11-1-1996

Communication between theory and practice: How student teachers develop theories of teaching

Adrienne Waghorn
Wellington College of Education

Ken Stevens
Victoria University of Wellington

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Adrienne Waghorn
Wellington College of Education

Ken Stevens
Victoria University of Wellington

Abstract

The teaching profession continues to have difficulty in codifying a body of knowledge on which to base pre-service teacher education programs. One problem is the gap between the student teachers' theoretical beliefs and their practical experiences in classrooms. Student teachers often fail to implement their ideas and instead comply with the status quo in the classroom. Previous research has identified the student as dealing with this dilemma by developing a mind set which places theory in one compartment and practice in another. This paper describes a study of ten student teachers at the end of their training. Their descriptions of their experiences confirm the theory-practice gap but they also demonstrate that they are very much aware of the discrepancy between how they teach and how they would like to teach. It is a situation which they feel powerless to change. Pre-service course objectives need to be aligned with those of professional development programs for practising teachers in order to bring about a convergence of thinking and consequent change in schools.

Effective communication between theory and practice has been the primary concern of teacher educators for over two decades. It continues to challenge those whose task is to develop pre-service teacher education programs which integrate professional knowledge and classroom teaching practice.

This paper revisits three problems in teacher education identified by Sellars and Stevens (1983): the lack of communication between educational research and teacher decision making, the belief that teaching has a shallow knowledge base and the belief that teaching does not require a theoretical base at all. It examines the findings of a recent study which analyses the teaching practice experiences and theories about teaching and learning held by student teachers in an elementary pre-service teacher education program (Waghorn, 1993). It was found that the student teachers had developed firm beliefs about teaching and learning and clear ideas about how their classroom programs should be implemented. They recognised, however, that despite their best intentions, they failed to put their beliefs into practice when in the classroom. The conflict for the ten student teachers in this study was between their personal beliefs which were congruent with course work, and what happened in classrooms during their teaching practice. Past research has identified student teachers as being relatively unaware of this dichotomy, describing them as having "developed a mind set which places theory in one compartment and practice in another" (Ramsay and Battersby, 1988:15).

The study described in this paper begins with Ramsay's and Battersby's findings and adds a new dimension: that the student teacher is fully aware of the tension between theory and practice and, lacking any authority to do otherwise, usually complies with classroom practices. The student teachers carried out actions and routines which were, in the main, the preferred style of their supervising teachers. This did not mean that the student teachers necessarily agreed with or even liked what they were doing. They made explicit decisions to set aside their own preferred methods and ideas, suspended their own judgements and adopted what they often thought of as less desirable ways of teaching when in classrooms. In practical terms, then, compliance with their supervising teachers did not necessarily mean compliance with the teachers' ideas. The study drew the conclusion that student teachers are theorists undertaking teaching practice in prevailing conditions which they are powerless to change. The same conclusion was reached by Renwick and Vize (1993) in their major longitudinal study of student teachers. This conclusion provides an insight into the nature of the theory-practice gap in teacher education which could influence future decisions relating to both the content and resourcing of pre-service and in-service teacher education.

This paper takes the position that the first of the problems outlined by Sellars and Stevens in 1983 - the lack of communication between educational research and teacher decision making - remains a serious one for teacher educators. The development of educational theory by Katz and Raths (1985), Shulman (1987) and others contributes to the solving of problems two and three: that teaching has a shallow knowledge base and that teaching does not have a knowledge base at all. However, two further problems are identified in the present research: that the theories of teaching held by student teachers are overlooked during the teaching practice component of their programme and that student teachers' theories of teaching and learning based on research can be reversed by prevailing conditions in classrooms.

Research background

Research by the Holmes Group (1986) and the Carnegie Workforce on Teaching as a Profession (1986) highlights the failure of the teaching profession in the United States to explicate a theoretical base. Such projects make causal links between education and economic and social decline in developed countries. In Australia and New Zealand, the connection between education and national economic performance has led to unprecedented pressure on school systems to improve standards and engage in curriculum change. A current side-effect of such policy development is the restructuring of formal qualifications frameworks and the redefining of knowledge bases for the professions and vocations at tertiary level. Within this context teacher education is more than ever under pressure to codify its professional knowledge base in order to justify the cost of training and resources.

Two well-researched barriers to a secure professional base for teacher education are the "latent culture" or the effect of the ten thousand hours teachers spend in their own schooling (Tabachnick and Zeichner, 1984) and the "washout" effect when new teachers' ideas are steadily eroded over time (Lortie, 1969; Tabachnick and Zeichner, 1984).

Subsequent researchers have employed a range of qualitative methods and have continued to generate material which is leading to a model of how theory informs practice in teacher

education (Barrow, 1990; Beyer, 1987; Popkewitz, 1987; Tabachnick and Zeichner, 1984). In many studies, arrangements between lecturers and students are described, such as methods of supervision, ways of recording life histories and the keeping of diaries of reflective thinking (Gomez, 1990; Nettle, 1988; Sikes and Troyna, 1990; Tabachnick and Zeichner, 1984). Methods for student teachers to carry out specified procedures such as these do not on their own generate a theory of teacher education. Calderhead (1993: 16) warns that by allowing terms such as "reflective practice" to become slogans, a very restricted view of classroom practice will be developed.

Tisher (1987) reviewed 90 documents which used empirical methods such as surveys, action research, case studies, evaluations, reflections on anecdotal data, as well as pre- or post-test designs, leaving out philosophical treatises, descriptions of courses, procedures and position papers on the practicum. Tisher, however, questions (1987: 88) the value of such an accumulation of studies which lack theoretical frameworks:

Unfortunately, a considerable proportion of the research on the practicum, in Australia, and elsewhere, takes place in a theoretical vacuum and at the same time neglects the influences and interactions from other components of the teacher education programme. The research is not associated with any second order theory about how to educate people to be effective teachers, and it does seem necessary to link it with some theoretical framework in order to build an inter-related effective knowledge network.

Tabachnick and Zeichner (1984: 29) identify the absence of research into students' experience during teaching practice:

despite the literally hundreds of studies that have been conducted on student teaching, relatively few researchers have actually examined what takes place during the experience itself and how professional life is interpreted and acted upon as students participate in its ongoing affairs. Most students, by relying exclusively upon the pre- and post- administration of questionnaires and surveys for data and not upon observations of and discussions with students as the experience involves have failed to address many important questions related to the experience.

During the 1980s and 1990s there has been growing interest in research into the nature of knowledge in teaching: what Shulman (1987) terms "the intersection of content and pedagogy." Wilson (1989) calls for a return to a constructivist model of students developing personal theories of education in a democratic learning setting. Such a model requires a renewed focus on the disciplines of sociology, psychology and philosophy but within a research-based teacher education program which would encourage the construction of personal theories of education.

The construction of personal theories of learning and teaching by student teachers is also advocated by Tickle (1987) and Meighan and Harber (1986). Marland (1992) notes the significance of "teacher know-how" or "implicit theory" and cites the considerable range of researchers who have coined terms synonymous with teacher thinking. Marland concludes that such knowledge will become inert unless it is accompanied by knowledge of how to use theory.

Stones (1989) calls for students to be equipped with a grasp of some key pedagogical principles that would enable them to construct a personal model of teaching which would be generally applicable, and some way of monitoring their own performance. Shulman's model of pedagogical reasoning and action involves a cycle of comprehension, transformation, instruction, evaluation and reflection. The starting point and terminus is comprehension. Shulman's work combines findings from empirical research, contributions from a range of academic disciplines and ethnographic research in his pursuit of a knowledge base for teachers. He lists Plato, Dewey, Neill and Skinner as the philosophers who communicate what a good educational system should be and adds Bloom on mastery learning and Rosenthal's and Jacobson's work on teacher expectations. The teacher effectiveness literature is a necessary component of the paradigm, but Shulman warns against the application of this material to teacher appraisal. The third component of Shulman's model is the presentation of case studies in order to present examples of teachers in action and to protect against the analysis of teacher effectiveness measures out of context (Shulman, 1987).

The call for research into individual student teacher experiences during classroom teaching practice is a persistent and justified one. Research studies which reveal the complexities of what goes on in the classroom during student teaching practice have much to say that is valuable about existing classroom organisation as well as student teacher decision-making. Increased knowledge about both will enhance children's learning in both the short and long term.

Methods

The primary research undertaken for this study concentrated on a crucial six weeks for final year students in a pre-service primary (elementary) teacher education program. During the sole charge teaching practice the student teachers took control of the supervising teachers' classes and were responsible for the entire program during that time.

The student teachers participating in this study were situated in a diverse range of school settings. Class sizes ranged from 13 to 38 students, some with transient populations, others with a wide range of cultural and language backgrounds. Ethnographic methods of investigation captured the highly individualistic nature of each set of student teacher interactions.

The student teachers were asked to recall specific incidences of teaching in some detail, with emphasis on their reasons for the particular decisions that they made in the classroom. Critical incident analysis provided the students with a focus for reflecting on practice (Sellars, 1992). Grounded theory was applied to interpret the data (Glaser and Strauss, 1967; Strauss and Corbin, 1990). The findings from analysis of this data were then compared to findings drawn from a literature review.

The study asked three questions:

1. To what extent do student teachers develop their own meaningful and lasting theories of teaching and learning?

2. Are the decisions they make in the classroom based on these theories?

3. What are the structures and processes within the training program which provide for successful integration of theory and practice?

The data from the ten taped interviews with the student teachers were organised into four categories: descriptions of successful teaching episodes, descriptions of college courses which contributed to teaching practice, accounts of conflicting ideas, and how the student teachers assessed children's work during teaching practice. Each of these categories was then considered in relation to the student teachers' philosophies of teaching and learning.

During each interview all topics, ideas and contexts for discussion were selected by the students. This ensured that no external judgements were made as to the quality of their choice, the curriculum areas they chose to talk about or the length of time they chose to devote to a particular issue. With this degree of control over the discussion, students had the opportunity for critical reflection, recall of events and comparisons with feelings then and now - all of which further contributed to the shaping of their own ideas, theories and views of themselves as teachers (Zeichner, 1983; Zeichner and Liston, 1987).

It was also hoped that student control of the interview would lead to accurate recall and an avoidance of the common phenomenon of a mismatch between what people think or hoped they did, and what actually took place. There were many cases of key information being found in responses to secondary questions or conversation additional to the answers to the interview questions. For example, the student teachers would describe how they assessed children's progress while giving details about record keeping or classroom management.

Research findings

The first research question asked: *To what extent do student teachers develop their own meaningful and lasting theories of teaching and learning?*

The student teachers described their theories about teaching and learning while specifically discussing their personal philosophy as well as incidentally during the interviews. They described two different kinds of theories or beliefs: firstly, theories about teaching and learning for which there was an overall framework or research context; and, secondly, miscellaneous beliefs with no evident theoretical framework or research base. In the first group was the theory of teaching and learning mentioned by all of the student teachers in the study, the interactive approach to teaching and learning. This constructivist view of classroom teaching and learning has its foundation in the Waikato Learning in Science Project (LISP). The student teachers had learned about the interactive approach in science education courses and they applied it in a range of curriculum areas. The model consists of a teaching sequence of four phases: preliminary, focus, challenge and application. It is based on the generative (constructivist) view of teaching and learning; that teachers take into account children's thinking and their differing perspectives while working through the stages of establishing context, presenting evidence for the scientist's view and assisting children with clarifying new views and ideas (Osborne and Freyberg, 1985: 108-111).

Examples of the second group of theories or beliefs about teaching and learning were child-centered education, children taking responsibility for their own learning, the teacher as facilitator, and independent learning. The student teachers variously described these views as coming from "everywhere", "all course work", "the thinking you pick up as you go along". These phrases persisted throughout the data. One student expressed reservations about children's capacity to cope with so much decision making but the rest of the student teachers expressed a strong commitment to these beliefs. No one described a theoretical framework or a research context which defined "child-centered learning" or "independent learning".

There were many examples of the student teachers implementing the interactive learning model in their classrooms in a range of curriculum areas:

What came out of it was the questions they wanted to find out more about, and that's why I always thought about the interactive approach and I always used to think, I don't know if I could do that, how would it work? Well, it does work and children can learn from their questions.

Examples of the second category of student theories about teaching also took place in a range of curriculum areas.

Donna felt that children should be encouraged to do their own learning and to work independently, to know their own limits but try and experiment. She described herself as pro-independent learning. She wanted the children to make their own decisions a lot of the time and to be accountable for what they did:

(My objective was) *to get them to work independently and another was just to have fun. It wasn't my objective to have beautiful published work for the parents to come and see although of course some of it was.*

Emily agreed that the learning process was up to the individual, that the teacher is there but people will learn things in their own time. The teacher is a facilitator and will guide the children in the right direction, perhaps not telling them how to do things but where to find the information:
I like the idea of this child-centered approach, where the kids are learning by themselves and of themselves as a group. I don't think the teacher should stand up in front and recite and regurgitate information they've learnt.

Angela expressed the same ideas about independent learning in slightly different terms. She said that she wanted the children to understand that they were responsible for their own learning, that she could offer them experiences or knowledge but unless they were also prepared to bring something of themselves too, it wouldn't go very far. She was cautious about a wholesale application of the independent learning view. The children who were not prepared to pick up the challenge required a lot of overseeing. It worked for some and not for others. She felt that teachers needed to proceed with small steps and monitor progress.

The second research question asked: *Is student teacher decision making in the classroom based on these theories?*

There was a consistent pattern of student teachers electing to abandon planned approaches and continue with whatever the class was used to doing. For most, this was not regarded as a problem, it was only to be expected, although they did express disappointment. They believed that at some time in the future they could teach in accordance with how they felt things really ought to be done:

It was like the beginning of science units...where you have to find out what the children know and what they need to have and what they could investigate...well we didn't actually do that but we did find out what they know and from that we found out a little about what they might like to know.

Moana described how she wanted to teach maths to the children in mixed ability groups for maths. Her supervising teacher was happy for her to do this but her planning only lasted a week because the class was used to being streamed for maths according to ability. She was adamant that she would teach her own class in mixed ability groups which was advocated in her course work:

I have had to not entirely do things my own way because my style is very different from my associate's style and so I modelled myself on her deliberately because that is what the children are used to.

Andrew expressed surprise and disappointment when his planned PE program had to be abandoned. Cross-school interruptions such as choir practices took precedence. He also abandoned his maths planning. He had wanted to implement peer tutoring and group activities rather than what he described as his supervising teacher's directive delivery. For Thomas, grouping children for reading and maths proved an impossibility. The children had not been grouped for these activities previously. Although the supervising teacher was happy for this to take place, the children's resistance proved overwhelming.

Organisational changes appeared to be very difficult to achieve. Examples given were concerned with grouping children and expecting them to work in those groups in quite a different way from what they were accustomed to. In all cases, however, the student teachers' decisions were based on a view of best practice gained from course work. These were no instances of student teachers viewing classroom practice as better than anything they had heard about during course work, and making a decision for that reason.

There were two reasons given by the student teachers for deciding to abandon their preferred approach to teaching: direct contradiction between their ideas and those of their supervising teacher and conflict with the wider school timetable. There is a significant gap between student teacher expectations about the best of current teaching practice which they gained from their course work, and what is happening in the classroom.

The third research question was: *What are the structures and processes within the training program which provide for successful integration of theory and practice?*

The student teachers credited their course work with equipping them with a theoretical framework for teaching and learning, the interactive approach used in science courses. Course work however, must also take the dubious credit for being the source of the miscellaneous beliefs about child-centered learning. Regardless of the quality of the theory, in both cases the student teachers were often unable to put their ideas into practice in the classroom.

The findings from this study are very similar to those of Renwick and Vize (1993: 219):

Our students were far from passive recipients of the courses laid out for them...most were quick to detect 'dichotomies between theory and practice' and to that extent were reflecting on their experiences and thinking of ways in which things might have been done differently and better. Their problem was that they were powerless to change what had already been laid down for them.

The student teachers succeeded in developing their own theories of teaching and learning, albeit they were incomplete or contained shortcomings. It remains to be seen how long such theories will last, but research evidence is traditionally pessimistic (Lortie, 1969).

There was a consistent pattern in the interviews of student teachers electing to abandon planned approaches and concur with whatever the class was used to doing. The student teachers were able to introduce their own topics in some instances, but it was frequently beyond their control to teach in the way they would like. These powerful "antecedent conditions" are the findings of numerous research studies (Tisher, 1987; Katz and Raths, 1985).

The interactive approach used in science courses described earlier was reduced by circumstances to a strategy or technique for finding out children's ideas about topics in a range of curriculum areas. The students expressed strong belief in the important of this preliminary phase, but did not mention carrying out the equally important phases of the model which involve challenging and changing children's ideas.

It has already been mentioned that prevailing or existing conditions strongly militated against students carrying out their preferred objectives during teaching practice. This, in itself, prevented implementation of the interactive model for teaching and learning. However, the student teachers' descriptions of their personal philosophies of teaching and learning also appear to have served as a preventative measure in the classroom.

When the student teachers talked about their philosophies and beliefs, there was a sense that whatever the children knew was all that they needed to know at that time. It seems that in the minds of the student teachers the next stage in the interactive teaching model was left entirely up to the children because teacher subject knowledge was not seen as having a place in the enquiry. The rationale which the students gave for this position was that the research on which the interactive teaching model is based (The Learning in Science Project) shows that teacher (imposed) knowledge is the type of knowledge that does not last in the long term.

The student teachers often referred to themselves as facilitators, and expressed discomfort with the view of a teacher standing before the class imparting knowledge.

It is possible that student teachers apply research findings (in this case the Learning in Science Project) to classroom practice within the framework of their personal philosophies in ways that could, in fact, be counterproductive. It seems that their understanding of the interactive teaching and learning model has been filtered through their personal philosophies of "child-centered teaching" and "independent learning". The result is that information is withheld ("I'm not going to tell you, you have to figure it out for yourselves"). There appeared to be few mechanisms in place for children to access information once they had identified their own knowledge and formulated questions. A topic for further study is how much subject knowledge student teachers think they ought to bring to each topic they expect children to investigate.

Osborne and Freyberg stress the intellectually-active stance of the teacher in the process and describe the success of the application phase of their model for teaching and learning as "dependent on active, intelligent teaching" (Osborne and Freyberg, 1985: 117). Shulman (1987) draws the same conclusion:

Indeed, we have reason to believe that teacher comprehension is more critical for the inquiry-oriented classroom than for its more didactic alternative.

Conclusion

This paper describes a research study which contributes to our understanding of one of the main problems for teacher education: the gap between student teachers' theoretical development and their practical work in the classroom. This problem continues to contribute to the difficulty of securing a professional knowledge base for teacher education. The paper describes research studies which have used qualitative research methods revealing the complexities of student teacher decision making, and how they deal with the conflict between how they wish to teach and how they actually teach. It then discusses the additional effect of theories which may be, in their implementation, in conflict with other theories the student teachers are attempting to implement.

The ten student teachers who were the subjects for this study undertook a program for coursework for which they developed two sets of theories for teaching: the first was a constructivist model for teaching, grounded in a rigorous theoretical framework. The second was a group of beliefs variously described as children taking responsibility for their own learning, the teacher as facilitator, and independent learning. These beliefs were not part of an overall theoretical framework. The student teachers demonstrated strong commitment to both sets of theories but they generally chose not to teach in accordance with those theories. Two reasons were given: contradictions between their ideas and those of their supervising teachers, and conflict with the wider school timetable.

The constructivist model for interactive teaching described earlier, which was the theoretical model for teaching science used by the student teachers, was no more successful after the initial stages than application of the ideas from the second set of theories. Furthermore, it appears that ideas from the second group actually impaired implementation of the interactive

model. Although courses had been successful in engaging the student teachers in theoretical development, the prevailing conditions during teaching practice caused them to abandon their preferred style and teach according to the status quo.

The student teachers participating in this study demonstrated an impressive ability to think through situations and make decisions based on what they thought was best for the children they were teaching. With considerable skill they worked through the contradictions within their training program. However, the situation the student teachers find themselves in confirms the first of the problems for teacher education cited at the beginning of this paper, the lack of communication between educational research and teacher decision making. For the student teachers finding out about research in teaching and learning and building their philosophies around such research did not result in change in the classroom.

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