follow-up evaluation of training; The second is the construction of digital schools, which provided teachers with space for network training, and helped teaching teachers get rid of the constraints of time and hell; The third is the development of diversified long-term teaching and research activities, such as hand-to-hand cooperation between urban and rural teachers, excellent teacher demonstration teaching, inter-school observation, etc. Evaluating the effectiveness of practical activities can find that the teachers' informatization application ability has been improved and their sense of self-development has been enhanced; teaching problems have been continuously solved and daily teaching results have been improved; awareness of inter-teacher communication has increased and professional reflection ability has been strengthened. However, it can also be found that there are still some deficiencies in practical activities, such as the lack of participation in teacher training, the lag in the update of teaching resources in digital schools, and the problem of "taking the form" in some activities.

3) Current Situation Investigation of Teachers' Teaching Ability in Rural Small-schools and Promotion Strategy under Informatization-Take Xian'an Experimental Area as an Example

## **Abstract**

Compulsory education is the foundation of national education and it occupies an important position in the education system of our country. To achieve a balanced and high-level development of compulsory education is of great significance in improving the quality of citizens and promoting the realization of education fairness. In China, due to inconsistent economic and social development, the gap between urban and rural areas is being widened year by year, which has had a profound impact on education. In some rural and weak schools, due to the lack of educational resources and limited ability of teachers, the problem of quantity and quality in teaching is still serious. With the rapid development of information technology, we can't help thinking whether we can make innovations in teaching mode with the help of information technology, making it an important way to improve the quality of rural teaching and promote the balanced development of urban and rural education. Therefore, the professor Tang Min of State Department Counselor proposed "Double Teacher Teaching" under the support of information technology. The application of the "Double Teacher Teaching", the city's high-quality teaching resources will be synchronized to the weak schools in poverty areas to help these schools improve the quality of teaching and the level of teachers, so that every rural student can enjoy the teaching of excellent teachers and grow together with the urban students. Inspired by this, the paper takes the model of "Double Teacher Teaching" as research object and summarizes the process and method of applying this model in specific teaching. On this basis, the practical effect of the "Double Teacher Teaching" was tested, and the problems existing in the practice process were analyzed and corresponding improvement strategies were proposed.

Firstly, the author investigated the current teaching status of weak schools in rural areas. The teaching point of Daba Village in Pengshui County, Chongqing was selected as the research object. Based on the questionnaires and interviews, the author analyzed the implementation of education in teaching point of Daba village from the aspects of condition, teachers, students, and summarized the problems existing in the teaching. The first, Due to lack of professional teachers, some courses cannot be set up properly. The

second, Rural teachers' information literacy is low and their information technology ability is poor. The third, Teacher training is not reasonable enough and their professional development is difficult to guarantee. The fourth, Students' academic performance is unsatisfactory, and their recognition of themselves also is low.

Secondly, based on the investigation and analysis of the status quo of the rural weak schools in the previous period, the author introduced the "Double Teacher Teaching" proposed by Professor Tang Min of the State Council. And explaining the concept and characteristics of this model in depth. The "Double Teacher Teaching" as an innovative teaching model, it includes five elements: disciplined teachers, local curriculum teachers, local classroom students, high-quality teaching resources and technical support teams. According to the different tasks need to be completed at different stages, the author also divided the implementation process of "Double Teacher Teaching" into three stages: before class, during class, and after class.

Finally, according to the implementation process of "Double Teacher Teaching", the author carried out the "Double Teacher Teaching" practice at the teaching point of the Daba village of Pengshui County, and analyzed the teaching process of music course in primary school. Through questionnaires and interviews to understand the role of "Double Teacher Teaching" in promoting the development of teachers and students. In addition, the author also expounds the existing problems in the practice of "Double Teacher Teaching", and proposed improvement strategies from resource production and teacher interaction.

#### 4) Promoting a Balanced Development of Compulsory Education in Rural Areas through

## **Abstract**

At present, many remote rural teaching sites have problems of quantity and quality in teaching, the shortage of teachers, which are still prominent. They have become the last kilometer of balanced development of basic education. To solve these problems, Hubei Co-Innovation Center for Educational Informatization and Balanced Development of Basic Education tried to use information technology to explore effective strategies and methods for helping teaching sites to open quantity and quality nationally-prescribed courses. It established Digital Schools for Rural Area and applied it in the Xian'an Experimental Area. Among these, Synchronous Interaction Hybrid Classroom is an important aspect. However, a new teaching model, which is different from the traditional classroom, it puts forward new requirements for the teaching organization and management, and it has also become an important aspect affecting the improvement of teaching effect. For this reason, the author conducted an investigation on the current state of the organization and management of Synchronous Interaction Hybrid Classroom with the example of the Xian'an Experimental Area, in order to find a strategy for constantly improving the teaching practice of Synchronous Interaction Hybrid Classroom.

Firstly, the author describes the design and construction of Digital Schools for Rural Area, and based on this, led to the innovation teaching model: Synchronous Interaction Hybrid Classroom, combined with the concept, characteristics and teaching mode of Synchronous Interaction Hybrid Classroom, analyzed the content and significance of teaching organization management. In general, Synchronous Interaction Hybrid Classroom is the form of teaching, in which the teachers of Center school face both local classrooms and remote classrooms. Any of these classes will affect the learning of students in other classes. Therefore, compared with the traditional classroom, its teaching organization and management is more complicated, and the impact on the learning of urban and rural students is more obvious, the close collaboration between urban and rural teachers is needed.

Secondly, taking the Xian'an Experimental Area as an example, the present situation of the teaching organization and management of Synchronous Interaction Hybrid Classroom in Digital Schools for Rural Area was analyzed. combined with previous research and field research, the main contents of teaching organization and management

of Synchronous Interaction Hybrid Classroom were determined, including the organization and management of preparation before class, the organization and management of classroom teaching, and the organization and management of feedback and tutoring after class.

At last, combining the analysis of the previous status quo and the analysis of the problems, the realistic needs of the current teaching activities were clarified, and optimizing strategies for the teaching organization and management of Synchronous Interaction Hybrid Classroom in Digital Schools for Rural Area was proposed, which specifically included four aspects: The first is to take care of differences between urban and rural students on the basis of Unified and reasonable teaching arrangement, involving the formulation of overall teaching plans and the design of differentiated teaching; The second is to carry out teaching activities in an orderly manner while maintaining class disciplines in urban and rural areas, including classroom activities, discipline maintenance, and classroom atmosphere construction; The third is to enhance the effectiveness of classroom teaching activities in strengthening the interaction between teachers and students in urban and rural areas; The fourth is to continuously improve teaching in multi-level interactions and feedbacks under the curriculum, including homework feedback and question-answering tutoring of rural teachers, discussion of problem-sharing and improvement strategies between urban and rural teachers, and communication between urban and rural teachers as well as urban and rural students.

5) Ridge Digital School: Teaching Organization and Management Practice Research of Synchronous Interactive Blended Class

## **Abstract**

At present, many remote rural teaching sites have problems of quantity and quality in teaching, the shortage of teachers, which are still prominent. They have become the last kilometer of balanced development of basic education. To solve these problems, Hubei Co-Innovation Center for Educational Informatization and Balanced Development of Basic Education tried to use information technology to explore effective strategies and methods for helping teaching sites to open quantity and quality nationally-prescribed courses. It established Digital Schools for Rural Area and applied it in the Xian'an Experimental Area. Among these, Synchronous Interaction Hybrid Classroom is an important aspect. However, a new teaching model, which is different from the traditional classroom, it puts forward new requirements for the teaching organization and management, and it has also become an important aspect affecting the improvement of teaching effect. For this reason, the author conducted an investigation on the current state of the organization and management of Synchronous Interaction Hybrid Classroom with the example of the Xian'an Experimental Area, in order to find a strategy for constantly improving the teaching practice of Synchronous Interaction Hybrid Classroom.

Firstly, the author describes the design and construction of Digital Schools for Rural Area, and based on this, led to the innovation teaching model: Synchronous Interaction Hybrid Classroom, combined with the concept, characteristics and teaching mode of Synchronous Interaction Hybrid Classroom, analyzed the content and significance of teaching organization management. In general, Synchronous Interaction Hybrid Classroom is the form of teaching, in which the teachers of Center school face both local classrooms and remote classrooms. Any of these classes will affect the learning of students in other classes. Therefore, compared with the traditional classroom, its teaching organization and management is more complicated, and the impact on the learning of urban and rural students is more obvious, the close collaboration between urban and rural teachers is needed.

Secondly, taking the Xian'an Experimental Area as an example, the present situation of the teaching organization and management of Synchronous Interaction Hybrid Classroom in Digital Schools for Rural Area was analyzed. combined with previous research and field research, the main contents of teaching organization and management

of Synchronous Interaction Hybrid Classroom were determined, including the organization and management of preparation before class, the organization and management of classroom teaching, and the organization and management of feedback and tutoring after class.

At last, combining the analysis of the previous status quo and the analysis of the problems, the realistic needs of the current teaching activities were clarified, and optimizing strategies for the teaching organization and management of Synchronous Interaction Hybrid Classroom in Digital Schools for Rural Area was proposed, which specifically included four aspects: The first is to take care of differences between urban and rural students on the basis of Unified and reasonable teaching arrangement, involving the formulation of overall teaching plans and the design of differentiated teaching; The second is to carry out teaching activities in an orderly manner while maintaining class disciplines in urban and rural areas, including classroom activities, discipline maintenance, and classroom atmosphere construction; The third is to enhance the effectiveness of classroom teaching activities in strengthening the interaction between teachers and students in urban and rural areas; The fourth is to continuously improve teaching in multi-level interactions and feedbacks under the curriculum, including homework feedback and question-answering tutoring of rural teachers, discussion of problem-sharing and improvement strategies between urban and rural teachers, and communication between urban and rural teachers as well as urban and rural students.

## 6) Applied Practice Research of Synchronous Interactive Specified Courier Class-Taking Congyang County as an Example

### Abstract

Education fairness has been attached great importance to by the country, and the balanced development of basic education is the premise of promoting education equity. In many places, education informationization is adopted to promote the balanced development of compulsory education. Chongyang County, Hubei Province, began to implement synchronous interactive dedicated classes in 2014 under the background of more rural teaching sites, weak teacher resources and uneven music art courses, through a way of "one-to-two" or "one-to-three" to achieve live teaching in rural schools. As a major measure of education informatization in Chongyang County, does this new teaching mode solve the problem of rural schools? How has the application been working so far? None of these problems has a systematic conclusion. In this paper, literature research, questionnaire survey and interview are used to investigate 14 teaching points that have been implemented in Chongyang County, starting from three angles: teachers, students and assistant teachers. This paper makes a comprehensive investigation on the application effect of synchronous interactive courier classroom, analyzes deeply according to the investigation materials, and puts forward the corresponding optimization strategies for the existing problems, so as to provide reference for the education department to manage the synchronous interactive courier classroom, and to provide suggestions for teachers to improve their teaching work. This article is divided into five chapters:

Chapter one: introduction. The research background, problems, contents, significance, train of thought and research methods of this paper are described in detail. The domestic and foreign research status of synchronous classroom and special dedicated classroom is combed with the method of literature research.

Chapter two: a summary of synchronous interactive dedicated class. This paper introduces the definition of concept, the background of synchronous interactive dedicated classroom in Chongyang County, teaching environment and teaching structure, organization and management, and system construction.

Chapter three: synchronous interactive dedicated classroom application survey. By using the method of literature research, this paper looks up the evaluation index of teaching effect put forward by experts and scholars at home and abroad, and designs

student questionnaire, assistant teacher questionnaire, student interview outline, assistant teacher interview outline, lecture teacher interview outline, combined with the characteristics of synchronous interactive dedicated classroom. This paper investigates the application effect of synchronous interactive courier classroom from three angles: student, assistant teacher and lecture teacher, processes the investigation data with SPSS 22 and Microsoft Excel 2010, and summarizes the application effect of synchronous interactive courier classroom.

Chapter four: the problems and optimization strategies in the application of synchronous interactive dedicated classroom. Combined with field investigation, the problems in the application of synchronous interactive dedicated classroom are briefly described, and the corresponding optimization strategies are put forward.

Chapter five: research summary and prospect. This paper summarizes the research, reflects on the shortcomings, and looks forward to the research.

7) Practice Research of Informatization Promoting Compulsory Education Resources Sharing in Towns-Taking Xian'an District as an Example

## **Abstract**

At present, there are still many problems with the balanced allocation of compulsory education resources in China. There are some universal phenomenon in rural schools, such as the shortage of teachers, not enough and not good classes, the obvious gap of teaching resources with urban schools, which seriously restrict the balanced development of compulsory education and hinder the realization of educational fairness in our country. It is an effective way to solve the imbalance of the allocation of compulsory education resources in our country by means of information technology to promote the sharing of high quality compulsory education resources. Taking Xian'an district as an example, through questionnaire investigation and interview, the author investigates the current situation of compulsory education resource sharing through the construction of Xian'an Digital School in Xian'an district, in order to seek the strategy of improving the practice effect of compulsory education resource sharing.

First of all, the author describes the main problems faced by the allocation of compulsory education resources in Xian'an district and the construction concept of Xian'an Digital School. At rural schools in Xian'an district, the lack of teachers leads to not enough and not good classes phenomenon generally exist and lack of teaching resources make teaching form single. In view of these problems, Xian'an Digital School improves the teaching environment of rural schools through the construction of information infrastructure, transport urban schools' quality teacher resources to rural schools through the establishment of synchronous interaction hybrid classroom and synchronous interaction special delivery classroom, make teachers in Xian'an district share high quality digital teaching resources, and improve teaching quality by constructing teaching resources database.

Secondly, the author investigates and analyzes the present situation of compulsory education resources sharing in Xian'an district, from the aspect of information infrastructure construction, using synchronous classroom to share teacher resources, teachers' satisfaction with digital teaching resources and their participation in the sharing of educational resources. Through the investigation, the author finds that Xian'an district has achieved certain results in the practice of sharing compulsory education resources, which are mainly reflected in four aspects. First, the problems of not enough and not

good classes in rural schools are effectively solved. Second, the students' interest in learning have been improved at urban school and rural schools. Third, the teaching quality in rural schools has been improved. Fourth, teachers' information-based teaching ability has been improved. There are also some problems with the practice of sharing compulsory education resources in Xian'an district, which are mainly reflected in four aspects. First, in the synchronous classroom, problems in teaching equipment are difficult to be solved in time in rural schools. Second, the teaching experience of the teachers in the synchronous central school need to promote. Third, the teaching resources in the resource bank can't fully meet the teachers' teaching needs. Fourth, it is a failure to fully mobilize teachers' enthusiasm to participate in educational resource sharing.

Finally, combined with the investigation of current situation and the analysis of problems, this paper puts forward the optimization strategy of sharing compulsory education resources in Xian'an district. It includes five aspects. First, regular personnel should be sent to maintain the synchronous classroom teaching equipment in rural schools, and solve the problems in time. Second, the communication between the teachers of urban schools and the teachers of rural schools should be strengthened, and the experience of synchronous classroom teaching of the teachers in urban school should be improved. Third, the government should increase capital investment to enrich the quality teaching resources types in teaching resources bank. Fourth, select excellent teachers to prepare lessons collectively and unify the construction of teaching resources. Fifth, improve the incentive mechanism and encourage more teachers to participate in the sharing of educational resources.

- 8) Observe Teaching and Learning Behavior and Analysis Effect of Synchronous Interaction Hybrid Classroom-A Case of Xian'an Experimental Foreign Language Primary School Music Course

## **Abstract**

To promote the balanced development of compulsory education and narrow the gap and the high-quality education resources allocated rationally between urban and rural areas, which is a significant goal of China's basic education at this stage. However, there is most of bad phenomenons that it is lacking sufficient and good course and faculty in rural small-teaching schools, which is one of the significant factors to hinder the balanced development of compulsory education. Synchronous interaction hybrid classroom is an innovative measure as education information construction project of Xian'an District, which achieved remarkable results to resolve that bad phenomenons. And this is a new model of instruction that is more and more complex, changeful, comparing with the traditional teaching, so encountering mangy problems and challenges in teaching process. How to take qualitative and quantitative analysis of teaching and learning behavior with the new mode, and reveal the operation mechanism, existing problems and provide optimization strategies of improving the effect, which is a new topic of theoretical significance and practical value.

This essay's point of penetration is teaching and learning behavior and effect, and takes a case of fascinating music course. According to the relevant theories and methods of classroom observation, the author designs an observation scale and analysis method. Meanwhile it begins to observe and record the teaching and learning behavior in music classroom and investigates the effect. According to record result, analyzes the problems of teaching and learning behavior in some detail. The author provides optimization strategies of solving problems, hopes to achieve promotion teaching effect of Synchronous interaction hybrid classroom in the end.

Firstly, the author describes Synchronous interaction hybrid classroom concept, teaching mode, technology, and so on, letting more people know the classroom, and analyzes music classroom characteristics of strong practicality, strong interaction, using information technology seriously, comparing with other subjects.

Secondly, the author designs a Synchronous interaction hybrid classroom behavior observation scale and analysis method, according to the “FIAS、ITIAS、TBAS”and it begins to observe and record Synchronous interaction hybrid classroom music course of

Xian'an experimental foreign language primary school connected with Liuci and Sujiafang rural schools and analyze teaching and learning behavior.

Next the author designs analysis dimension of teaching effect, according to the "compulsory education music curriculum standard", investigates and analyzes teaching effect.

Ultimately, the author discovers behavior troubles that the leading-in way of classroom teaching is too single, the instruction is not sufficient and careful, the lack of interaction and the students' peer discussion and ask questions, basing on analyzing the behavior and teaching effects, and propose the optimization strategies that the change of teaching concept and the promotion of teaching environment, optimizing teaching design and strengthening collaboration of the remote teacher, combining small class instructional mode with regular class teaching, effective integration of "Hand in hand" activities and practical teaching.

- 9) Research on the Development of Teaching Community Based on Dual Track Digital School-Take "Guo Linlu Primary School -Panyuan and Gankeng" Teaching Community in Xian'an as an Example

## **Abstract**

Accompanied by the rapid development of society, education fairness has got more and more attention. At present, due to the unbalanced development of economic development, leading to the vast rural primary school, especially the teaching points have the shortage of teachers and lack of teaching resources. It's difficult to open the prescribed courses and the quality of the teaching needs to be improved. How to promote the balanced development of basic education and help rural education to overcome the difficulties faced by the education system has become an urgent problem to be solved. The rapid development of educational information has opened up a new way to promote the fairness of education. The dual-track digital school with the teaching community as the constituent units have emerged and has played an important role in the balanced development of basic education.

This paper through the use of literature research, observation method, interview method, questionnaire and so on. Take "Guo Linlu Primary School - Panyuan, Gankeng" teaching community in Xian'an of Hubei Province as an example, to investigate the actual development of the teaching community Situation, investigating the actual development situation of teaching community, summarize the deficiencies in the process of development, and carefully analysis the related causes . Put forward the corresponding improvement strategy combined with the reasons and hope to provide certain reference for the subsequent development of teaching community .

This paper includes six chapters, the specific content as follows:

The first chapter is the introduction. This part mainly introduces the basic situation of the research, including the research background, the research purpose and the significance, the research thought and the content, the research method, and further elaborates the related research present situation both at home and abroad.

The second chapter is the double track digital school and its teaching community. This chapter introduces the dual - track digital school , concept and features of the teaching community , the role and value of the teaching community.

The third chapter is the investigation of the development of "Guo Linlu Primary

School - Panyuan and Gankeng" teaching community. In this chapter, the teaching community is introduced in detail from four aspects: concrete profile, preliminary construction, practice exploration and the current situation of the development.

The fourth chapter is the deficiency of the development of the teaching community of "Guo Linlu Primary School - Panyuan and Gankeng". The main content of this chapter is to combine the actual development of "Guo Linlu Primary School - Pan Yuan and Gankeng" teaching community and summarize its development faces a series of problems.

The fifth chapter is the improvement strategy of "Guo Linlu Primary School - Panyuan and Gankeng" teaching community. Combined with the analysis of the causes of the fourth chapter, the paper puts forward the concrete strategy which is conducive to the sustainable development of the teaching community.

The sixth chapter is the summary and prospect. Summarizes the research papers, Clarify the concrete achievements of the research, and further introduce the shortcomings of the research. In addition ,prospects for the future research.

## **Abstract**

With the development of network and communication technology and the further development of teachers' Continuing Education, network training has become a new model for teachers to improve their professional ability and build up a high-quality teaching team. Due to the breaking of the separation of time and space, the network training is more flexible and open than the traditional teacher training, which alleviates the contradiction between work and study, and broadens the scope of teachers' cooperation and communication. Therefore, network training is favored by the administrative department of education.

Currently, with the deepening of the urbanization process, the basic education is not balanced. The rapid increase of urban students and the decrease of the number of students in rural areas led to the original complete school into teaching point. The schools in a better condition are merged, but for the schools of poor remote rural areas , the merger of the school is obviously unrealistic. Therefore, the teaching point of this kind of school is of great significance to the healthy and stable development of basic education in china. However, there is a core problem in the teaching point is the shortage of teachers, in addition to the limited number of teachers, teachers' professional ability level is not high. Hubei Province, Xian Ning city as an example, alone from the academic level, about 73% of teachers are only secondary education. Therefore, the professional level of teachers need to be improved, because only the ability of teachers to put up, the quality of teaching can be raised. The network training breaks the limitation of time and space, and opens up a new way for the improvement of teachers' professional ability.

This paper is based on the needs of teacher training of Xian An experimentation area. Based on the theoretical analysis, the contrast of the related construction cases and the analysis of the statistical data, the author designs the network training space for

teachers, providing effective tool and carrier for Xian An experimentation area teachers. This thesis has six chapters. The first part is a prolegomenon, which outlines the context of the topic, the research goal, significance, the study content, the study mind and methods, study development in and out of home and the rationale. The second part holds an inquiry to the network training needs of teachers in Xian An experimentation area, gathers statistics analytical data, summarizes survey results. The third chapter combs the thoughts and guiding principles of the network training space design. The fourth, five is the core content of this article. First of all, the author designs the overall information architecture of the network training space, and then designs the function structure of each module, the process and the output of the interface prototype. The sixth chapter summarizes the problems and puts forward the prospect.

11) Students' E-learning Space Design in the Perspective of Blended Learning-Take the Longshang Digital School Cloud Platform Students Space as an Example

## **Abstract**

With the advent of the information age, the continuous development and application of new technology and new ideas has brought great opportunities and challenges to the reform of teaching methods. The way of learning needs to change in the direction of more diversified, personalized, open and free to follow the pace of the rapid development of education information. The change of learning style needs the favorable learning environment as the support, and the E-learning space arises at the historic moment. The E-learning space is devoted to the education service, however, education should focus on students, So it is very important to constructing the students' E- learning space.

Firstly, this paper analyzes and summarizes the relevant literature on the students' E-learning space and the blended learning, then this paper introduces and analyzes the construction of the students' E-learning space in the current mainstream cloud platform, determining the content and characteristics of the design of students' E-learning space, and pointed out the shortcomings of students E-learning space in the current cloud platform. Secondly, from the theoretical level, the value orientation and influencing factors of students' E-learning space in the perspective of blended learning has been discussed. In terms of value orientation, it includes online education and blended learning. As for influencing factors, it contains stimulation of learning motivation, learning resources and learning community. Then, through the questionnaire survey of teachers and students on the needs of students' E-learning space design, this paper deeply understands of the problems encountered by students in learning, used to guide the design of E-learning space, resources and activities. Then, this paper clears guidelines and principles of students' E-learning space design, and constructs the overall structure of the student space in the LongShang digital school cloud platform according to the survey results, designing the space form this five module: course study, extra reading, homework center, online test and personal center, and designs the learning resources and learning activities of the page. Finally, this article summarizes the whole research process, and rethinks the defects of this study, which lacks on the students' E-learning space and does not include application study.

At the present, with the development of education information, the traditional learning style seeks change to adapt to the changes of the times. Based on the perspective of blended learning, this study provides students with a variety of learning methods, and starts the learning needs of students to build a free, personalized, open network learning space for learners.

12) Research on the Evaluation and Promote Research of District Primary and Secondary School Teachers' Informationized Teaching Ability under the TRACK Vision

## **Abstract**

In the 21st century ,Internet change the time .As the quick update of technology and knowledge, teachers' teaching ability and students' learning ability are put forward new requirements. Teacher, student, teaching media are the three main aspects in the development of informationized education process, teachers are the backbone link, the role of teachers is more flexible. So the teachers' professional development and education informatization are closely two principal themes, while teachers'informationized teaching ability is the expression of the teachers' comprehensive qualities.

Throughout the current literature on teachers' information technology teaching ability, the researchers mostly focused on informationized teaching ability training and promote research, case study, or from the aspects of overall investigating a regional present and improving situation of teachers' informationized teaching ability. The author screens literature about teachers' information technology teaching ability evaluation, finds that there are literature involves the evaluation of the overall principles of teacher evaluation, the final purpose of evaluation, there are rarely literature mentioned the specific operational implementation of teachers' information technology teaching ability evaluation scheme. In this paper, the research puts emphasis on the teachers' informationized teaching ability of evaluation and follow-up tracking the improvement of teachers' informationized teaching ability.

In the first chapter, the research background、research purpose and significance 、research methods、research status at home and abroad are described.

The second chapter expounds the theoretical basis of this article, this article first study the status quo of teachers' information technology application situation, in order to provide a practical assessment scale. Based on T - pack theory as the instruction, the connotation of teachers' informationized teaching ability research, on the basis of "the ministry of education of the national primary and secondary school teachers' informationized ability promotion project" and "primary and secondary school teachers' informationized application ability standard" of 2014 ,the author sets for primary and secondary school teachers' informationized teaching ability evaluation index in detail.

The third chapter expounds the formulation and modification process of the evaluation scale. According to the time dimension before, class, after class and the spatial dimension for teacher why to teach, what to teach and how to teach ,to make the evaluation indicators of teachers'

informationized teaching ability. The author uses the Delphi method, lines with relevant experts and first-line teachers, in order to perfect the modified scale, ensure the demonstration and feasibility of the inventory.

The third chapter expounds the implementation of teachers' informationized teaching ability evaluation. According to the measurement results, the author test the reliability and validity of the evaluation scale. Then the author analyze the questionnaire data, concluding teachers' informationized teaching ability level.

The five chapter uses case study method, the author selects case teacher, and evaluates the teacher's informationizationized teaching ability. With the method of continuous measurement, continuous longitudinal tracking evaluation of teachers for many times, finally summarize the evaluation methods of teachers' informationized teaching ability.

The sixth chapter expounds the conclusion of the whole research process and analyses the shortcoming of the whole research.

## **Abstract**

Teachers' classroom teaching behavior is the performance of the teachers' comprehensive quality, it determines the efficiency and quality of teaching. The roles of revolutionary in the development of information technology to the education teaching should not be ignored. The changing rules and characteristics of teachers' classroom teaching behavior under informationization environment and technical support for teaching and so on, which has become a concern in education field.

This paper starts from the theoretical and practical aspects. First, the analysis of the research status at both home and abroad. And on this basis, this paper explores the rules of teachers' teaching behavior in the environment of informatization and the support of information technology for teachers' teaching behavior. Based on the above research, this paper puts forward the improvement related suggestions to perfect the teacher's teaching behavior under the multimedia environment. According to the above ideas, this paper studies from the following six chapters:

Chapter one is the introduction. Elaborate the background, the research status at home and abroad, core concept definition, research content and method to clarify of this paper.

Chapter two is the design of observation and analysis method. First, this paper introduces the characteristics of Class Access to ICTs and Smarter Classroom. Draw lessons from the domestic Information Technology-based Interaction Analysis System, this paper builds a set of coding system.

Chapter three is to use the designing analysis method, with the case of the Class Access to ICTs to analysis.

Chapter four is to use the designing analysis method, with the case of the Smart Classroom to analysis.

Chapter five is the core part, it mainly compares the generalities and differences of teacher's classroom teaching behavior in information environment. Based on the above results, this paper put forward related strategies which support for teacher's classroom teaching behavior from informatization environment.

Chapter six is the conclusion and prospect. This part summarizes the research achievements and the deficiency of this thesis, and puts forward the prospects.

14) The Design and Implementation of Learning Union Based on Online Learning Environment: In the Case of Longshang Digital School

## **Abstract**

The development of Internet and information technology makes all kinds of information content in television, computer, mobile phone and all sorts of compatibility of digital media flow terminal to achieve the sharing, get information into the network age. The arrival of information age also update the concept of human study, the traditional learning mode is difficult to satisfy human's growing desire for knowledge acquisition of information, and break the time and space in ubiquitous learning style is people need. The development of network teaching to the teaching and learning mode has brought the new dawn, but many rural areas due to not keep pace with times all aspects of development, the quality of education is still backward, and the gap is also gradually expanding of the city. This case, you can use the network to set up a communication bridge between urban and rural areas, the formation of learning union between both of urban and rural teachers and students, to promote the balanced development of the urban and rural education.

This paper divided into six parts, the concrete content as follows:

The first chapter is introduction, this paper expounds the research background of this paper, the research purpose of this thesis and research meaning, research contents and research methods of the general introduction.

The second chapter analyzes the research status at home and abroad, mainly including space in online learning, learning community of the analysis of the status quo, the inter-school cooperation alliances with common mode at home and abroad were reviewed and the research were reviewed.

This paper related concepts in the set, the third chapter briefly introduces the consortium and network learning space including the relative concepts of network teaching platform and contact, and has made the related association in learning and learning community set.

The fourth chapter for network learning environment in the study design and construction of a joint venture. Analyzed the design of the network learning environment in learning complex background, idea and should have the function. Learning complex main adhering to the "N times (1 + M) model", the basic idea of the design right from the

beginning, the design of the proposed learning consortium must comply with the human-based concept, the practical idea, the education fair idea and concept of social interaction, under the guidance of design concept, put forward the design principle of network learning environment in learning complex are: principle, pay attention to the applicability of the different objects, pay attention to the principle of fair distribution of resources, pay attention to the interactive principle of audience and the audience.

Fifth chapter for network learning environment in learning complex design practice, this paper select on the network teaching platform of LONGSHANG digital school as an example, the digital school of several commonly used based on the analysis of digital teaching mode, according to the design concept and design principles, building the learning design strategy of a joint venture, including participants activity strategy, resource strategy and evaluation system, etc.

As the summary and outlook, chapter 6 summarizes this study, put forward the shortcomings existing in the research, the paper points out the ongoing work of the next.

15) Teachers' Informatization Space Design-Take the Longshang Digital School Cloud Platform Teachers Space as an Example

## **Abstract**

"The national medium and long term educational reform and development program (2010 - 2020)" stressed: "information technology has a revolutionary impact on the development of education, we must attach great importance to it." The development of educational information plays an important role in promoting the modernization of educational content, teaching means and teaching methods. As the core and developing direction of education informatization, the construction of network learning space is the key content of the current information construction. And as the main content of the learning network for all through the construction, the construction of teachers' informatization space will help to improve the teacher's ability of applying information technology, with the advantage of the cloud computing and big data, to provide teachers personalized service. The construction of teachers' informatization space can break through the limitation of time and space, and narrow the gap between urban and rural education, share the high quality education resources, The information network space can expand the interaction between teachers and students from the school and classroom, the interaction and communication between teachers and students, teachers and parents can be based on the network to interaction too. Teachers can explore the ways and methods of deep integration of information technology and education teaching based on information space, to carry out teaching research and network research, to realize the continuing education and lifelong learning.

I have the honor to participate in the mentor Professor Wang Jixin and his team in construction the LongsShang digital school cloud platform related research work, in the project team I was mainly responsible for the LongsShang digital school cloud platform teachers space preliminary analysis and prototype design research . Therefore, this paper based on the summary work of the team and my personal research results, take the design practice of the LongsShang digital school cloud platform teachers

space as example for the teachers' informatization space design research.

This paper is divided into six chapters, the specific content as follows:

The first chapter is the introduction. The research background, purpose and significance of the research, the main contents and methods of the research are described in this paper. The research status at home and abroad is analyzed, and the related concepts are defined.

The second chapter is the research preparation, mainly through the current mainstream of the four types of teacher space construction case for the introduction and analysis, determine the direction and specific objectives of the study and the specific design content of the teacher space. Specifically, through the Sina blog, Jilin education community, the World University City, Xiangyang educational resources public service platform for the four types of teachers' space construction case investigation and analysis. It is pointed out that the construction of the teachers' space should be four aspects of teacher's teaching, research, interaction and resource construction.

The third chapter is the demand analysis of teachers' space design. Mainly through the methods of questionnaire and interview, to Hubei Xianning Xian'an district teachers as the research object, under the information environment of teachers teaching present situation and the demand, teacher development present situation and the demand, resources construction present situation and demand, interpersonal interaction status and demand were investigation and analysis.

The fourth chapter is the functional design of the LongsShang digital school cloud platform teachers space. First introduced the LongsShang digital school cloud platform architecture design, summed up the teachers space design target, design idea, design principle, points out that teachers space of main function modules including teaching preparation module, teacher module development, resource center module, application module personal center module and the curriculum center module.

The fifth chapter is the LongsShang digital school cloud platform teachers space design and main part of the page design activities. This paper mainly introduces the

design of landing interface, the design of individual center page, the page design and activity design of teaching preparation, the page design and activity design of the teacher development.

The sixth chapter is the summary of the study and follow-up research questions. This research is summarized, the author puts forward the shortcomings of the author in the research process, the next step to be carried out to look forward to the work.

16) Research on Construction Practice and Promoting Strategies of Educational Information Resources with Regional Characteristics

## **Abstract**

To strengthen the design, development and utilization of educational resources, achieve the resource sharing and promote the teaching effectiveness are the prerequisite and foundation for the rapid and further promotion of regional basic education informatization. However, the construction of regional education resources has many insufficiencies although it has obtained certain result, such as multi-channel management, redundant construction, different standards, immature cooperative building and sharing mechanism and the poor personalization and pertinence. Also, the problems on the deficiencies of overall planning, leadership, organization and human resources, the delay and insufficient of external support, and the unfounded development plan for the construction of education resources affect the promotion and development of the construction of education resources in the area. So, solving the problems of regional education resources construction and developing personalized and applicability resources for meeting the need of the regional practical teaching. Based on the construction of regional characteristic education information resources, the paper analyzes the construction current situation and application requirements of education resources in Xianan district and Caidian district, and illustrates the problems in the process of regional education resources construction and application. And providing a case study of digital curriculum resource construction of Xianan district, it puts forward the constructional strategies in six aspects: infrastructure construction, overall plans, specialty construction activities, teaching research, application level of teachers and normal mechanism in order to provide advices for the construction of regional educational information resources. Based on the idea above, this research unfolds in five chapters:

Chapter One is the introduction, which the presentation of background, significance, research actuality in overseas and domestic, the core concepts and the research plan.

Chapter Two is the analysis of the construction and application status of regional education resources. Based on Xianan District and Caidian District, the paper conducts field research and summarize the construction and application status of regional education resources, and put forward the problems existing in the regional education information resources and the train of thought to solve the problem.

Chapter Three is the case study on the construction of regional characteristic

education information resource. The part introduces the actual situation about the construction of regional characteristic education information resource in Xianan district, and conducts the case study on the construction of curriculum resource about English and maths, so that it can summarizes the strategies of the construction of the regional education information resources from the practice.

Chapter Four is the strategies of the construction of the regional education information resources. The part put forward the strategies which include the construction system and the advanced strategy.

Chapter Five is the conclusion and prospect. The part summarize the research achievements and the deficiency of this thesis, and put forward the prospects.

17) Instructional Pattern Construction and Practice Research of the Synchronous Interactive Class

## **Abstract**

Taking advantage of the methods of education informatization is an important way to guarantee the quality of teaching of teaching points in rural to promote the balance development of basic education. The synchronous interactive class is an effective way to solve the problem of teaching points lacking of teachers in rural and narrow the disparity in urban and rural areas. The instructional pattern of the synchronous interactive class is constructed based on the social constructivism theory by Lev Semenovich Vygotsky, the group social development theory by Judith Rich Harris and the characteristics of the synchronous interactive class, whose relationship between elements inside would be interpreted. This pattern has been used in the synchronous interactive class which including central schools and teaching points. The synchronous interactive class which includes Xian'an Foreign Primary School with Liuci teaching point and Su Jiafang teaching point, and the teacher and students were set to be the research object. Analyzing practice process, practice effects and existed problems of the instructional pattern of the synchronous interactive class on the side of instructional design and instructional process in combination with the specific teaching case and the teachers' interview. Furthermore, investigating the emotion and attitude of the teachers and students who have taken part in the synchronous interactive class in the way of interview. Finally, putting forward feasible strategies based on the application status and the practice research results about the synchronous interactive class in Xian'an district. Based on the idea above, my research unfolds into five chapters:

Chapter One is the introduction, which is the presentation about background, significance, research actuality, idea and method of this research.

Chapter Two is the instructional pattern construction of the synchronous interactive class. This part narrates the concept and characteristics of the synchronous interactive class, then describes the social constructivism theory by Lev Semenovich Vygotsky and the group social development theory by Judith Rich Harris, and interprets the object and property of the synchronous interactive class guided by these theories. Finally, constructing the instructional pattern of the synchronous interactive class, whose relationship between elements inside would be interpreted.

Chapter Three is the instructional practice results and analysis of the synchronous interactive class. The synchronous interactive class which includes Xian'an Foreign Primary School with Liuci teaching point and Su Jiafang teaching point, and the teacher and students were set to be the research object. Analyzing practice process, practice effects and existed problems of the instructional pattern of the synchronous interactive class on the side of instructional design and instructional process in combination with the specific teaching case and the teachers' interview. The practice research on instructional design includes the investigation of group's on-line lecture preparation and the interpretation of the instructional design's main contents. The practice research on instructional process includes the basic structure and interactive quality analysis of the synchronous interactive class' instructional process. Finally, investigating the emotion and attitude of the teachers and students who have taken part in the synchronous interactive class in the way of interview.

Chapter Four is the feasible strategies analysis of the instructional pattern of the synchronous interactive class. This part describes the application status about the Synchronous interaction classroom in Xian'an district, and put forward feasible strategies with the theory and practice.

Chapter Five is the conclusion and outlook. The whole research process is reviewed and the deficiencies should be cleared, then the further work that required is put forward.

18) The Study on Teacher's Community of Practice Between Urban and Rural Areas under the Background of Synchronous Classroom- A Case of Xian'an in Hubei Province

## Abstract

The balance of basic education is an important mission of education development in our country at present. However, because of the shortage of teachers, small-scale incomplete schools are still facing the serious problems of quantity and quality in teaching, which becomes the emphasis and puzzle of basic education balancing development. Therefore, people in Hubei Information and Basic Education Balanced Development Innovation Center try to solve this problem by information technology, and regards the empirical study in Xianan, Xianning, Hubei province for the first experimental region. Synchronous classroom is one of the most important measure in it. Now the synchronous classroom is developed smoothly and improved somewhat after a period of practice exploration, but it also encountered many problems. After researching the author found that there are two main factors which impact the promoting of synchronous classroom: First is the lack of communication between teachers from urban and rural areas which hinders the timely solving of problems in synchronous classroom. The other one is the uneven of teachers' information technology teaching ability which influenced the teaching efficiency in synchronous classroom. As a new perspective of teacher's professional development, community of practice can not only promote the interaction and cognition of teachers from urban and rural areas, but also can help them realize the knowledge building and resource sharing in the process of discussion and problem solving. For this reason, the author tries to promote the common professional development of teachers from urban and rural areas through practice community, hope for realizing the promotion of synchronous classroom teaching effect in the end.

First, the author makes a primary research of teacher's community of practice theoretically from the concept, characteristics, significance and values, summarizes the influencing factors of teacher's community of practice, which is the identity and status of participants, the common goals of members in the community and the common exploring problems. After the completely theoretical study of teacher's community of practice, the author proposes the construction strategies of teacher's community of practice from

urban and rural areas combining the demands of synchronous classroom and teacher's professional development in Xianan. First, create the real practice situation with the aim of improve the effect of synchronous classroom teaching. Second, establish an effective communication mechanism between teachers from urban and rural areas, build cooperation sharing learning culture. Third, encourage teachers' participating, promote the problem solving of synchronous classroom teaching and sharing knowledge construction from urban and rural areas.

Second, the author selects Xianan Biguiyuan Foreign Language Primary School and rural scaled schools connected with it (Liuci and Sujiafang) as a case to making empirical study. At first, the author builds teacher's community of practice between the central school and rural scaled schools that connected with it, including virtual teacher's community of practice based network and real teacher's community of practice based practical teaching situation. On the basic of which the author organizes the community members beginning the practice exploring according to activity strategies that are proposed in theoretical learning, it is conform the common exploring themes according to problems that were found in teachers' synchronous classroom teaching, starts discussion and find solutions aim at those problems, carry out practical study with the real case of "Making Nursery Rhymes into Paintings", which using the solutions to solve practical problems, and made a summarize reflection contrapose the practice, carried out a new turn of practice to solve problems constantly and improving the effect of synchronous classroom teaching.

At last, the author evaluated the effect of the building and activities that carried out in teacher's community of practice in Xianan. Generally speaking, after a period of practice exploring, the interaction and real practice have been carried out sequentially in teacher's community of practice, it not only promotes the realization of teachers and students with each other from urban and rural area schools, provides important support for leading teachers to arrange teaching contents, design instructional things, settling teaching activities, and promote the common development of teachers from urban and rural areas in cooperation and interaction. However, as the limit of time, teachers in this community have not form a comprehensive understanding of synchronous classroom teaching, hence the discussion and practice activities are limited at simple problems, they have not made breakthrough progress in the fundamental problem of the real-time interaction of teachers and students from urban and rural area schools.

19) The Teaching Practical Study on How the Technology Promoted Rural Teaching Points to Set up Complete and Quality Courses-Take Xian'an District in Hubei Province as an Example

## **Abstract**

Under the background of education fairness, urban and rural basic education is to promote the balanced development of compulsory education based on development strategy of our country. As the main form of rural compulsory education, the rural teaching points has the vital significance. The rural teaching points are small-scale incomplete primary school refers to the rural, sparsely populated, living scattered in remote areas, to complete the compulsory education. The rural teaching points will not only help solve the problems of the students from remote areas is difficult, but also can encourage students to neighborhood school, promote the education opportunity equality. In recent years, the provisions of the state of rural primary school as soon as possible open to the teaching requirements of a good lesson. But the rural teaching points are lack of teachers, class master problem, So it is difficult to realize national regulations on compulsory education.

In this paper, on the basis of literature research, the rural teaching points teaching status quo of on-the-spot investigation xian an district in hubei province, summary analysis of various kinds of factors influencing the rural teaching points open good lesson, And for the rural teaching points teachers interview investigation, understand the status of the basic teaching situation, the school students' learning situation. Based on the results of the survey, the end of the rural teaching points mainly exist the following questions:

(1) There was a terrible shortage of excellent teachers, teachers teaching ability is limited in the rural teaching points.

(2) The number of Students' physical and mental can not health development.

(3) The rural teaching points's infrastructure construction is not balanced, management level and using efficiency is low.

This study based on hubei province information and foundation education balanced development of collaborative innovation center by promoting urban and rural basic education balanced development projects, xian an district school teaching situation in hubei province interview and questionnaire survey in the first, through the analysis of the results of the investigation, summarizes the problems of teaching, then put forward in the study of theoretical guidance and practical support of rural school open has good teaching guiding ideology, then xian an district TingSi bridge town DaPing Township school teaching practice it. DaPing Township places of use of teaching practice, the

author puts forward the teaching thoughts, accompanied by the author in all the local teaching timely find problems and solve the problem. Through observation, analysis, summarize DaPing Township school teaching practice as a result, the author sums up the problems existing in the teaching strategy, and further puts forward improvement strategy.

According to the logical thinking, the full text is composed of six parts:

The first part introduces the research background of this article, the question proposed, the research content and significance, research status at home and abroad, the research purpose and research method, etc.;

The second part mainly through the combination of questionnaire and interview survey method, to the countryside to teach the analysis of existing problems and reasons of teaching;

The third part expounds technical support of rural school has opened a good lesson of relevant guidance strategy;

The fourth part is mainly to the third chapter mentioned teaching strategies in practice to explore, select DaPing Township teach for pilot action research;

The fifth part is mainly for the promotion of technical support rural open good lesson , again from the classroom, teaching resources, and elaborates the teaching environment;

The sixth part is mainly to summarize full text research, shortcomings in the course of research and problems need to pay attention to in the follow-up study.

20) Study on the Design and Practice of the Wechat Public Platform Applied in Regional Instructional Research

## **Abstract**

The rapid development of information technology in education, provides more convenient, accurate channels for the transmission of information in the area of Regional Instructional Research, in which in the past, the members involved are more dispersed one another, showing a loose type of academic community, and the transmission of information and interaction in between is not convenient. With the development of mobile Internet, more and more social media have been applied to support Instructional Research. Such as Wechat, with the high popularity and high viscosity in the midst of the users, the Wechat Public Platform has accurate channels to transfer information and abundant mechanisms to share online resources, which make it a positive significance for the trying in the field of Regional Instructional Research as a kind of mobile social media.

Based on the existing literature, this paper focuses on the WeChat Public Platform's support functions in the area of Instructional Research and the characteristics in spreading information, comparing with other famous social media. Summarize the actual needs of target users in the area of Instructional research, by questionnaire surveys and depth interviews, and then design the WeChat Public Platform applied in Regional Instructional Research, named "CCNU-Xian'an Instructional Research". Through operating the platform, assess the effect of the practice, and summary the design principles and the operation strategies in the WeChat Public Platform for regional instructional research, under the guidance of Universal Instructional Design Principles for Mobile Learning.

Based on the idea above, this research unfolds in six chapters:

Chapter One is Introduction, which is the presentation about background, idea, method, significance and some key concepts of this research.

Chapter Two is the Analysis of research and application actuality. Summary the current existing problems in the field of regional instructional research as well as the application status of WeChat Public Platform in the area of instructional research. Analyze the communication characteristics of knowledge and summarize the advantages in WeChat Public Platform applied for instructional research, as the practical and theoretical support for the subsequent Design-Based research.

Chapter Three is the Design and Construction of the WeChat Public Platform. Summarize the target users' habits in using Wechat as well as their actual needs for the

instructional research by questionnaire surveys and depth interviews, and design the users relation model and use flows in WeChat Public Platform according to the requirements and functional. Determine the design framework of the platform, and build the main function structure.

Chapter Four is the application and practice of the WeChat Public Platform. Operate the WeChat Public Platform named “CCNU-Xian'an Instructional Research”, which is applied in regional instructional research, and keep updating the functions and structures in the platform during the practice. Evaluate the effect of the design and practice through the user satisfaction survey and the monitoring data which we can get from the WeChat Public Platform.

Chapter Five is the conclusion of the design principles and the operation strategies in the WeChat Public Platform for Regional Instructional Research.

Chapter Six is the summary and forecasting. This part states the conclusion and achievement of this study , and propose some solutions to the shortages in this study.

## **Abstract**

Taking advantage of the methods of education informatization is an important way to guarantee the quality of teaching of teaching points in rural to promote the balance development of basic education. The synchronous interactive class is an effective way to solve the problem of teaching points lacking of teachers in rural and narrow the disparity in urban and rural areas. The instructional pattern of the synchronous interactive class is constructed based on the social constructivism theory by Lev Semenovich Vygotsky, the group social development theory by Judith Rich Harris and the characteristics of the synchronous interactive class, whose relationship between elements inside would be interpreted. This pattern has been used in the synchronous interactive class which including central schools and teaching points. The synchronous interactive class which includes Xian'an Foreign Primary School with Liuci teaching point and Su Jiafang teaching point, and the teacher and students were set to be the research object. Analyzing practice process, practice effects and existed problems of the instructional pattern of the synchronous interactive class on the side of instructional design and instructional process in combination with the specific teaching case and the teachers' interview. Furthermore, investigating the emotion and attitude of the teachers and students who have taken part in the synchronous interactive class in the way of interview. Finally, putting forward feasible strategies based on the application status and the practice research results about the synchronous interactive class in Xian'an district. Based on the idea above, my research unfolds into five chapters:

Chapter One is the introduction, which is the presentation about background, significance, research actuality, idea and method of this research.

Chapter Two is the instructional pattern construction of the synchronous interactive class. This part narrates the concept and characteristics of he synchronous interactive class, then describes the social constructivism theory by Lev Semenovich Vygotsky and the group social development theory by Judith Rich Harris, and interprets the object and property of the synchronous interactive class guided by these theories. Finally, constructing the instructional pattern of the synchronous interactive class, whose relationship between elements inside would be interpreted.

Chapter Three is the instructional practice results and analysis of the synchronous interactive class. The synchronous interactive class which includes Xian'an Foreign Primary School with Liuci teaching point and Su Jiafang teaching point, and the teacher and students were set to be the research object. Analyzing practice process, practice effects and existed problems of the instructional pattern of the synchronous interactive class on the side of instructional design and instructional process in combination with the specific teaching case and the teachers' interview. The practice research on instructional design includes the investigation of group's on-line lecture preparation and the interpretation of the instructional design's main contents. The practice research on instructional process includes the basic structure and interactive quality analysis of the synchronous interactive class' instructional process. Finally, investigating the emotion and attitude of the teachers and students who have taken part in the synchronous interactive class in the way of interview.

Chapter Four is the feasible strategies analysis of the instructional pattern of the synchronous interactive class. This part describes the application status about the Synchronous interaction classroom in Xian'an district, and put forward feasible strategies with the theory and practice.

Chapter Five is the conclusion and outlook. The whole research process is reviewed and the deficiencies should be cleared, then the further work that required is put forward.

## 22) The Case Study of Rural Teaching Points Development under the Background of Educational Informationization

### Abstract

Currently, human beings have benefited numerous from this informational era, which contributes to relieving the sense of alienation in the individuals' communicating activities as well as promoting the revolution of education. In this age, the informationization in the field of education have reformed not only the methods but also the idea of education, for instance, it pushes the online classes, that exceed the limits of time and space, into the public's sight, and provides the public with chances to access to the highly shared online resources. Hence the typical problems such as incomplete courses, deficiency of teachers, and lack of education resources in rural teaching points, which play an vitally significant role in development of rural compulsory education, needs being tackled urgently by promoting the informationization. Nevertheless, while taking the present circumstance of rural teaching points into consideration, it is indefinitely that whether the development of education informationization will lead to some substantial or constructive transformation to deal with the problems mentioned above.

Based on the goal above, in this article, we select the teaching unit, which is located in Liuci Village, Guihua Town, Xianan District, Xianning City and has improved the informationization teaching by "Xianan Education Service Platform", as the specific case; investigate on the spot mentioned above, analyze the development status and the impact in rural teaching points under the background of education informationization and relevant policy; summarize the experience and problems during developing education informatinization, and propose the developing strategies and solutions.

This thesis clarify the research of the rural teaching points' development under the background of education informationization from the several parts following through case studies.

Chapter 1: Introduce the significance of development of rural schools under the background of education informationization; select research objects and methods, and design the investigation approach for Liuci teaching unit in this survey project.

Chapter 2: Illustrate the reference, data, and the review of the relevant research situation at home and abroad,; define the relevant concepts, including the definition of rural teaching points, the types and function analysis of teaching units, and

the research of its development status;clarify and analyze the information teaching methods in the existing rural units.

Chapter 3:Investigate in Liuci school,which is the pilot institution in the “Xianan Digital School” project,and illustrate its fundamental state by sending out questionnaire to the teachers and students and depth interview.

Chapter 4:Analyze the challenges and problems which Liuci school faces with during the process of development, and summarize the relevant experience.

Chapter 5:Explore the developing strategy of the rural teaching points under the background of education informationization

Chapter 6:Summarize the research achievement,the problems and deficiencies existing in the research process;discuss the improvement, as well as the vista of the rural teaching points’ developing road under such background.

23) Research on Construction Practice and Promoting Strategies of Primary and Secondary School Teachers' Cyberspace

### **Abstract**

Dr. Huang view it as one of the ten trends of international development of educational information in the project results conference of "International Education Information Development" that Education information development in different areas of the world will be multipolar. The Ministry of Education puts forward "Work for the construction of three through two platform", and treats it as China's "Twelfth Five Year Plan" of education information and marks the core objectives, making the direction of the development of education information clearly. The construction of "straightway network communication between schools and sharing of resources with high quality between classes" have made great breakthrough, and the construction of straightway communication of learning cyberspace between learners is in urgent need of the construction of space network guidance of practical experience of excellent teachers. The construction of teachers' cyberspace in primary and secondary schools provides a new opportunity for the professional development of teachers, playing a decisive role in promoting the reform of teaching methods, innovation of the education management mode, especially in promoting the corporate construction and share of education resources with high quality.

In this article, the author starts with reading a large number of domestic and foreign literatures, reports about learning cyberspace and teachers' cyberspace, then analyzes three excellent cases about teachers' cyberspace, and investigates the current situation of the construction of primary and secondary school teachers' cyberspace by the questionnaire, in order to put forward the propulsion strategy on the construction of primary and secondary school teachers' cyberspace. This paper includes six chapters. The first chapter is introduction in which the author expounds the research background and proposes thesis research ideas and research methods with the combination of domestic and foreign research present situation. The second chapter is the target and meaning of the construction of teachers' cyberspace, and there is a simple analysis of the providing of "straightway communication of network learning space between learners" and some

concepts, and then explains the meaning of teachers' cyberspace, makes it clear that the meaning and function of teachers' cyberspace in information environment. The third chapter is the analysis of the current situation of constructing teachers' cyberspace in which the author selects "QQ space +360 cloud disk", Xian'an digital school, the World University City as three cases to analyze the advantages and disadvantages of the construction of teachers' cyberspace, then grasp the current situation of teachers' cyberspace through a questionnaire survey about surveyed personnel structure, the usage of network, the perfection condition of teachers' cyberspace and advancing advice in primary and middle school in X region. The fourth chapter is the function analysis and framework design of teachers' cyberspace. In this chapter, the author analyze the function of teachers' cyberspace in supporting all aspects of teaching, and design the content framework of space as well as the principle of how to construct teachers' cyberspace. The fifth chapter is promoting strategies of teachers' cyberspace, which are summarized by the author from two levels, regional promotion and teachers' promotion, referring to administrative promotion, space training and technological support, hoping to provide some references for promoting the construction of teachers' cyberspace in primary and secondary school. The sixth chapter is the conclusion of the research on how to construct teachers' cyberspace , the shortage and research prospect in the study.

## 24) The Construction and Practice of Online Teaching Study Activities for Area **Abstract**

With the development of technology industry, the application of information technology has brought great changes to the field of education. The Normal School is committed to seeking the best fusion of information technology to improve the contemporary teachers' knowledge and skills, combining the basic subject and technology in primary and middle schools has been put on the agenda of education and teaching, more and more teachers chose information technology to combine and optimize traditional teaching methods. Especially in the field of the teaching study, due to the people, time, geography, teaching resources and other factors, the enthusiasm and initiative that teachers participate in the traditional form of the teaching study activities are not high, the depth of the teaching study is not deep enough, the whole activities become a mere formality, it has been far from the need of teachers' professional ability development and subject research, the development of a teacher's professional ability, research ability, innovation ability is worrying. At the same time, a new form of the teaching study, based on the support of information technology environment, has become an important form of the development of education informationization . It passes through the barriers of time and space to carry out online teaching study activities to enhance the teachers' professional knowledge and skills, teaching study ability. Online teaching study makes up the insufficiency of traditional teaching study activities, optimizes the present situation of teaching study, fully improves the efficiency of teachers' teaching study activities. But how to use the information technology environment to support teaching study ? How to combine the various environmental support in the information era with the process of teaching study in primary and middle school to provide more convenient, fast, comprehensive service for the teachers? these will be the focus of this thesis.

The thesis consists of three parts as follows:

In the first part, the thesis analyzes the traditional and current online teaching study situation and the successful cases based on the traditional and information technology environment from home and abroad, sums the application of information technology in the teaching study.

In the second part, it analyzes the traditional teaching study type, form, activity way and so on. Then it analyzes online teaching study type, form, activity way and so on under the information technology environment. Finally it designs the online teaching study mode.

The third part is about practice. Firstly, it uses questionnaire survey and interviews of teachers in Xian'an District Xianning City to know about the information ability of teachers and teaching study. Then, it observes the online teaching study process, analyzes the advantages and disadvantages of online teaching study, and analyzes the practice strategy of online teaching study to provides the best teaching study cases for subsequent reference under the information technology environment.

25) Online Collective Lesson Preparation Practice Research of Primary and Secondary School Teachers

## **Abstract**

With the development of malformation education and the reform of teaching way, the online lesson preparation is becoming the trend of the preparation. Collective lesson preparation are based on the group learning, the participants in the collective lesson preparation can supervise and motivate each other, diagnose, find and perfect themselves by the guidelines of the same goals and the constraint of the unified standard. The teaching plan can share, communicate and comment the annotations, it help teachers make the content-rich and distinctive style of teaching plan.

In order to promote the online collective lesson preparation activities' development for teachers in Xian'an district. This paper adopts literature research, questionnaire and action study method to research. The paper expounds the district preparation status, analyzes the reasons of collective lesson preparation has not yet to carry out online, organize teachers conduct online collective lesson preparation practice, summed up online collective lesson preparation processes, and strategy. The paper carry out action research from six chapters:

The first chapter is introduction; it expounds research background and significance, research status at home and abroad, research contents and methods for this topic.

The second chapter is the investigation about status quote of lesson preparation for elementary and middle-school teachers , it survey the present situation about collective lesson preparation, online lesson preparation and online collective lesson preparation, and summarize and analyze the survey of online collective lesson preparation. Its purpose is to understand the teachers' attitudes about the online collective lesson preparation activity and the reason that online collective lesson preparation has not yet been carried out in Xian'an district, Hubei Province, and provide the guidance and direction for the action research of online collective lesson preparation later.

The third chapter is the process design and practice; it detailed described the process that the author carry out action research for online collective lesson preparation in Xian'an district, Hubei Province. The author establish preparation group with five Chinese Teachers in this district, Chinese researcher is the team leader, they take four rounds of online collective lesson preparation about the topic for the talk about the pictures in the oral course. This content summarizes the process, the key link and the preparing tools in the online collective lesson preparation.

The fourth chapter is the tool design for online lesson preparation with the support of information technology. From three aspects of business, function and administrative

authority, we explains that how to design the tools and apply some education information products into the activities for online collective lesson preparation.

The fifth chapter is the analysis of strategies for online collective lesson preparation. From three aspects of from the establishment of the team with Group Dynamics, the construction of network preparation environment with the networked learning community and the organization of the lesson preparation with the goal directed theory, we put forward the strategies for the online collective lesson preparation.

The sixth chapter is the summary for research. It expounds the research results and summarizes the research deficiencies about the development of tools, management mechanisms and evaluation system for collective lesson preparation.

## **Abstract**

With the promoting of global informatization, the promoting of educational informatization is also getting faster step by step, our country's revolution of educational informatization is the forefront of the world. “Class access to ICTs” project appeared in recent ten years during which the promoting of global informatization getting faster, and it's gradually spread in our country, not matter in a center city of a high modernization level, or in a village that less developed, “Class access to ICTs” is gradually becoming the basic equipment in every school, and it's becoming a breakthrough in the new round of curriculum reform. As science and technology developing rapidly in the new century, having basic technology literacy is becoming a necessary ability that every high school student should follow, so “General Technology” the course which based on the time, highly integrated, focus on creating, combining science and humanities became a required course for high school students. As a new course, “General Technology” has an advanced curriculum idea, but facing the Advanced teaching facilities, a lot of teachers feel confused and puzzled. How to use “Class access to ICTs” to make the class lively and interesting, how to play the full “Class accesse to ICTs” role to make the class achieve better results, are the important problems which us educators need to and have to solve. This essay is based on the actual general technology class using “Class access to ICTs” in real class, choosing two classes, One as the experimental classes, classes in communication environment under general technology curriculum teaching; another class is control class, using conventional teaching, laboratory started investigating two classmates attitude toward classes in communication and general technical courses before, and then to Two classes are two classes, one theory class section, a section of the actual operation of classes, should make the appropriate knowledge quiz after each lesson, the end of the first two classes and then do attitude questionnaire through two classes of data. The comparative analysis of the following conclusions: General technical teaching classes in communication environment under 1. to change the attitude of students and classes in general technology. 2. Under general technical teaching classes in

communication environment to improve student interest in learning, to focus the attention of students, expanding students' knowledge in the field has a positive effect. 3. Application of teachers teaching classes in environments enriched IT teaching methods, teaching methods more diversified. 4. Environmental former General classes in communication technology and teacher lesson preparation teaching effectiveness is directly related to the application of information technology in general technology curriculum must be closely linked to the course objectives, teachers must be fully prepared. 5. attention to the impact on the comprehensive development of students' ability classes in communication environment under the general technical teaching of Tacit Knowledge. 6. Lesson study teachers promote teaching reflection, is an important way to promote the professional development of teachers 7. Application of classes in general technical teaching must take into account the principle of proportionality, to prevent misuse of ICT classes. In this study, there are still many shortcomings, teaching classes in research confined to the school environment, this Lesson, yet a lot of practice to conduct a more investigation. And for even more far-reaching effects and no teaching more long-term investigation, and in towns and cities, focusing on ordinary schools may have different conclusions, the study is not comprehensive enough. Future general technical teaching systems should be established to set up large educational concept in the context of the general technical teaching for the overall planning.

27) Investigation on Development Status and Promotion Strategy of Principle's Information Technology Leadership in Primary and Secondary School

## **Abstract**

In recent years, the educational informationization continues with a high-frequency and modern word in people's sight, the research on the information technology leadership has been a main issue focused by the field of Chinese educational informationization. As the pioneer of the school's educational informationization work, the principal plays an important role on the construction, the level of the primary and secondary principal informationization technology leadership affects the implementation of basic education informationization.

This study consists of three parts, the first part is the theoretical basis of the study, and the second part is empirical analysis of research data and findings in the design, the third part is the study of the problems and corresponding promotion strategy, as a total of six chapters. The first chapter of the "Introduction", clarifies the research background, research status, pointed out the importance and necessity to promote the educational informationization work in the research area. Then, on the basis of the definition of the principal information technology leadership to determine the contents, and to select a more appropriate research methods. The second chapter, by the basic theory to design a the survey research program to meet the regional characteristics and accordingly carry out field surveys, questionnaires, interviews, case studies and other research methods, to obtain real and effective data and interview information. Chapter IV is the leadership problems of principals. Then, some promotion strategies on specific issues in chapter V have been raised, which to promote the information leadership of the principals from four aspects: individual, educational departments, schools, and social.

### 3 Academic Works

Table 3 List of Academic Works of the Project Team

No.	Title	Author	Publisher	Pub Date
1	<i>Informatization Education: Concept, Environment, Resources and Application</i>	Wang Jixin et al.	Huazhong Normal University Press	2014.11
2	<i>Design and Construction of Digital School for Rural Areas</i>	Wang Jixin et al.	Science Press	2018.01
3	<i>Technology, Education and Human Development: Axiology of Education Technology</i>	Zuo Mingzhang et al.	Science Press	2018.03
4	<i>Nonlinear Learning: The Innovation of Learning in Digital Age</i>	Wang Jixin et al	Higher Education Press	2012.02

The covers and catalogue pages of the publications above are as follows:

总主编□马敬

信息化与基础教育均衡发展丛书



# 信息化教育： 理念、环境、资源与应用

- 教育信息化与信息化教育
- 数字化学习资源
- 信息时代的教师专业发展
- 信息化环境下的教学与教学设计
- 信息化学习环境
- 信息化教育教学的研究方法

王继新 左明章 郑旭东/著

 华中师范大学出版社

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书名：农村数字学校设计与建设实践

# 农村数字学校设计 与建设实践

Design and Construction of Digital School  
for Rural Areas



王建新 宗敏 吴秀国 侯晓鹏〇编著

科学出版社

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# 技术—教育—人的发展： 教育技术价值论

左明章 著

 科学出版社

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### 内 容 简 介

如何认识与实现教育技术的价值？本书以技术哲学关于技术本质和技术价值观的相关认识为指导，以教育技术的历史与现实分析为基础，指出教育技术是为了满足教与学的需要而采用的物化技术和智能技术的总和，是人类认识教育和改造教育的一种本质力量的体现，是现代教育的一种展现与解蔽方式，是技术理性在教育领域扩展的中介与具体形式，并提出教育技术价值的本真意义在于促进人的发展，教育技术价值的本质乃是发展价值。书中还通过对教育技术与教师和学生的关系的分析，阐明了教育技术的价值二重性，并阐述了教育技术发展价值实现的策略。

本书可供教育技术工作者和研究者、教育教学管理人员阅读，也可作为教育技术、教育学原理、课程与教学论等学科的研究生教材或教学参考书使用。

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教育部哲学社会科学研究后期资助项目

# 非线性学习： 数字化时代的学习创新

Nonlinear Learning: The Innovation of  
Learning in Digital Age

◎ 王继新 等著

高等教育出版社  
HIGHER EDUCATION PRESS



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## 4 Patents and Software Copyrights

Table 4 List of Patents of the Project Team

No.	Patent Name	Application No.	Processing Time
1	A Digital Education Resource Teaching System Based on Editor	201510814337.0	2015.11.24
2	An Omnimedia Online Editing Tool	201510813777.4	2015.11.25

Table 5 List of Software Copyrights of the Project Team

No.	Software Copyright Name	Register No.	Registration Time
1	Hubei Local Curriculum Cloud Platform System V1.0	2014SR136597	2014.7.28
2	The Intelligent Push System of Digital Teaching Structured Resources Based on Cloud Computing V1.0	2014SR093084	2014.3.25
3	The Structured Management System of Digital Teaching Resources Based on Cloud Computing V1.0	2014SR093098	2014.3.28
4	The Student Learning Analysis System of Digital Teaching Based on Cloud Computing V1.0	2014SR093103	2014.3.29
5	Family-School Collaborated Digital Education Management System V1.0	2014SR093037	2014.3.30
6	Digital Education Intelligent Guidance System V1.0	2014SR093088	2014.3.27
7	Digital Education Intelligent Reinforcement Learning System V1.0	2014SR093091	2014.3.26
8	Omnimedia-Guided Composition Template Online Editing Software V1.0	2014SR105623	2014.4.25
9	Omnimedia Multiscreen Template Online Editing Software V1.0	2014SR105274	2014.4.28
10	Omnimedia Micro-video Online Editing Software V1.0	2014SR105282	2014.4.30
11	Omnimedia Knowledge Entries Database Template Online Editing Software V1.0	2014SR105278	2014.4.19
12	Omnimedia Reading Terminal Service System V1.0	2015SR245763	2015.9.10
13	Omnimedia Resources Intelligent Management System V1.0	2015SR245764	2015.10.07

**The patents and software copyrights certificates are attached as follows:**



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发文日：

2015 年 11 月 24 日



申请号或专利号：201510814337.0

发文序号：2015112401669190

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申请日：2015 年 11 月 23 日

申请人：华中师范大学

发明创造名称：一种基于编辑器的数字教育资源教学系统

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2015 年 11 月 25 日



申请号或专利号：201510813777.4

发文序号：2015112500800380

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申请日：2015 年 11 月 23 日

申请人：华中师范大学

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证书号： 软著登字第0805837号

软件名称：湖北地方课程教育云平台系统  
V1.0

著作权人：华中师范大学

开发完成日期：2014年07月28日

首次发表日期：未发表

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[简称：资源智能推送系统]  
V1.0

著作权人：华中师范大学

开发完成日期：2014年03月25日

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V1.0

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V1.0

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V1.0

著作权人：华中师范大学

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V1.0

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V1.0

著作权人：华中师范大学

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软件名称：全媒体导引式组合模板在线编辑软件  
[简称：组合模板编辑软件]  
V1.0

著作权人：华中师范大学

开发完成日期：2014年04月25日

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[简称：多分屏模板编辑软件]  
V1.0

著作权人：华中师范大学

开发完成日期：2014年04月28日

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[简称：微视频编辑软件]  
V1.0

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[简称：知识词条数据库编辑软件]  
V1.0

著作权人：华中师范大学

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软件名称：全媒体阅读终端服务系统  
[简称：阅读终端系统]  
V1.0

著作权人：北京泰克贝思数字出版技术有限公司

开发完成日期：2015年09月10日

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