
Title	Pedagogical knowledge and skills of preservice primary school teachers
Author(s)	Sylvia Chong, Doris Choy and Angela F. L. Wong
Source	Australian Association for Research in Education Conference, Brisbane, Australia, 30 November to 4 December 2008

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

Pedagogical Knowledge and Skills of Preservice Primary School Teachers

Sylvia Chong
Doris Choy
Angela F. L. Wong

National Institute of Education
Singapore

There seems to be an expectation that preservice teacher preparation will equip beginning teachers with a set of beginning knowledge and skills in teaching. The objective of this paper is to examine the perceptions of pedagogical knowledge and skills in teaching held by preservice teachers of the Postgraduate Diploma in Education (PGDE)(Primary) programme in the NIE Singapore, at the entry and exit points of their preservice programme. It will compare the perceptions at the two data points to see if there are changes.

Introduction

Beginning teachers are expected to bring to classrooms a basic set of pedagogical knowledge and skills. They will require a good knowledge of their teaching subjects, a confident grasp of a range of teaching methods and sufficient knowledge of child development and school for an effective start to their teaching careers. There is an expectation from schools and beginning teachers that the preservice teacher programme will provide them with this set of beginning knowledge and skills (Kervin & Turbill, 2003).

Literature (Davies & Ferguson, 1997; Feiman-Nemser, 2001) stressed the importance of teacher preparation and quality teaching and that a knowledgeable and skilful teacher makes the greatest impact on the learning process of the students. Upon graduating from his/her pre-service programme, a beginning teacher's practice is in a unique environment with an intersection of multiple, interacting, interdependent contexts and s/he must call upon diverse sets of knowledge and skills to begin enacting the roles of the profession (McLeod, 2001). Teachers need to know many things, including subject

matter, learning, students, curriculum, and pedagogy. An important part of learning to teach involves transforming different kinds of knowledge into a flexible, evolving set of commitments, understandings, and skills (Feiman-Nemser, 2001).

Review of Literature

Professional knowledge and skills are central in learning and learning to teach. Different literatures have defined the professional knowledge and skills to be acquired by preservice teachers in various ways. Smylie, Bay and Tozer (1999) organized knowledge and skill acquisition for preservice teachers into 3 areas:

- in-depth subject matter knowledge,
- knowledge of the historical, philosophical, and social-cultural foundations of education and
- knowledge of formal theories and empirical research about teaching, learning, schools as organizations, and change.

Thiessen (2000), on the other hand, suggested that professional knowledge and skills is the interrelationship between practical (e.g., routines, procedures, methods) and propositional (e.g., discipline-based frameworks and concepts, pedagogical principles, situation-specific theories) knowledge and skills. Successful teaching depends on the teachers' capacity to concurrently use both kinds of knowledge and skills in purposeful contexts. They also need to understand that knowledge and skills comes with changes in what 'the knowledge is for and how and with whom it develops' (p. 133).

According to Uhlenbeck, Verloop and Beijaard (2002), there are two perspectives on the sort of knowledge and skills teachers need in order to teach well. These two perspectives are research-based and practice-based knowledge and skills.

The research-based perspective on teacher knowledge and skills relates to the following: subject-matter knowledge, classroom management, student learning, student motivation, instructional strategies, and pedagogical knowledge. Beginning teachers ideally need to know and are able to use the knowledge about teaching generated by researchers in various disciplines. They need to demonstrate that they are able to use and adapt certain instructional strategies to their own situation. The main issue is how teachers can translate these sets of knowledge and skills into effective teaching activities.

McBee (2004) asserts that research-based knowledge and skills can help a beginning teacher to connect their learning to practice. Proponents of research-based knowledge emphasize “learning from teaching” rather than “learning how to teach”.

The practice-based perspective on teacher knowledge and skills assumes that what teachers need to develop is practical knowledge and skills, that is, the knowledge and skills that are embedded in practice. These include personal practical knowledge, practical knowledge, craft knowledge, wisdom of practice, implicit theories. They also refer to knowledge that teachers develop with respect to their teaching practice, knowledge of the classroom situation and of practical dilemmas. Classroom experience and reflection on experiences form a primary source in teachers’ practical knowledge. Teachers must integrate research-based knowledge and skills and their practical knowledge and skills. The integration of both sets of knowledge and skills help to guide a teacher’s behaviour because of its relevance and immediate use in daily practice (Van Driel, Beijaard, & Verloop, 2001).

Eggen and Kauchak (2001) gave a cognitive dimension of perception; they see perception as the process by which people attach meaning to experiences. Perception may be influenced by both the present and past experiences, individual attitude at a particular moment, the physical state of the sense organ, the interest of the person, the level of attention, and the interpretation given to the perception. It has been established that there is high correlation between what teachers perceived they know and what they teach (Wilson et al., 2001). Thus, the ability to teach effectively depends on the teachers’ perceptions of knowledge and skill, and knowledge and skill occurs in a variety of forms.

Objectives

This paper reports part of the results from a longitudinal study conducted with preservice teachers at the National Institute of Education (NIE), Singapore. The longitudinal study collected baseline information on why the preservice teachers wanted to join the teaching profession, their attitudes, and perceived knowledge and skill levels towards teaching at the beginning and at the end of the teacher preparation programme. Upon completion of the teacher preparation programme, the study follows the preservice teachers into their first and third year of teaching.

The objective of this paper is to examine the perceptions of pedagogical knowledge and skills in teaching held by preservice teachers of the Postgraduate Diploma in Education (PGDE)(Primary) programme in the NIE Singapore, at the entry and exit points of their preservice programme. It will compare the perceptions at the two data points to see if there are any changes in perceptions. Based on the objective, only part of the data and findings from the longitudinal study will be reported and discussed. Specifically, this paper will focus on how the Primary PGDE preservice teachers perceived their knowledge and skills. The data collected from the questionnaires administered at the entry and exit points of the teacher preparation programme were the main source of data.

Postgraduate Diploma in Education (Primary)

The PGDE (Primary) programme is a one-year full time programme for graduates and is designed to prepare preservice teachers to:

- a. have the knowledge and skills to teach in primary schools;
- b. be aware of and sensitive to the needs, abilities, interests and aptitudes of students in schools;
- c. be able to teach students of different abilities, interests and backgrounds effectively and creatively;
- d. be committed to the nurturing and development of the students in their charge; and
- e. be committed to self-initiated and sustained professional development.

(National Institute of Education, 2004)

To ensure that standards, NIE has an International Advisory panel to review roles and functions of the Institute as well as its strategic thrusts, and included in these, is the quality of its teacher preparation programmes. At the programme level there are, external examiners for each programme. At the curriculum studies level, external examiners/assessors are appointed for each discipline.

Methodology

The participants were preservice teachers in the 2004 intake of the PGDE

(Primary) programme. This one year programme is for graduates with a baccalaureate degree from local or recognized foreign universities. They were invited to participate in a survey at the entry and exit points of their initial teacher preparation (ITP) programme. Out of the total of 284 students, 170 participated in both data collections.

The survey instrument comprised 34 items. All items had two sets of five-point Likert scales (see Table 1) for measuring their perceptions of knowledge level and skills level separately.

Perceptions of Knowledge Level	Perceptions of Skills Level
5. Highly knowledgeable	5. Extremely confident
4. Knowledgeable	4. Confident
3. Uncertain	3. Uncertain
2. Not so knowledgeable	2. Not so certain
1. No knowledge at all	1. No confidence at all

Table 1: The five-point Likert Scale of the self-perceived level of knowledge and skills in teaching

Data Analysis and Results

Factor analysis with Varimax rotation was used to extract five factors. Each factor's eigenvalue ranged from 11.94 to 1.10. Only factor loadings of 0.30 or above were considered. The five factors extracted are: Factor One: Facilitation; Factor Two: Assessment; Factor Three: Management; Factor Four: Preparation; and Factor Five: Care and concern. Each factor consisted of five to six items from the survey. Six out of the 40 items were eliminated as they did not fit the extracted factors. The instrument is fairly reliable as the Cronbach alphas for the five factors ranged from 0.77 to 0.89. The descriptors of the factors and selected items as well as Cronbach alphas are shown in Table 2.

Factor	Factor description	Sample items	Cronbach Alpha
Factor 1: Facilitation	Facilitating students' thinking and learning	<ul style="list-style-type: none"> • Infusing critical thinking appropriately into the lessons • Facilitating and stimulating thinking among students 	0.89
Factor 2: Assessment	Assessing students' learning formally and informally	<ul style="list-style-type: none"> • Using evaluative feedback to assist students in their progress • Interpreting students' performance from test scores 	0.82
Factor 3: Management	Managing student behaviours and discipline	<ul style="list-style-type: none"> • Managing students with behavioural and learning problems • Managing student learning-groups effectively 	0.84
Factor 4: Preparation	Planning lessons and preparing appropriate resources	<ul style="list-style-type: none"> • Choosing appropriate teaching strategies for teaching particular topics • Planning lessons that take into consideration the different abilities of students 	0.83
Factor 5: Care and concern	Providing care and helping students with problems	<ul style="list-style-type: none"> • Showing concern for the holistic development of students • Motivating students to work hard 	0.77

Table 2: Sample items of factors and their reliabilities

Based on the factors, paired sample t-tests were conducted to compare the means of the data collected from the entry and exit points. There were significant differences in all five factors in their perceptions of pedagogical knowledge (see Table 3). The biggest increase was found in Factor four: Preparation, from 3.19 to 3.76 and the smallest increase was Factor five, from 3.63 to 3.85. For pedagogical skills, there were significant differences in four out of five factors (see Table 3). The biggest increase in perceived pedagogical skills was in Factor four: Preparation and there was no significant change in Factor five: Care and concern.

	Knowledge		t	Skills		t
	Entry	Exit		Entry	Exit	
1. Facilitation	3.21	3.70	-9.71**	3.31	3.56	-4.45**
2. Assessment	3.29	3.59	-5.51**	3.35	3.48	-2.74*
3. Management	3.17	3.60	-7.83**	3.28	3.47	-3.94**
4. Preparation	3.19	3.76	-11.63**	3.33	3.65	-7.92**
5. Care and concern	3.63	3.85	-5.16**	3.67	3.75	-1.79

Table 3: Preservice teachers' perceptions of pedagogical knowledge and skills at entry and exit points of the programme (p < 0.01, *p < 0.05)**

Conclusion

Yarger and Smith (1990) proposed a “linking” approach for studying teacher education. The approach links three components of a teacher education programme, namely, the antecedents or pre-existing conditions, the process or transaction and the outcomes. It is this linking process that this study has adopted. It began with the study of the preservice teachers' perceptions of the level of knowledge and skills that they had when they entered the initial teacher preparation programme. This was followed up a year later with the assessment of their perceptions again at the point of exit from the programme. Any changes in perceptions from entry to exit could be a result of the “process” of the teacher preparation programme.

Findings showed that at the entry point, preservice teachers already perceived that they have some pre-requisite pedagogical knowledge and skills. This perception could have arisen from personal experience as pupils in schools, causing them to feel that they know what teaching is about. Lortie (1975) refers to this as “apprentice of observation.”

At the exit point, preservice teachers perceived a significantly higher level of pedagogical knowledge and skills. For pedagogical knowledge, the perception was significantly higher for all five factors. However for perceptions of pedagogical skills, there were significant differences in all factors except Factor five: Care and concern.

The significant differences found in most factors between the entry and exit points in both pedagogical knowledge and skills could be due to the fact that all the preservice teachers have already completed their course work as well as a 9-week block practicum in school by the exit data collection. Therefore, the initial teacher preparation programme could have had a positive effect on their perceptions.

With regards to the non significant difference in perception of pedagogical skills

found for Factor five: Care and concern, it could be because the preservice teachers were more concerned with the more “technical” pedagogical skills like planning, instructing, classrooms management and assessment of pupils’ learning, and hence did not pay as much attention to their affective pedagogical skills of showing care and concern to their pupils. This finding is supported by a study by Hansen (2001) which reported that preservice teachers and beginning teachers are preoccupied with planning, effective instructing, managing classrooms and assessing pupils’ learning. He referred to the traditional competencies of a teacher education programme that built on the “technical” aspects of teaching and described the actions that distinguished the flat and technical teacher from the dynamic and inspirational teacher. As this paper is part of a longitudinal study, future research will continue to follow these primary PGDE beginning teachers into their first year of teaching. Data from questionnaires, in-depth information from interviews and focus group discussions could be used to examine further changes of the self-perceived level of pedagogical knowledge and skills.

Teacher preparation and development is a continuum (Feiman-Nemser, 2001). Preservice programmes provide foundational knowledge and skills. In the long term, professional development plays an integral part in the growth of teachers and their teaching skills. This is a shift away from a fragmented view of discrete “preservice preparation” and “in-service development” to one continuous teacher development over time.

References

- Davies, R., & Ferguson, J. (1997). Teachers’ views of the role of initial teacher education in developing their professionalism. *Journal of Education for Teaching: International Research and Pedagogy*, 23(1), 39-56.
- Eggen P., & Kauchak D. (2001). *Educational psychology: Windows on classrooms*. New Jersey: Prentice Hall, Inc.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013-1055.
- Hansen, D. T. (2001). *Exploring the moral heart of teaching: Toward a teacher’s creed*. New York: Teachers College Press.

- Kervin, L. K., & Turbill, J. (2003). Teaching as a craft: Making links between preservice training and professional practice. *English Teaching: Practice and Critique*, 2(3), 22-34.
- Lortie, D. (1975). *Schoolteacher: A sociological study*. London: University of Chicago Press.
- McBee, M. T. (2004). The classroom as laboratory: An exploration of teacher research. *Roeper Review*, 27(1), 52-58.
- McLeod, J.C.H. (2001). Getting out, getting on: Becoming a teacher. In J. Allen (Ed.), *Sociology of education. Possibilities and practices* (2nd ed.). Social Science Press: Katoomba.
- National Institute of Education (2004). *Postgraduate Diploma in Education, 2004 -2005* ISSN 0218-3196.
- Smylie, M. A., Bay, M., & Tozer, S. E. (1999). Preparing teachers as agents of change. In G. A. Griffins (Ed.), *The education of teachers* (pp. 29-62). Chicago: The University of Chicago Press.
- Thiessen, D. (2000). Developing knowledge for preparing teachers: redefining the role of schools of education. *Educational Policy*, 14(1), 129-144.
- Uhlenbeck, A.M., Verloop, N., & Beijaard, D. (2002). Requirements for an assessment procedure for beginning teachers: Implications for recent theories on teaching and learning. *Teachers College Record*, 104(2), 242-272.
- Van Driel, J.H., Beijaard, D., & Verloop, N. (2001). Professional development and reform in science education: The role of teachers' practical knowledge. *Journal of Research in Science Teaching*, 38(2), 137-158.
- Wilson, S.M., Floden, R.E., & Ferrini-Mundy, J. (2001). *Teacher preparation research: Current knowledge, gaps, and recommendations*. A research report prepared for the U.S. Department of Education by the Center for the Study of Teaching and Policy in collaboration with Michigan State University.
- Yarger, S.J., & Smith, P. L. (1990). Issues in research on teacher education. In W. R. Houston (Ed.), *Handbook of research on teacher education* (pp. 25-41). New York: Macmillan.