

Education Reform and Economic Development in China: A Multiple Case

Study with particular reference to Manpower Development

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Abstract: This panel presents four on-going case studies on educational reconstruction in a few Chinese provincial, county or school organizations. The main purpose for the educational reconstruction and change of policies, systems, administration or instructional methods and tools is to enhance manpower development and to reduce economic wastage. Collectively, the writers of the cases have attempted to distill from the experience of Singapore in formulating and implementing education policies on bilingual and value education, professional and vocational staff development, management and the use of IT for improving learning & teaching, and the financing of professional and technical education. The case studies are the product of the writers' one-year study for the degree of Master of Educational Administration (MEA -Chinese) at the National Institute of Education, Nanyang Technological University, Singapore. Upon their return to China in August 2006, the writers have attempted to implement their proposed instructional designs and management policies and procedures so that improvements could be effected in their own educational institutions in China.

Keywords: educational change and reconstruction, policy change, instructional design and development, management policies and procedures

Introduction

The challenges of balancing the needs of individual learners and societal expectations and demands have attracted growing attention among the educational policy makers and implementers in recent years. One of the key focal points of concern and sometimes controversy is the optimal use of human and financial resources for maximal human resource development. Translated into simplified terms, it can be narrowed down to “the cost effective use of specific financial resource” for a particular group of learners for a specific purpose or for some specific purposes over a period of time. Amidst the many educational reforms in China, the most effective way of financing different types of education programmes and developing different levels of learners has become the major focus of education policy inquiry in the new millennium.

This symposium will feature four case studies of educational reforms in a school in Beijing, one provincial college and one county school system in Hebei province and a medical college in Shanxi province. Though the studies vary in scope, scale and nature, they share one common feature, that is, applying some ingredients of successful educational

policies and action learning principles and practices that are found in Singapore to transform problems and learners for world-class organizational learning in China.

The studies are still in progress but there are some evidences of greater interest in transforming problems into feasible solutions due to several motivational factors such as the more frequent occurrence of individual and group collaboration over the Internet using the affordances of chat and forum facilities, or the sharing of school and district educational resources in their design for learning as an organization or as a learning system.

Theoretical underpinning of the Proposed Educational Reforms and Instructional Changes

The case studies are based on a composite mix of problem-solving strategies, action learning and action research principles. They are built on “a number of organizational, sociological, epistemological and psychological systems that energize and synergize each other in the process of transforming problems and people”(M.J.Marquardt, 1999).In attempting to do action learning as individuals, or as team members, the writers of the cases hope to grow and develop with their organizations, their colleagues and students. They also hope to implement curricula and organizational policies that will have significant impact on student learning and staff development to maximize the use of educational resources such as finance and IT facilities for not only their own organizations but also for other institutions with similar educational problems and needs.

As the writers started their action learning and action research while pursuing their postgraduate studies towards the degree of Master of Educational Administration (MEA) in Singapore, they focused their studies on selective educational policies and practices that have successfully solved some of the Republic’s educational and economic problems. These policies and practices are adapted and selectively used in two main districts in China – Beijing, the Chinese capital and parts of Hebei Province. The case studies are still in the initial phase of implementation and the writers will progressive collect data for sharing with their colleagues and their theses supervisor and lecturer, Chen Ai Yen, on a half yearly basis. The following pages are records of their proposed studies and progress so far.

Two Cases of Using Information Technology to Enhance Learning in A Beijing Secondary School and in a Medical College in Shanxi Province

In the Shanxi Medical College, Xie Zheng, Head of Department of Health Management, Humanities and Social Studies, has led a team of lecturers in re-structuring the entire medical curriculum by revamping the design and the implementation of a basic medical course. For the past two months since August 2006, the Shanxi team has started the First Phase of a two-year plan aimed at transforming the learning of basic medical modules such as anatomy and health management and clinical practices by revamping the curriculum and increase the use of IT in formal classroom instruction, and using other mass media such as the College Teachers’ Newspaper to inform, motivate and develop lecturers’ instructional and professional knowledge and skills. In the meanwhile, four action learning steps are being implemented by the writer and her team simultaneously. They are:

- 1) Orientating and creating a new vision of a learner-centered learning school such as the best ones found in first-world learning organizations like some Singapore and the United States schools, colleges and universities..
- 2) Teaching now focuses on the learners and all the instructional and evaluation methods will be more learner-centered, that is, learners have to learn to solve problems and gather information themselves, individually or collaboratively, from available multimedia including the Internet and rely less on text books and lecture notes. Staff development courses will be conducted to develop the lecturers' skill in using IT as a tool for delivering and designing the curriculum;
- 3) The learning environment will be provided with improved IT facilities so that the learners and lecturers could communicate more easily and frequently over the Internet;
- 4) More lecture and classrooms will be equipped with IT facilities so that the lecturers could conduct their classes using video, IT and the Internet.

It is hoped that by the beginning of 2007, a new Shanxi Medical College Web will be in place with some lecturers making use of the Internet to teach their courses and conduct more just-in-time communication and dialogue with their students. The new curriculum design has included a quality control system as well as a feedback system from the teaching and non-teaching staff as well as the students so that the course could be properly evaluated by the end of the first year of implementation in August 2007. Any problems and weaknesses found would be arrested and rectified at that point. It is hoped that by September 2007, a revised and improved medical curriculum that is supported by IT would be in place.

At the Beijing Feng Tai No. 2 Secondary School, Wang Zhijiang, the Vice Principal has also begun, slowly but steadily, his 3-stage action research proposal on improving the use of the English language as an important communication tool for doing integrated Project Work (IPW) among 100 students in the school. Modeling after Singapore's School Excellence Model (SEM) and using the strategic management system called Balanced Scoreboard (BSC) developed by Kaplan and Norton in the 1990's, the IPW will be the focus for the test run of a learning support system designed and developed specifically for the Beijing Government experimental school.

The IPW includes a number of language learning activities related to the forthcoming 2008 Olympic Games in Beijing. The BSC management system will develop metrics, collect and analyse the data in relations to the learning of the students, and the growth perspective of the school as a dynamic learning organization. Participating students and teachers will use information communication technology (ICT) tools and systems under the leadership of the researcher, who is the Vice Principal of the Feng Tai No. 2 School and in consultation with Dr. Chen Ai Yen of the National Institute of Education, Nanyang Technological University, Singapore.

The Case of Reforming A Technical and Vocational Curriculum to Enhance Learning

At the Si Jia Juang Vocational and Technical College in Hebei Province, Huang Shalan, the Deputy Director of the College, has planned to design and implement an integrated curriculum for the students in the vocational institute. To support learning and teaching in the Institute, the teaching and evaluation methods will be changed to be more student-centred with improved designed learning activities. These will include group work and team investigations on specific projects. To facilitate individual and group learning, it is proposed that the entire learning environment will be equipped with better media and communication facilities such as more up-to-date information communication technology (ICT) equipped lecture and tutorial rooms and laboratories. It is also hoped that ICT software and other media materials on specific aspects of skill training such as technical and media designs, mechanical and IT development skills, and business and industrial management knowledge and practical skills, will be purchased and used by the lecturers and students. Lecturers will first be trained in using the materials first before they can integrate and use them in the various technical and vocational studies courses.

To ensure that the above proposal is implemented, the writer also advocated Provincial government support in terms of increased budget allocation for staff training and development, facilities development for improved student learning and a new evaluation system to assess the quality of student learning outcomes and their future employment.

A Proposal for Reconstructing Educational Investment Policies for Manpower Development in A Hebei County

In Changzhou County in Hebei Province, Hu Tongfa, the Deputy Director (Finance) of the County Education Bureau, has planned for the redistribution of financial resources for the County's schools. These measures include

- 1) preparing a more 'equitable' budget for financial distribution,
- 2) organizing a more balanced distribution of different resources and
- 3) setting up a reformed resource management system.

In great detail, Hu Tongfa made a comprehensive study of how the government of Singapore's great financial investment in education in the past four decades have paid off in transforming Singapore with a Third - World country status to that of a First World country. As Singapore has a well trained and well qualified work force in the present Information Age, Singapore is able to overcome the Economic Recession of 1997 and regained its competitive position in the world economy – it ranked fifth for the past five years. Hu Tongfa noted that Singapore's educational investment is balanced and strategic. There is not only adequate investment in basic school education but very sizeable investment in technical and vocational and higher education. The work force is continuously trained and developed for lifelong learning hence the country can justifiably be described as a "Learning Nation" with "Thinking Schools".

Hu Tongfa advocated a more equitable distribution of China's financial resource beginning with the department under his charge in Changzhou, Hubei Province. Systematically, he described how his plan for using different educational funds can be

implemented step-by-step in the next three years for the primary, and secondary schools in the 15 districts in the Changzhou County. If proven successful, similar plans can be rolled out in the rest of the 10 Hubei counties.

Tentative Conclusions

The above educational reform proposals and action plans are concrete, realistic and feasible. The writers, armed with new knowledge and skills for action learning and action research are able not only to plan but also to implement some of their plans upon their return to China. What is gratifying is that the writers are able to persuade a number of their senior administrators and boss to have a common vision and are slowly but steadily introducing concrete and sensible measures for implementing their educational reform and reconstruction proposals. We wish them every success as they enthusiastically seized upon every conceivable opportunity to improve the education of Beijing and Hubei students with practical proposals and sensible actions through educational and instructional reforms and development.

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据中、新资讯科技教育政策比较
推动山西职业医学教育发展
**Developing Professional Medical Education
Through the Use of IT in Shanxi Province, China**

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Abstract: Based on the experience of Singapore's IT Masterplan I and II and lessons learnt, the writer has proposed a 2-year plan for the implementation of the use of information technology to enhance learning and teaching in a medical college in Shanxi Province, China beginning in September, 2006. The plan has included the basic reasons for upgrading professional medical education, the factors that contribute to the urgency for bringing about the much needed medical professional education reforms. If such a plan is properly implemented, the writer sees the promises of the use of IT in developing and upgrading manpower even in other similar fields such as nursing and medical laboratory technical services being realized more speedily. Also, it may result in the more equitable and efficient use of the education budget in the college.

The proposal was written during the writer's postgraduate study leave in Singapore in 2005-2006 at the National Institute of Education, Nanyang Technological University.

Keywords: professional medical education, education reform, manpower development, information communications technology.

资讯科技教育是指在教育领域全面深入地运用现代信息技术来促进教育改革与发展的过程。是在教育中普遍运用多媒体辅助技术，开发教育资源，优化教育过程，以培养和提高学生的信息素养，加快对创新人才的培养，促进教育现代化的过程。其技术特点是数字化、网络化、智能化和多媒体化，基本特征是开放、共享、交互、协作。

一、资讯科技教育的意义

(一) 资讯科技教育的意义

资讯科技教育有利于缩小地区间教育差距，实现教育公平；是实现建设学习型社会、构建终身教育体系、提高全体国民素质的有效途径。它是教育现代化必由之路，也是教育现代化的重要内容和主要标志。资讯科技教育有利于素质教育的实施和创新人才的培养。

(二) 实际工作的需要：

我所在的学校是在中国山西省的省会太原市，我们学校是一所成人高等医学教育学院，有 52 年的建校史。由于山西是一个内陆省份，所以这些年发展相对滞后。这种滞后在我们学院表现的更加突出，到目前为止我们学院还没有建立校园网，教学管理、学

生管理、行政管理等等仍然停留在传统管理模式水平上，计算机的使用大部分停留在一些文档的处理上。信息技术的体现仅仅是在课堂教学中使用多媒体课件，且大部分停留在 PowerPoint 的简单制作水平上，基本上是黑板的迁移。我们在工作中强调的是如何让教师们做出更好的多媒体课件。来到新加坡学习以后，我不仅感到了差距，关键是对资讯科技教育有了全新的、完整的认识，并且想认真研究、借鉴新加坡的经验，回国后指导我院提高教育信息技术的使用能力。

（三）研究目的与限制

目的：本研究试图通过中国、新加坡教育资讯科技政策在职业医学教育中的应用对比，找出两国发展的优势，发现不足，以期达到相互借鉴、相互学习的目的。并寻找规律，加以推广，扩大受益范围，实现教育为整个人类服务的宗旨。

限制：由于受时间和收集资料所限，本论文的研究仅仅是建立了一个框架。在后续的行动研究中将做进一步深入的研究。

二、方法

通过文献收集、专家访谈^[1]、实地考察^[2]等方法，对所获资料进行比较并得出结论，同时对所得的结论进行理论和实践的分析。

三、引进措施，推动山西职业医学教育发展

总结新加坡资讯科技教育的成功之处，结合实际情况，作者设计了资讯科技教育在中国山西职工医学院的实施方案，并将付诸实施。实施同时将与山西省类同条件学校协作一同开展工作，找出规律性的东西，以期在全省推广。在此基础上，总结成功之处，向全国类似省份介绍其可行性，用以推动中国资讯科技教育的全面发展。时间安排及工作重点如下：

协同工作计划表

时 间 单 位	2006 9月	2006 9--10	2006 11月	2006 11--12	2007 2-6月	2007 7月	2007 8月
本 校	申报课题	可行方案	下达各部门	准备工作 发表论文	具体实施	实施效果评价	审核评价效果提出新计划，发表论文
同类校	提出邀请	制定方案	下达各部门	准备工作	具体实施	实施效果评价	审核评价效果提出新计划
教育厅	递交申请	递交计划书	审议	政策支持	督导	实施效果评价	检验

[1] 专访新加坡中医药预科学院院长潘广斋博士与前国立大学医学院副院长及儿科教授何乃强博士

[2] 实地考察了新加坡南洋理工学院、义安理工学院、工艺教育学院（东区）

（一）组织保证

一是**制定翔实的可操作的实施计划**，包括要达到的目标、完成的任务、时间要求、负责的部门及负责人，制定奖惩责任制度，奖励积极、合理使用资讯科技于教学和管理工作中的教师和职员。二是**管理层必须树立服务意识**，对管理干部中出现推诿教师要求、不负责任的行为等要追究责任，给以惩罚。

（二）资金管理

资讯科技教育的投入对职业医学教育来说相对要求更高，一是医学服务的对象是人，对生命的尊重提高了学习的要求，所以配备设备一般高于其他专业。二是职业医学强调操作性，实训场景的配备也要求很大的投入。所以对于资金投入也有两方面的要求：一是尽量加大对资讯科技教育的投资，给以政策倾斜，但要注意合理的比例：硬件：培训：软件，4：3：3，不能顾此失彼。二要注意资金的充分利用，不能导致二度浪费，如：不重复投资、硬件与软件匹配、不能闲置设备，等等。

（三）人力资源

人力资源开发包括领导、教师、学生、家长、社会各阶层人士。

1、首先**领导者**要具备资讯科技教育在现代职业医学教育中的重要性的意识，并且接受培训，掌握资讯科技技术，使用资讯科技技术，自己成为资讯科技技术的内行人，产生对资讯科技技术的渴求与使用的连贯性需求，才能真正带动和正确领导一个学校、一个教育部门资讯科技技术的发展。其次，领导要具备系统发展的思想，杜绝换一个领导上一个项目的现象，好大喜功，不讲求实效，导致本来就有限的资源二度浪费，一定要具有以国家、社会、民众的利益为重的领导者素养。这是中国目前应该特别关注的问题。

2、重视对**师资**的培训。首先要提高认识，要知道教师是执行政策的关键所在，所以要改变资金分配的百分比，提高教师培训的资金投入，同时给予政策支持。如：一是，制定规范的培训制度，包括新软件、新系统应用的培训；定时知识的更新培训；职业医学课程整合专项学习的培训，等。二是对课件制作的多途径准备，包括教师自己制作；建立学群组服务器，汇集教师自制课件，分享以及提高、改进课件的制作水平。三是与企业合作，专业教师提出方案，由企业横向比较，综合考核后，研制适合操作型、技能型的临床专业课程课件。

3、**人才**的培养目标。职业医学教育培养的学生注重技能性和操作性的培养，资讯科技教育一是拓展了教学空间，应用资讯科技技术模拟临床场景，帮助适应真实的临床环境 如新加坡南洋理工学院 SIMan 仿真模拟病人的使用、学生与教师共同开发的课件、资讯科技技术提供的情景式教学，等等，使学生有身临其境的感受。二是培养学生自主学习的能力以及创新精神，学生毕业即就业，尽量缩短岗位适应期，减少社会的资源浪费。就业后能够开拓性的工作，形成不断有创新力的职业医学教育行业发展优势。

4、**社会各阶层力量**的动员。包括家长和协作的相关单位。他们从学生、学校获得

的信息在自己工作领域的拓展将会带动整个社会对资讯科技技术的重视和应用，从而推动社会的发展。同时，企业的协作不仅是生产符合学校要求的课件，由此扩展的新产品的研发带来的社会和经济价值是不可估量的。

（四）课程整合

1、课程内容。强调学科间的联系与综合，进行课程间的整合，淡化学科界限。设置综合实践活动课程，包括信息技术教育、研究性学习、社区服务与社会实践以及劳动与技术教育等。强调课程内容与职业、社会、科技发展的联系。在构建知识体系结构的同时，强调对学生学习方式与实践能力的培养。注重新知识、概念建立在社会发展与学生生活的基础上。知识的学习与技能的学习能够支撑终身学习。打破学科中心组织教材的思想。

2、教学方法：强调让学生自主与探索性的学习，接受、探索、模仿、体验等学习方式的综合运用；强调对学生创造力的培养；强调通过多种学习方式的运用，培养学生搜集和处理信息的能力、获取知识的能力、分析和解决问题的能力以及交流与合作的能力；关注学习结果与学习过程等等的教学方法的运用。

3、课程管理：应该对什么课程使用资讯科技技术；课程使用的百分比；哪些课程资源可以通过校园网让学生共享；设立防御措施阻隔未经允许者进入者，学生在修课时进入相关支持系统，等等。杜绝凡课都使用简单的多媒体技术，如只是 PPT 的简单使用，造成黑板的迁移现象，这也是一种资源浪费。

（五）评价体系

汇集上述四点形成评价体系的主干，加上教学效果的评价、学生就业率方面以及相同学校比较等因素，形成的评价体系，使资讯科技教育的应用在区域性的范围内—山西省产生共享价值。

上述几个关键点是职业医学教育中的共性问题，尤其针对山西这样的内陆省份，在政策导向、经济发展水平、社会支持度、文化积淀、民族习俗等诸多方面齐同条件下，这些关键点的解决对全省职业医学教育将具有推广性。

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- 中国教育部·面向21世纪教育振兴行动计划,
<http://www.cutech.edu.cn/zhengce/guanli/000198.asp>
- 中国国务院。关于深化教育改革全面推进素质教育的决定,
<http://www.ydjs.sc.cn/shaoxiandui/wenjian/20010200/031.htm>
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附件一： 山西职工医学院 IT 教育整体建设实施方案

解 征

卫管系、人文社科部主任

内容	建 议 人	时 间	实 施	产 出	经 费	负 责 人	达 成 目 标
资讯科技整体建设规划	作者 本人 对方 案的 调 整、 改 进、 执行 进行 直接 操作	2006.9---	1、建立保证 机制	信息中心从 教务处独 立，成为专 设机构	▲	院 长	组 织 保 证
		- 2006.12	2、合理投 资，增加基 础设施，软 件和资源 (占投资 40%)	1.增加 500 台电脑 2.在 每一个教学 环境中都有 信息技术支 持 3.可供教 学和管理使 用的软件系 统	100万	院 长	生 机 比 6:1 师 机 比 1:1 建 职 业 医 学 教 育 媒 体 库
		2006.9--- --	3、人力资源 培训：1)领	1.信息化办 公体系 2.全	75万	教 务	现 代 化 教 学 手

		2007.6	导的培训2) 教师的培训 3)所有职工 的培训(占 投资30%)	体教师使用 信息技术教 学的的能力 3. 全校信息管 理体系		处	段;高效 率的工 作环境
		2006.9--- 2007.9	4、物质基础 和技术支持 (占投资 30%)	校园局域 网;针对性 的学科软件 系统;共享 的教学资源 馆库,包括 人体正常与 疾病标本陈 列馆	75万	院 领 导 教 务 处	解决资 讯科技 教育当 前在我 校的关 键问题 之一
			5、课程整合	信息技术应 用于课程并 进行课程整 合		教 务 处	利于培 养创新 人才
		每届学 生的第 三学期	6、职业医学 教育	对就业的专 项技能培训		系 部	提高就
		2006.12-	7、建立与新	如何使用信		教	建立评

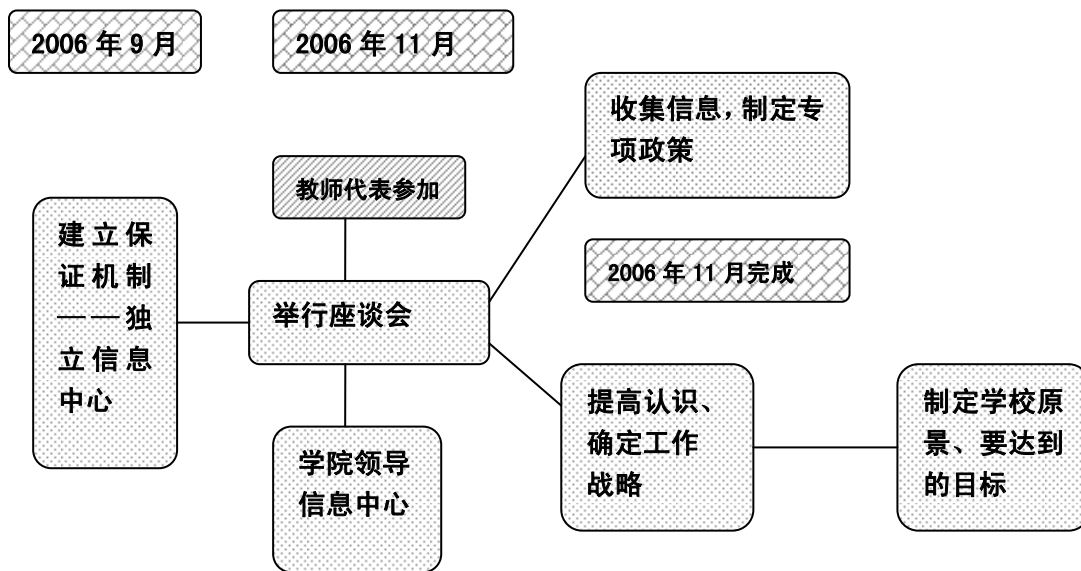
		---	学科群教学	息、学会思		务	估体系
		2007.12	配套的教学	考以及交流		处	机制和
			效果评估体	的技能成为			制度
			系	评估的主要			
				内容			

▲ 经费：一次性投资 250 万，以后每年拨款 10 万，用于维护、维修、升级、培训人力

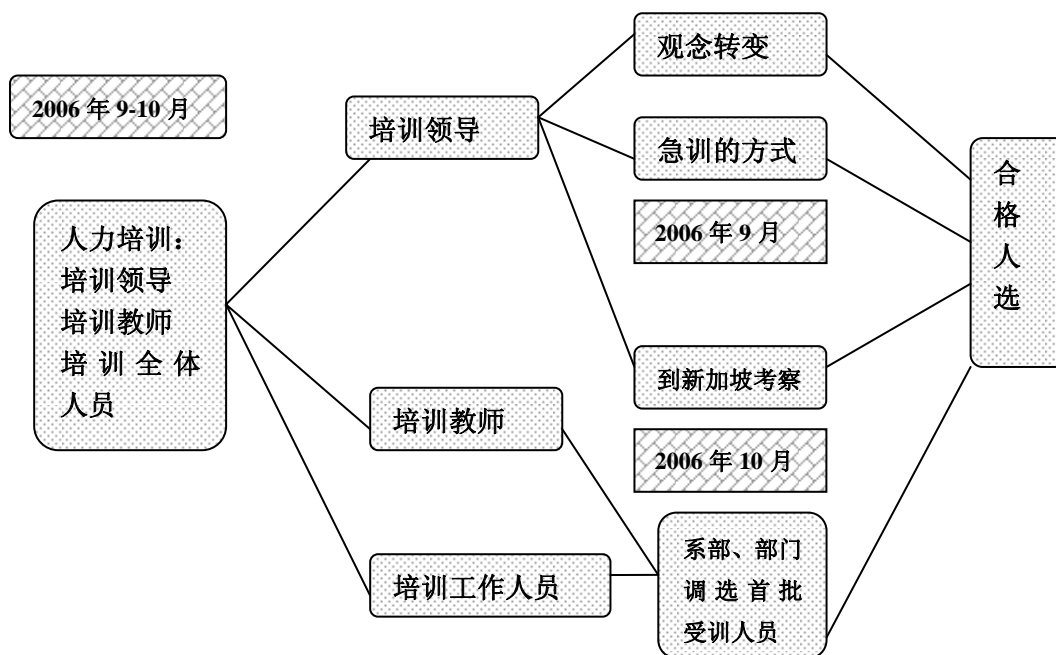
附件二：

实施方案流程图

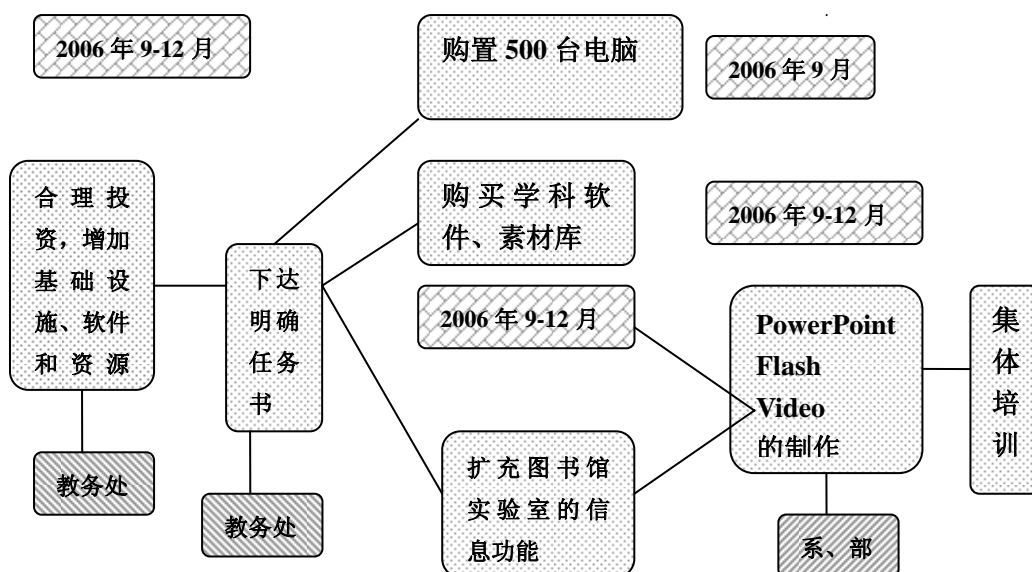
第一阶段



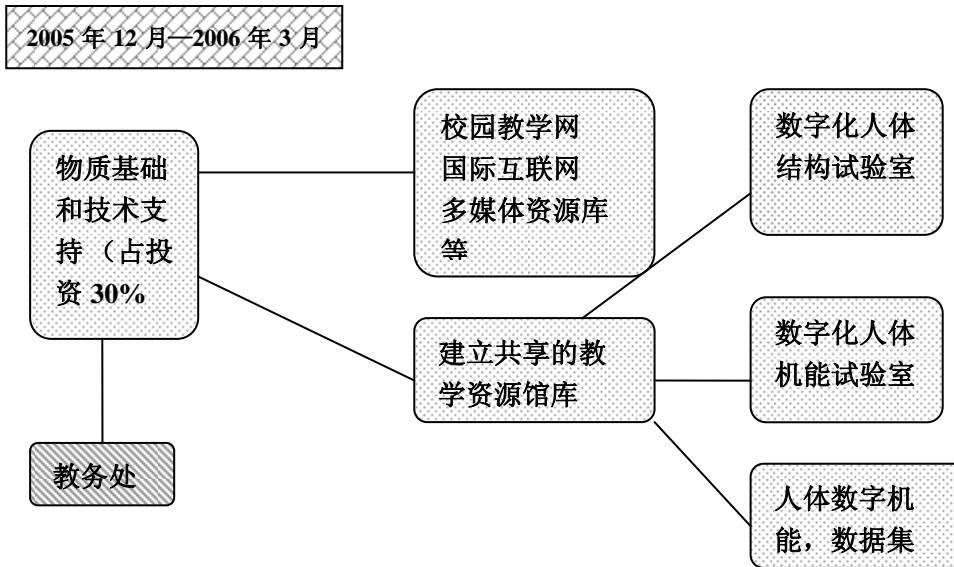
第二阶段



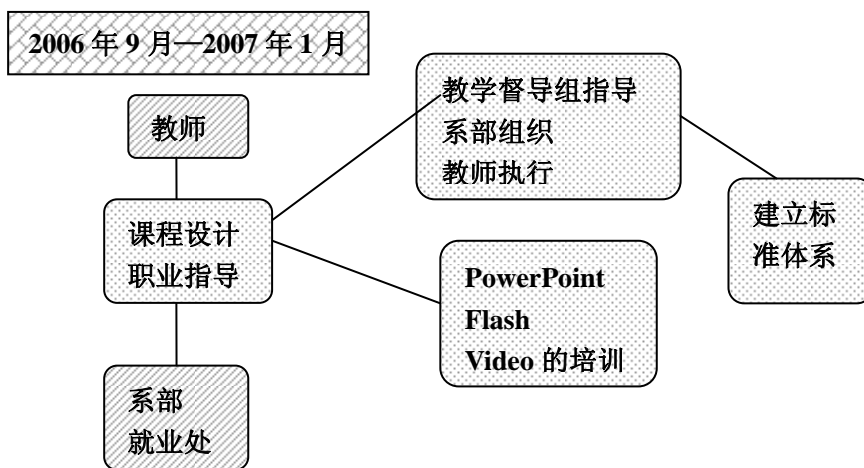
第三阶段



第四阶段



第五阶段



第六阶段

