New Teaching Staff in Higher Education in China Learning Lecturing in Mathematics

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Abstract. *This study describes how a College of Mathematics (CM) in one Chinese provincial university implements a system of staff development to help new teaching staff learn how to lecture, describes what those involved think of the system, and evaluates the implementation from an Human Resource Development / Professional Development (HRD/PD) perspective. Data were collected from a field-based study over almost three months, involving 10 one-on-one interviews and five observations with six participants, – two managers and two pairs of mentors and novices, – who were selected by purposive sampling. It was found that implementation of the staff development policies in the CM created a 'system' involving input, a seven-component process, output, and feedback. The system worked principally on the basis of well-known HRD/PD strategies – mentoring, coaching, and modeling in which an experienced staff member (mentor) helped a new teaching staff member (novice) learn how to lecture, mainly through mutual classroom observation and discussion. Although all participants had generally positive attitudes towards the system, from a Western HRD/PD perspective the system had a number of serious weaknesses, which are discussed in the article.*

Key words: New Teaching Staff, Learning to Lecture, Higher Education, Evaluation

Introduction

Higher education (HEd) in China has made impressive progress in the past thirty years. The number of new academic staff is growing rapidly. Due to the shortage of staff, new teaching staff are expected to start to teach immediately, despite almost all of them having no experience and theory of lecturing. The Chinese government and many institutions have formulated policies and implemented programs to change this situation. By contrast this researcher received no assistance when she started to lecture. Consequently, as an HRD student she is wondering what in fact happens when assistance is provided and the quality of the assistance from an HRD/PD perspective.

Purposes of this study

The purposes of this study are to: a) examine from an HRD/PD perspective what policy assistance the Chinese government offers to universities for staff development for new staff, and how national policy compares to local policy for the same purpose within one specific setting; b) identify how that college implemented training to lecture; c) find out what those involved think of the system and how far the practices meet the needs of new teaching staff; d) evaluate the system from a Western HRD/PD perspective and offer recommendations for its development.

Research questions

Five research questions (RQs) were proposed: 1) What is the HRD policy of a Chinese college for assisting new teaching staff to improve their lecturing skills? 2) How was the policy implemented? 3) How worthwhile do those who provide new teachers with assistance view the system? 4) How far do these practices meet the perceived development needs of new staff for lecturing students? and 5) What further assistance do new teachers say they need to improve their lecturing skills?

Literature review

'Learning' is a key concept in this study. Expe-

riential learning theory (ELT) (Kolb, 1984) and social learning theory (SLT) (Bandura, 1977) are considered as the theoretical bases in this study. Based on these learning theories, HRD/PD strategies – modeling, coaching, and mentoring are considered by literature as approaches for supporting and developing teaching practices in the HEd context.

HR theorists argue that one criterion for a successful executive development process is a clearly stated development policy (Nusbaum, 1986). The policy should define the role of participants involved, provide a clear statement of performance expectations (Noe, Hollenbeck, Gerhart, & Wright, 2009), and the statement should help managers make decisions on rewarding participants.

Kahn and Walsh (2006) and Petersen (2007) proposed that mentoring is one approach for novice lecturers to develop their lecturing skills. McGuire and Reger (2003) stated that 'traditional mentoring' is a 'supervision model', involving one-to-one relationships which "reinforce power imbalances between participants" (p. 54). Petersen (2007) offered a co-mentoring model which involved a non-hierarchical relationship based on reciprocity. The research literature suggested that management should consider the training of mentors (e.g., Werner & DeSimone, 2006; Smith, 2007; Nolan & Hoover, 2008) and compensation for mentors (e.g. Ingersoll & Kralik, 2004). Noe et al. (2009, p. 261) found that "mentoring programs tend to be most successful when they [mentors and novices] are voluntary". Kahn and Walsh (2006, p. 108) claimed that "it is worth establishing and perhaps negotiating basic ground rules at the beginning of the (mentoring) relationship".

Joyce and Showers (1980), Arends (1994), Kahn and Walsh (2006), Petersen (2007), and Nolan and Hoover (2008) found that modeling, practice in the classroom, a coaching cycle, all combined with feedback, were the elements of a productive training design to help new teaching staff develop their teaching and lecturing. Joyce and Showers (1980) advocated a traditional model of coaching – pre-conference / observation / post-conference. In addition, Arends (1994) and Nolan and Hoover (2008) claimed the importance of reflection in learning to teach and advocated keeping a journal as a productive way to foster beginning teachers' reflective thinking.

Brown and Atkins (1991) argued that the major lecturing skills are lecture preparation, explaining, presenting information, and generating interest. They also claimed that "the essential skill of effective lecturing is preparation" (p. 35). Brown and Atkins (1991) and Light and Cox (2001) also recommended that lecturing skills development includes practice in using modern technologies, such as PowerPoint, OHP transparencies, handout. Moreover, Nicholls (2001) claimed that new teachers learning about educational theories and technologies assist developing teaching skills.

Methodology

The methodology of this study was a qualitative case study. A qualitative approach allows for exploring how staff have experienced the development system in improving lecturing skills, how they perceived the system, and their suggestions for its development. The professional development system in operation at the college of mathematics was considered as the case in this study.

This study involved a policy-oriented research to explore how national and local HRD policies relate to each other, and how the policies are put into practice. Owen with Rogers (1999) indicated that policies may be realized through programs that are then put into practice – the 'plan in action' for operationalizing the plan. The 'plan in action' may be conceptualized from an HRD perspective as a 'system'.

The study also involved an evaluation component. Owen with Rogers (1999) identified five 'forms' of evaluation. One form, appropriate for studying newly established systems, was called 'clarificative evaluation', where the researcher studies the documentation developed for the system, observes the system in action and interviews participants about their understanding of the system and its effects, with the aim of making recommendations for policy and system development to conform to best HRD/PD practice.

Purposive sampling as a form of non-probability sampling (Robson, 2002) was used in this study to select the study site and participants. The site of this study was a College of Mathematics (CM) – with large numbers of new teaching staff and which had just introduced a staff development system – in a provincial university in China. Two

participants, selected by virtue of their position, became subjects of the research. They were two administrators of CM: Administrators 1 (A1) and Administrator 2 (A2); moreover, the two managers were also mentors, both being female. The researcher selected two out of three pairs whom A1 nominated: Mentor 1 (M1) and Novice 1 (N1) were both male, while Mentor 2 (M2) and Novice 2 (N2) were male and female. Therefore, this study involved six participants – A1, A2, and two pairs of mentors and new teaching staff: M1/N1 and M2/N2.

The instruments used in the data collection comprised interview and observation, – with interviews uncovering additional documentation. Its use of multiple methods of collecting data is one form of what Mathison (1988) called triangulation – checking sources of data derived from interview, observation, and document analysis.

This study used unstructured interviews with management to acquire information about policy, then, used semi-structured interviews to identify participants' perceptions of the system, as well as needed improvements of mentors and novices. Six one-on-one interviews with six participants were arranged before observations were carried out. Five observations included a teaching seminar (TS), where novices joined other staff to discuss course planning and management issues, two classroom observations where one mentor's lecture was observed by the paired novice, one novice lecture was observed by the paired mentor, and two related post-lecture discussions. After the observations, four one-on-one interviews with two pairs were arranged. In total, 10 individual interviews and five observations were used to collect data.

All the data of this study were organized into three sets: documents, interview data, and observation data, as Table 1 shows.

Table 1. Types of data collected

Documents File (DF)	- Five policy documents at three levels: national, institutional, and college - Four blank forms related to the system - Four related documents: two teaching syllabus and two teaching schedules - Meeting note of first Teaching Seminar - One Appraisal Form of Classroom Observation by N1 - One Record Form of Classroom Observation by M2 - Two Record Forms of Observation in Lecture by researcher - Three Record Forms of Observation in Meeting by researcher
Interview Data (ID)	- Participants' Consent Form - Ten Interview Guides with notes made during the interview in Chinese - Ten interview transcriptions in Chinese - Ten interview translations in English with comments
Observation Data (OD)	- Five observation transcriptions in Chinese that were transcribed from listening to recording - Five observation transcriptions in English with comments that were translated from Chinese vision - Two record forms of observation of lectures by the researcher - Three record forms of observation of meetings by the researcher

These data were analyzed through coding, summarizing, and comparing, and were triangulated to identify alignment of policy and practices and words and actions of participants for answering the five RQs.

Findings

This section is organized into five sections for answering the five RQs of this study. It describes the nature of college HRD policy, policy realization, perceptions of its value and success in meeting the perceived HRD needs of novices, as well as other assistance needed.

1) What is the HRD policy of a Chinese college for assisting new teaching staff to improve their lecturing skills?

The study identified that there were two national, one university, and two college HRD policies for staff development. They are shown in Table 2.

Table 2. List of five policy documents at three levels: nation, university, college

Levels	Code	Title	Date	Source
National Policies	NP1	*Training Regulations for Academic Staff in Higher Education Institutions*	1996	CME
	NP2	*Provisional Regulations for Pre-Service Training of Higher Education Institution Academic staff*	1997	CME
University policy	UP	*HU Class Observation System*	2004	HU
College polices	CP1	*CM Regulation of Mentoring Program*	2008	CM
	CP2	*CM Class Observation system*	2008	CM

CME: Chinese Ministry of Education

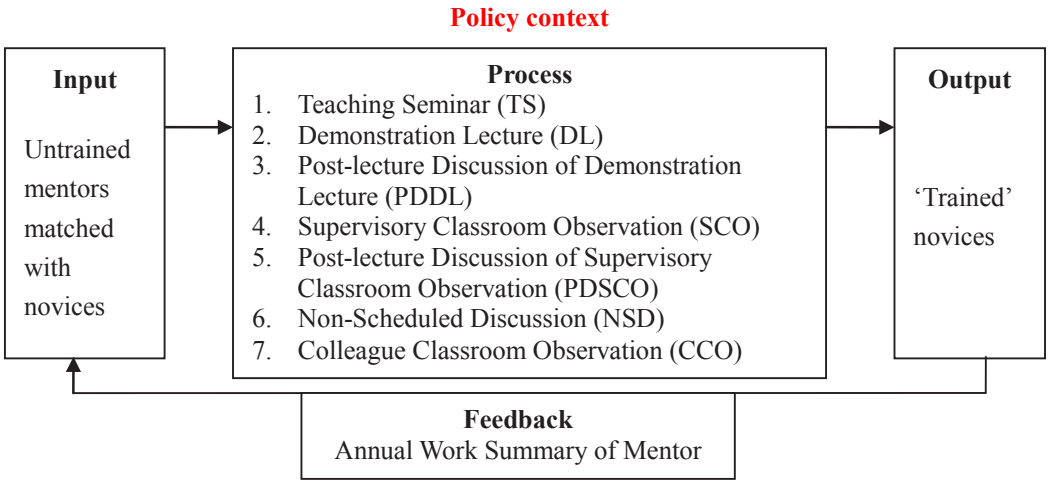
The college policy indicates that entry to the system is on the basis of being a 'novice' lecturer who is new to the college, although they may have had previous teaching experience in another educational setting. Management allocates novices a mentor with experience of teaching topics that the novice will lecture on, and the mentor works with the novice until they are judged to have developed sufficient lecturing skills to 'exit' the system. The policy documentation stipulates the roles of mentors and novice, but it does not explain how exit decisions from the system are made, and this was not a main focus of this study.

2) How was the policy implemented?

From an HRD/PD perspective, the policies implemented may be described as a 'system', which includes input, a seven-component process, output, and feedback. The system is represented in Figure 1 below.

Components 2 – 6 are outlined in CP, which describes the roles of mentors and novices, while the seventh component is stipulated in CP2. The first component is not mentioned in either CP1 or CP2.

Figure 1. Lecturing development system in the College of Mathematics



The main 'input' to the system involves management allocating a mentor to each novice. Participation is compulsory for novices who have no choice of mentor, while mentors are expected to serve in that role for two years and may be required to continue for a further two years if asked. No orientation is provided to mentors for their training role, and they receive no recognition or financial reward for their work.

The main 'process' is mentor teaching performance and explanation, and mentor feedback on novice teaching performance. A feature of lectures in the classes observed is the use of traditional teaching methods based on the blackboard, rather than on modern technologies, although these technologies are used on campus. Additional unstructured processes include casual meetings with mentors for advice and guidance, staff meetings, and mutual classroom observation between each colleague. The principal ways that novices learn to lecture are through monthly observations of the lectures of their mentors for an undefined period, and through monthly observations by mentors of novices' lectures with feedback on their lecture performance. There is limited joint planning of lectures and no pre-lecture discussion of either the mentor's or the novice's lectures.

System 'output' is a 'trained' novice, though the system appears to provide no information on what 'skill value' is added to the novice by the process. However, exit decisions appear to be based on ratings of novices' lectures from different sources – mentor, other colleagues, and selected students – using standardized forms developed by management.

Formal 'feedback' of the system involves mentors completing an Annual Work Summary which involves comments and suggestions for improvement, and submitting it to administrators. Administrators could synthesize comments and suggestions to develop the system.

3) How worthwhile do those who provide new teachers with assistance view the system?

The answer to RQ3 drew on interview data from four mentors on the seven components of the system. Mentors thought TS was worthwhile, because it provided novices with an equal environment for learning with other colleagues. Mentors deemed novices could learn from modeling of mentors, and improve their lecturing skills from mentors' critical evaluation and advice through classroom observation (e.g., DL and SCO) and post-lecture discussion (e.g., PDDL and PDSCO), which are most effective when observation and discussion were combined. They claimed observation and follow-on discussion helped novices learn such lecturing skills as communicating with students, managing class discipline, and effectively organizing teaching content. They considered NSD was worthwhile, because mentors could help novices solve problems immediately, and could establish

trust and good relationships. Moreover, mentors believed that novices could improve by accessing advice from various perspectives, if they discuss their problems with other colleagues after CCO.

4) How far do these practices meet the perceived development needs of new staff for lecturing students?

The answer to RQ4 was based on interview data from two novices on the seven components of the system. Novices claimed that DL and PDDL taught them the ability to organize the teaching content effectively, control teaching rhythm, communicate with students, effectively utilize oral and body language, and organize blackboard writing. They claimed they became aware of weaknesses in their blackboard writing, controlled their pacing of lectures, and improved by obtaining feedback and advice from mentors during SCO and PDSCO. They believed that NSD is an effective approach for establishing trust with the paired mentor. Moreover, N1 insisted NSD is the most frequent and important approach to learning to lecture according to his experience of meeting and discussing issues with M1 almost everyday. In addition, both novices claimed that discussions with other colleagues in TS and CCO were useful for them to access advice from various perspectives, especially within a democratic environment where they could develop their lecturing skills by sharing ideas, raising questions, and receiving solutions.

5) What further assistance do new teachers say they need to improve their lecturing skills?

Two novices' proposals for improving the development system were: 1) Making a plan before working together; 2) Organizing some targeted lecture observations; 3) Setting up internal competition on lecturing; 3) Implementing a pre-lecture discussion before selected lectures; and 4) Establishing a co-mentoring group with one head mentor who takes main responsibility for the novice.

Moreover, two mentors (M1 and M2) also suggested: 1) Providing opportunities to novices through more diverse approaches (e.g., set lectures on teaching theory and pre-lecture discussion); 2) Assistance with planning, such as establishing a plan for cooperation when mentor and novice start to work together; 3) Providing opportunities to improve their mentoring ability through exchange experience and meeting with other mentors in CM or in other universities; and 4) Recognizing mentoring as work and adding it into the year-end assessment.

In summary, mentors and novices suggested that the system would be improved if there were negotiations on working together, more joint planning, additional opportunities to observe, and courses to introduce novices to educational theory and modern technologies. Both mentors considered the college should provide recognition for their work and opportunities for improving their mentoring skills.

Interpretation and discussion

This section focuses on interpretation and discussion of two inter-related issues: 1) How far do the local policies conform to national guidelines? and 2) How well does the system achieve its purpose – developing lecturing skills of new teaching staff – when considered from an HRD/PD perspective?

1. The relationship between national and college policies

This section interprets and discusses three questions: 1) How consistent are local policies with national policy? 2) In what respects are they inconsistent? and 3) What issues are ignored in college policies that from an HR perspective ought to be addressed?

One purpose of the current study was to explore how national advice has been interpreted and implemented in local policies. National policies prescribe that universities and colleges should take main responsibility to formulate related policy that should be consistent with national policies, and result in a staff development system. National policy statements do not suggest that local universities and colleges may have policies different from what the national policy prescribes or recommends. Moreover, national policies provide universities and colleges with basic information and guidelines as to what to do. According to the stipulation and statement of national policies, it is important to keep college policies consistent with national policies.

This study found that the CM took main responsibility for lecturing skills development. CM, as implementer of national policies, is expected to formulate and develop local policies according to what the national policy prescribes and recom-

mends. Document analysis showed that college policies are consistent with national policies in respect of providing mentoring, classroom observation, and discussion, as the main forms for helping novices develop their teaching practice and lecturing skills. The inconsistencies of college policies and national policies are that college policy documents lack statements of assessment, rewards, and learning of educational theories and technologies. Moreover, neither national nor college policies defined criteria of 'good teaching' or 'effective lecturing'.

From the perspective of HRD policy making, both national and college policies are weak in that they do not make a clear statement of either performance expectations (i.e., what are the criteria for 'effective lecturing', for developing and assessing the performance of novices, or of how mentors should be appraised and rewarded). Since college policies do not refer to matters, such as learning about educational theories and technologies, they are also weak in this aspect.

In summary, national and college policies are consistent in some respects and inconsistent in others. From the perspective of HRD policy making, college policies should conform to national policies for addressing issues related to assessment, rewards for staff, learning of educational theories and technologies, and develop criteria for the 'effective lecture'.

2. Evaluation of the system

The purpose of the staff development system is to assist new teaching staff to acquire lecturing skills to a level of competence judged sufficient to enable them to exit the system. Suggestions from participants for its improvement have been described earlier. This section interprets and discusses how well the system achieves its purpose – from an HRD/PD perspective. It interprets and discusses two questions: 1) What are the strengths of the system from an HRD/PD perspective? and 2**)** What are the weaknesses of the system from an HRD/PD perspective?

The system aims to help new teaching staff develop their lecturing skills by using well-known HRD/PD strategies and performance improvement techniques – mentoring and coaching through observation and providing feedback. These support mechanisms are widely used for developing teaching skills of new staff in both school and HEd contexts (Anderson & Shannon, 1988; Kahn & Walsh, 2006; Petersen, 2007; Nolan & Hoover, 2008). The components of the learning process in the system conform to findings from the literature (e.g. Arends, 1994; Kahn & Walsh, 2006; Petersen, 2007), who found that teachers learn to teach from observations of teaching, peer observations, feedback, and networking with mentors and other colleagues.

Participants claimed that lecturing skills involve communicating with students, managing class discipline, presenting and explaining a body of knowledge, controlling pacing of the lecture, blackboard writing, and motivating students' learning. All of these skills conform to the argument of Brown and Atkins (1991) that lecturing skills include explaining, presenting information, and generating interest.

However, from the perspective of HRD/PD theory and research, the system is weak in many aspects: using experienced but untrained mentors; does not provide recognition or financial reward to mentors; both mentors and novices are compulsorily involved in the system; the mentors and novices within the system do not make a plan for helping each other to understand the goal of cooperation and their role of being a mentor or a novice; the system provides no learning on educational theories or technologies; and reflexive journals are not used by the novices to reflect on their lecturing skills development.

In summary, although participants viewed the system favourably on the whole, from an HRD/PD perspective, its strengths and weaknesses are summarized in Table 3.

Table 3. Strengths and weaknesses of the staff development system

Strength	Weakness
Uses well-known HRD/PD strategies, such as mentoring and coaching through demonstrations, observations, providing feedback, and networking with mentor and colleagues. Focus on learning lecture skills of explaining, presenting information, generating interest (Brown and Atkins, 1991)	Untrained mentors Using experience of teaching as main qualification to select mentors No recognition or financial reward for mentor's job Compulsory involvement of mentors and novices No plan before cooperation of mentors and novices No pre-lecture discussion Limited or no joint planning of lectures. No learning of education theory No learning of education technologies – blackboard mentors preferred technology No reflexive journal for lecturing reflection A limited amount of classroom observation *

* Weakness identified by participants

From the perspective of HRD/PD and viewpoints of participants, the system assists new teaching staff to acquire lecturing skills. However, there is scope for improvement by addressing issues of educational theories, modern teaching technologies, joint planning of lectures, and mentor development for their role.

Implications

This section presents the implications for management and practice drawn from the findings and interpretation of this study. The implications were divided into two directions: for policy making and for policy implementation.

1. Implications for policy making

Policy is the general guide and direction for action, an overarching statement which includes a goal and guiding principles for an intervention. Based on the findings and interpretation, the college management should formulate policies which have clear statements on assessment, rewards for staff, learning of educational theories and technologies, and criteria of the 'effective lecture'.

2. Implications for policy implementation

Owen with Rogers (1999) indicated that policies may be realized through programs that are then put into practice – the 'system' for operationalizing the plan. Based on the findings, the researcher interpreted the strengths and weaknesses of the staff development system from an HRD/PD perspective. The system helped new teaching staff develop their lecturing skills by using well-known HRD/PD strategies – mentoring, coaching, and modeling; however, the system had a number of serious weaknesses, which are discussed above. In view of existing situation, it is quite necessary for college management to retain the strengths and improve the weaknesses in order to keep the sustainable development of the system in the future.

Conclusion

The national Ministry of Education in China has issued policies for training new teaching staff and encouraged local institutions to implement them for the past 13 years. This study has investigated how national policies are interpreted and realized in a mathematics college of one Chinese provincial university where a staff development system has been recently established to help new teaching staff learn to lecture.

The study has shown that the system is basically a 'supervision model' in which an experienced, but untrained staff member works with a novice. The learning process in the system consists of seven components, but works principally on the basis of mentoring, coaching, and modeling in which mentors use the blackboard to demonstrate how to lecture and provide coaching feedback to

novices on their lecturing. Those who work within the system generally have positive attitudes towards it; however, they have some suggestions for its improvement. From a Western HRD/PD perspective, the system has a number of serious weaknesses that have been described above.

In the light of these findings and their interpretation in relation to relevant literature, this study argues that developing policies and providing structured assistance for new teaching staff to learn to lecture in mathematics are essential goals for HEd systems, institutions, and colleges or departments. Nevertheless, if relevant 'best practice' HRD/PD criteria are used to guide the system's development, it is likely that these goals would be realized with greater benefit to the staff, both novices and mentors.

Recommendations

This section offers recommendations on three aspects: policy document development, system development, and further research.

1. Recommendations for policy document development

Policy documents should be developed by adding statements and stipulations on: criteria of performance for 'effective lecturing'; training for mentors; rewards to mentors, such as financial benefit and recognition; learning of educational theories and technologies.

2. Recommendations for system development

Managers should: train and provide other staff development opportunities for mentors, including making time available for their work as mentors; provide recognition or financial rewards to mentors; introduce courses on Pedagogy, Education Psychology, and Education Technology; introduce joint planning for lecture preparation; request mentors and novices to formulate a plan before their cooperation; request novices to keep a reflective journal.

3. Recommendations for further research

A similar study may be conducted in other universities in China or other countries. And an evaluation study is required to compare the effectiveness of traditional blackboard teaching in mathematics, as favoured by mentors, with teaching using modern technologies, such as Microsoft Power point.

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