The Qualitative Report

Volume 6 | Number 4 Article 3

12-1-2001

Once Were Science Teachers

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Abstract

This paper explores the development of three pre-service science teacher educators' understandings of some critical incidents in their development of science teachers that has impacted on the manner in which they teach about teaching in a teacher preparation program. The study draws on self-study methodology by situating their reflection on practice within a critical discourse whereby reframing has been important in learning through a reconsideration from particular critical incidents in their high school science teaching experiences. The authors argue that through critical reflection on practice, as illustrated in this paper, that the beginnings of the articulation and documentation of a knowledge base of teaching about teaching might be initiated. They therefore offer some of their emerging views on what that knowledge base might encompass through some assertions of practice that they believe impact on their teaching about teaching.

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Abstract

This paper explores the development of three pre-service science teacher educators' understandings of some critical incidents in their development of science teachers that has impacted on the manner in which they teach about teaching in a teacher preparation program. The study draws on self-study methodology by situating their reflection on practice within a critical discourse whereby reframing has been important in learning through a reconsideration from particular critical incidents in their high school science teaching experiences. The authors argue that through critical reflection on practice, as illustrated in this paper, that the beginnings of the articulation and documentation of a knowledge base of teaching about teaching might be initiated. They therefore offer some of their emerging views on what that knowledge base might encompass through some assertions of practice that they believe impact on their teaching about teaching.

Introduction

Learning to teach is a complex and multi-faceted adventure as issues of pedagogy are shaped by the contextual features that are ever present, and changing, in a school environment. Our various experiences of learning to teach have uncovered some interesting challenges and dilemmas that, although individual, had common roots in the (subject) content within which this learning occurred. Once we were (high school) science teachers, now we are science teacher educators and the development of our understanding of science teaching and learning has been (and continues to be) shaped by both aspects of our teaching careers.

As schoolteachers we faced a range of issues that caused us to question our understanding of science teaching and learning. Some of these were generic, in terms of moving into the teaching profession, such as socialisation (Zeichner & Gore, 1990) or dilemmas in coping with change (Fullan, 1991) but there were also those that were (and still are) particular to teaching and learning in science. We have many vivid memories of images and episodes (White, 1988) from our teaching of science and, although the situations themselves may be like snapshots in time - some a little faded and ragged, others bright and new - these situations have been important in shaping our understanding of science teaching and learning.

Context

As high school science teachers, we moved into a system in which (in Victoria, a State in Australia) there had been a long history of school based curriculum development. Although

curriculum guidelines were available from the State Education system, the decisions about what to teach and how to teach at any particular year level was still a matter for the individual school. Hence, the professional autonomy we experienced in terms of teaching and learning and the 'nature of the content to be taught' was something that is perhaps not so common in some other Australian states and for that matter, many other countries.

Once when we were science teachers, approaches to science teaching did not rely so much on prescription (through curriculum documents) as on the ability of, and need for, teachers to conceptualise what they were doing and to really develop an understanding of the role of teaching and the relationship between teaching and learning that might be influential on one's practice. This approach then created situations whereby learning through experience necessitated reflection on experience. As both teachers and teacher educators, the role of reflection then has been important in shaping our understanding of the complex nature of teaching and learning and now, teaching about teaching and learning.

This paper is based on a Self-Study Methodology (Hamilton et al., 1998) whereby our learning through our reflection on practice has become an integral part of our understanding of practice. Through this approach we will attempt to illustrate how our views of teaching about teaching science have been shaped and how this understanding influences our teaching of pre-service science teachers at this point in time.

Self-study

As briefly noted above, we have developed this paper using a self-study methodology (Hamilton et al., 1998). In many ways, it could well be argued that self-study is a form of teacher research for teacher educators (Kuzmic, 2002) as the issues, problems and dilemmas of practice become the focus of the research. Self-study has developed as a research approach partly because,

The research on the development of teacher educators has been much more limited, and until recently, that too has been investigated by researchers who were not necessarily teacher educators. Consequently, most of our knowledge about developing as teachers and teaching teachers has not been grounded in practice or personal experience. The emergence of self-study and teacher research has shifted this trend. (Hamilton & Pinnegar, 1998, p. 236)

Our approach to the study we report in this paper similarly reflects the need for knowledge about teaching and the teaching of teachers to be grounded in the experiences of those who actually do that work. In our case, the work of teacher educators attempting to better understand and conceptualise their teaching about teaching to prospective science teachers.

Methodologically, self-study draws on data sources that are appropriate to examining the issues, problems or dilemmas that are of concern to the teacher educator. It is therefore common for such data to be drawn from discussions, journals and observations/recollections of practice. However, a central aspect of self-study is the need to frame and reframe practice in ways that encourage participants to consider different perspectives on practice, not to simply rationalise or justify existing practice (see for example, Loughran, 2002). This is an important issue in self-study for although; "all self-study scholars use extant research methods drawn from a number of

traditions and chosen for their ability to provide insight into the question of practice under consideration" (Hamilton & Pinnegar, 1998, p. 239) from our perspective, it is not possible to genuinely provide insights into questions about practice if the practice situation is not seen as problematic and that such situations are able to be viewed from varying perspectives (framing and reframing).

In our particular study, we collaborate as pre-service science teacher educators in the same teacher preparation program. Consequently, we often meet to consider the way the science section of the program is organised, jointly develop and review the curriculum, our teaching and our students' learning, and share experiences based on the teaching and learning episodes created for our students both at the university and during their school experiences.

On may occasions we reconsider what we are doing with our student teachers and why, and such questioning has been the catalyst for us to discuss and articulate that which we see as important in shaping our approaches to teaching in teacher education.

We trust that this paper begins to illustrate to the reader, the learning through reflection we have realized through this self-study based on a serious consideration of the shaping factors in our individual approaches to teaching in teacher education. For this paper, we have tried to limit ourselves to one major issue (or critical incident) that has been important in influencing our thinking about, and actions in, teaching about teaching.

Taxonomy - Engaging in Learning

Context: John was teaching science in an inner city Catholic Boys' school. After four years of teaching and coordinating the middle school (Years 9 & 10; 14 - 15 year old students) he moved into teaching senior biology. The change in content to be taught and the approach to teaching and learning caused him to reconsider a number of previously taken-for-granted assumptions about his practice.

The first year that I taught Senior Biology (Years 11 & 12) was my fifth year as a teacher. I was excited about teaching a subject I enjoyed but also somewhat apprehensive about the increased responsibility and the closer proximity of external examinations for my students. Fortunately, at this time I had a colleague who was a good mentor. He helped me to find my way through the syllabus by giving me a structure that enabled me to keep pace with the subject matter in accord with the relative importance of the content in relation to assessment. Hence, when the topic of taxonomy was looming large, I was advised to cover the topic in a sequential manner because it was, "a difficult and boring topic that the students just had to know."

I applied myself diligently to the task and attempted to memorise all the Kingdoms, phyla, species etc. so that I could deliver this information appropriately to my eager students. Within a few short lessons I had completed classification and announced as much to my colleague. His response was one of complete surprise. I had completed the topic and he had barely started. It was soon apparent that I may well have delivered the information, but I had not taught the topic, nor had my students learnt it (atleast if they did, it was not as a result of any particular help from me).

This episode became important in highlighting for me the difference between teaching and telling. I had embarked on the unit by telling the students what they needed to know but this did not translate into learning. Consequently, I reconsidered what it meant to learn about taxonomic classification and developed a teaching program (somewhat belatedly) which was much more satisfying for me and much more engaging for my students. Through this jolt to my teaching I soon came to recognise the value in attempting to construct teaching situations that were purposely and specifically linked with ways of learning. To do so I had to differentiate between transmission and active learning (Barnes, 1975) and to reflect on the manner in which I learnt particular concepts/content in order to genuinely 'teach' the concepts/content myself. Initially, my own limited grasp of the content had led me to teach it in a superficial manner. In the following years I learnt 'how' to teach the content as I refined and developed both my understanding of the content and the manner in which the students learnt it.

The importance of this story lies in abstracting from my high school teaching to teaching pre-service science teachers and similarly recognising the need to embed learning to teach science within experiences that highlight the very issues necessary to make sense of the relationships between learning concepts/content and teaching them. It is far too easy to tell student-teachers what they need to know and to offer vicarious experiences of teaching and learning science through our own memories of our teaching, it is another matter to construct learning experiences that teach the student-teachers about the learning in such a way as to trigger their understanding - in ways similar to my learning about teaching taxonomic classification.

Recognising the value of creating such learning experiences has led me to feel much less constrained by the curriculum and to genuinely recognise in my own teaching that 'less is more'. I believe in encouraging learners' curiosity by highlighting the questions I do not know the answers to such as the 'what ifs' and the 'what does that mean in a different context'. This questioning is valuable if drawn from the perspectives of both the teacher and the learner. Perhaps this point is more easily illustrated through an example. The Prediction - Observation - Explanation, POE (White & Gunstone, 1992; Baird & Mitchell, 1992) teaching procedure, which has proved to be particularly valuable in science teaching, is sometimes the vehicle I use to create appropriate teaching-learning situations in class. Engaging in learning is encouraged through using a POE for the addition of dry ice to a beaker of water. Predicting what will happen, observing what happens and then attempting to explain it is a valuable teaching and learning experience that teaches the very issues (that I outlined above) I would like student-teachers to understand; rather than simply be told about.

Embedding the learning about these teaching issues within the learning of particular concepts/content is an important way of not only highlighting what I consider to be important teaching insights, but also in helping student-teachers reconsider their understanding of the concepts/content in such a way as to encourage questioning of their knowledge base. Hopefully then, through such experiences, the student-teachers begin to recognise the need to create similar situations for their students when they are teaching. I certainly believe that the questions/issues/ideas that are raised by teaching science through situations such as that outlined above creates opportunities for understanding that are qualitatively different than if the knowledge were transmitted to student-teachers in a solely didactic fashion. For me, the learning needs to be 'in' the experience; hence the time taken to create such situations is quantitatively

different from simply passing on the knowledge as propositions; as I had initially done in my teaching of classification with my Biology class. In one sense, this difference may appear to be somewhat simple, but for me, the subtlety of the difference lies essentially with the necessary commitment to teaching for understanding, and therefore the commitment to the learning.

This leads to another issue that I view differently now as a science teacher educator. Much of the argument above revolves around the importance of learning as opposed to a singular focus on teaching. Teaching at University has dramatically broadened my understanding of learning and given me a vocabulary to articulate modes of learning in relation to theories of learning. Hence, learning science as a basis for teaching science has added significance when considered in concert with research on alternative conceptions/misconceptions (Driver, 1983; Driver et al., 1985; Osborne & Freyburg, 1985) and Children's Science (Gunstone, 1990).

As a high school science teacher I am not sure that I ever genuinely addressed issues associated with alternative conceptions. The notion of cognitive dissonance was not as powerful a frame for my science teaching then as it is now - partly through a lack of knowledge at the time and also through some of the social and cultural aspects of the school teaching profession in contrast to the expectations and 'taken for granted' aspects of the requirements of the academic teaching-researching profession.

Sharing Teaching

Context: Mandi shared the teaching of her middle school, science classes (yr 9 &10) with a colleague. Their collaborative planning and teaching led to new insights into their students' learning and their understanding of teaching, learning and science.

I was fortunate to be in a position of sharing a teaching load with a colleague. This meant that it was vital to communicate on a daily basis about what we intended to teach, what actually happened in our teaching, and as a result of this, what should be taught next (Berry & Milroy, 2002). We kept a detailed teaching journal to communicate this information to each other.

Excerpt from teaching journal.

Forces unit, year 10. (Following a prac in which students tied stones to a piece of string to investigate ideas about gravity and velocity.)

Teacher 1 (me)
Mirielle asked a question at the end of the lesson about whether a 5 cent piece dropped from the top of the Rialto tower could kill you if it landed on your head. Great question! Told her that. Not enough time to continue talking. Some one mentioned terminal velocity. (How much damage do you think a 5 cent piece would do to someone's head?)

Next lesson opened up discussion of Mirielle's question.
Karolina had worked out actual terminal velocity with her dad.
Zoe had asked "some guys" about it and they said, Crap, it wouldn't get fast enough".
Lots of kids said gravity increases as the 5 cent piece falls. This is a common misconception that we noticed last year.

Turned this into a Suchmann[Grant, Johnson, & Sanders, 1990] to get them to build up a picture of the explanation. At the end asked them to write the question that formed the problem and some explanations of the answer. Must try to link with dropping stones practice.*

(Next lesson - Balanced and Unbalanced forces)
Teacher 2 (colleague)
Great lesson.
The main misconception they have seems to be that if something is moving downwards then the downward arrow must be bigger.
Tiffany challenged this. (Hooray!) She said, "I've got it! You can still have balanced forces when something is moving as well as when it is still." Mirielle frantically scribbling down because she's "got it". M. says she hates this stuff but finds it challenging.
Karolina, Tiffany and Mireille taught for a good 20 mins. They had the idea of increasing velocity (rather than increasing gravity) and were prepared to answer lots of questions from the class AND link it to the Suchmann question.

Sarcastic Alicia said, "Why are we asking all these questions? It will take too long." At the end of the lesson, she said "What a surprise. We haven't finished."
As with everything I think that showing your understanding through presentation benefits from challenges at draft stage. Just telling them to do something and hand it in tomorrow is not enough.

*Suchmann inquiry method is a procedure that forces students to focus their ideas and develop questions, which are in effect, limited hypotheses. The emphasis in questioning is to encourage students to look for satisfactory explanations rather than 'getting the right answer.' (Grant, Johnson, & Sanders, 1990).

This journal entry highlights for me a number of factors that had become important in my teaching practice at this time.

Mirielle's question suggested that she was testing her thinking about the prac in another context. She was drawing links between the content of the lesson (what happens to the speed of objects as they fall?) and a real or imagined situation from her experience (dropping an object from a tall building). This highlights how simply providing information (such as answering a question) does not necessarily result in learning. Students need to be required to explore and revisit concepts in different ways to personally and meaningfully make sense of them. Good learning is a cognitively active process, which requires grappling with concepts and ideas through looking at them from different angles and through 'thinking out loud' (Loughran, 1996).

I am reminded that I did not 'close' on an answer to Mirielle's question for some time. There were a couple of reasons for this. One reason was that I wanted to encourage the students to think and discuss and come up with solutions amongst themselves. I could do that by extending the 'wait time' that I allowed. Evidence that extending the wait time was having a positive effect on the thinking of (at least some of) the students was the fact that some had taken the question home to 'dad' or 'some guys' - what a pity no one told me they had consulted a woman about this question. Students were also willing to continue their discussions into the next period, which I would consider to be significant for any group of secondary school students. The second reason for my delayed closure was that we were dealing with a subject area (forces) which was at best for me,

fuzzy. Most likely I did not know the answer to Mireille's question, but I did not want that to be a reason to avoid discussing it.

For me, 'wait time' operates on two levels. On one level, it is the amount of time that elapses between teacher question and student response (or student response and teacher response, Rowe, 1974). Increasing the amount of wait time and delaying judgement allows more students time to process information and to respond more thoughtfully to questions. On another level, 'wait time' refers to the amount of time spent exploring science concepts in the curriculum. I tend to think the same 'rule' applies. Increasing the amount of curriculum time spent on fewer concepts must also allow students better opportunities to process their thoughts and to develop, revisit and extend their thinking beyond an initial response. Linked to this is the comment that my teaching partner makes towards the end of this journal entry that showing your understanding through presentation benefits from challenges at the draft stage. Just telling them to do it and hand it in tomorrow is not enough. Helping students to articulate their thinking and then seeing whether their thinking holds up to the questions and ideas of others is time consuming and inevitably slows down the 'content covered'. We were fortunate to be teaching in a school where curriculum choices were made by the teachers in response to the perceived needs of their students.

However, such an approach is not always 'fruitful' (Posner, Strike, Hewson, & Gertzog, 1982). Alicia's cynical remarks suggest that for her such a volume of question asking, especially when the question remained unresolved for so long, was time wasted rather than 'time well spent'. Unfortunately Alicia was not the only student who did not share my views on the nature of good learning. Reflecting on this situation now I can see that I did not find ways for our different views to begin to meet. I needed to find tangible ways to demonstrate that the approaches to learning that I was advocating had merit because they could lead to a deeper understanding of science work. I needed to listen to Alicia who had been socialised through years of schooling to believe that in the end, all that matters in science classes is knowing 'the right answer'. As a result of her accumulated experiences as a learner, Alicia was not prepared to take the 'leap of faith' necessary to extend the boundaries of her learning; understanding was not part of her script for school learning (Loughran & Northfield, 1996).

In the same way that I needed to find ways of making learning fruitful for Alicia (and others in the class like her) so too I need to find ways of encouraging my student teachers to take a leap of faith and to trust me and my experiences (see for example, Berry, 2001).

An important issue here for me is to both recognise my student-teachers' needs and to respond appropriately to them. In the situation I now find myself (teaching Biology Method) I recognise their need to feel comfortable with the curriculum demands of the subject whilst at the same time knowing that simply covering the curriculum will not really adequately prepare them to teach it. Hence, as with Alicia, I need to respond to my student-teachers' needs but not to allow their perceptions of what they need to totally dictate what I teach and how I teach it.

In attempts to address these challenges, I try to create learning opportunities for my student teachers that will allow them to experience the role of the learner and in so doing, highlight the aspects of practice that I believe are important. One way that I do this is through 'making the straightforward problematic'. For example, I provide student teachers in small groups each with a

bag of objects and ask them to separate the living from the non-living objects. Through the discussion, student teachers come to see the variety of criteria that different groups apply to determine whether something is living or not and, more importantly, how different individuals and groups within the class interpret these criteria. Using this approach also allows me to model the core practices that underpin my teaching, such as thinking aloud; working together to challenge each other's understanding and delaying judgement.

One of the risks that I associate with teaching about science in this way is an implicit message that my student teachers should 'teach like me'. While I do believe that how I teach about science is important, I have come to realise that the approach that I use has developed out of my own struggles to create a personally meaningful pedagogy (Berry & Loughran, 2002). In an approach similar to that of Russell (1997), it may well be that my teaching IS the message for my student-teachers but I do not mean it to be something that they should imitate or mimic.

A 'Real World' Perspective

Context: Deb was teaching senior chemistry and biology and junior science in an independent girls school. After 7 years at this school she moved into science teacher education. The change from school to university caused her to think more deeply about some of the ideas of science teaching that she identified with in her high school teaching.

The students in my year 12 Biology class were the same students that I taught in year 12 Chemistry. In a Chemistry class I attempted to illustrate a concept that the students had been learning about in the previous Biology lesson and they protested, "this was Chemistry not Biology!" It seemed to me then that my students did not expect knowledge to be transferred between the different disciplines of science.

Another episode occurred in the same Year 12 Chemistry class later that year. The students were required to perform a number of practical activities with 'quickfit apparatus' (glassware that fits together in various forms such as in a distillation column). One of the students, while doing an activity exclaimed, "Finally after all this time, we get to do some real Chemistry!" I found this comment disconcerting since it made me realise that this student (and perhaps others in the class, too) did not consider her other experiences in this subject as 'real' chemistry. For her, chemistry meant being in a laboratory, working with complicated looking equipment and having various chemicals bubbling away.

The final episode was in my year 8 Science class. At the time there was great public excitement generated by the return of Halley's Comet. To celebrate this event with the year 8 students, teachers in different subject areas looked at the various ways that the return of Halley's Comet had been reported or celebrated in the past. Of particular interest to the students was the Bayeaux Tapestry that recorded the return of Halley's Comet in the Middle Ages. We decided to construct our own version of the Bayeaux Tapestry documenting the return of Halley's Comet in the present day. Students were required to research Halley's Comet in their Science classes, design a part of their tapestry in Art and construct their panel for the tapestry in Craft. The enthusiasm of the students for this project spread to other areas of the curriculum with the History and English teachers also providing experiences for the students that related to the return of the comet.

These episodes illustrate for me that it is the real world of the learner that has become most important in the way I now approach science teaching. The context and the content chosen for teaching science should be part of the real world of the students, not the real world of the teacher or the textbook. The real world of my high school Chemistry students was fairly stereotypic in which chemists wearing lab coats were using sophisticated glassware and lots of chemicals.

I want my student-teachers to have an appreciation of the way scientific knowledge is generated and accepted as knowledge as well as understanding the communal way scientists work (Corrigan, 1999). I therefore need to teach from contexts that are part of my student-teachers' real world. Such an approach enables them to demonstrate their understanding of both contexts and content as they apply their knowledge, skills, values and attitudes in their science learning.

Recently, I have been encouraged to see that my Chemistry method students have also begun to embrace a real world approach to their chemistry teaching. During the teaching practica, I observed several of my student teachers drawing on examples from their students' experiences of Chemistry. Adopting such an approach poses some risks for the student teacher because it deviates from the usual, predictable textbook procedure. Happily, the student teachers I observed found their experiences generally rewarding.

Overview

Teaching about teaching has helped us to recognise the 'purpose' (Gunstone, Loughran, Berry, & Mulhall, 1999) for a particular teaching approach/episode and making the implicit explicit for student-teachers has led to new ways of understanding and conceptualising science teaching - and particularly teaching about science teaching.

High school science teachers attempting to 'break set' (Loughran & Northfield, 1996) to maintain students' interest can (paradoxically) encourage an approach to teaching that is more 'activities based' rather than drawing attention to teaching for understanding. Hence, teaching of particular content in particular ways - as per Shulman's (1986, 1987) notion of pedagogical content knowledge - is an important issue in conceptualizing teaching in teacher preparation if this development of a 'bag of tricks' approach to science teaching is to be challenged. Therefore, in teaching pre-service science teachers, making the purpose of the teaching and learning explicit as the teacher and especially so for the learner must be important. Making clear the intentions of the pedagogical situation aids participants' expectations of, and actions in, the learning by encouraging metacognitive processing (Flavell, 1976). In our case, reconsidering the purpose of our approach to teaching has been one way of helping us to make explicit what we do and why and in so doing, we hope that it helps our student-teachers think carefully about their learning experiences and to similarly link these to the way they teach - to encourage their reflection on practice.

We have come to see that teaching about teaching and learning in science needs to be constructed in ways that purposefully embed the learning about both the teaching and the learning within experiences which are meaningful for student-teachers and which encourage them to abstract their learning from their University classes to their own teaching in schools. We do not expect our student-teachers to accept our views but do expect them to be prepared to

experience the learning opportunities we try to create and to then draw their own conclusions about what their science teaching might be based on as a result of reflection on the science teaching they experience with us.

This issue is encapsulated in the difference between teaching pre-service teachers through the authority of experience rather than by the authority of position (Munby & Russell, 1994). Telling is not teaching and listening is not sufficient for learning. The authority of position can often lead to a telling is teaching and listening is learning approach and as teacher educators it matters both what we teach and how we teach it. We need to be constantly reconsidering and reframing the situations in which we attempt to help our student-teachers learn about teaching and learning in science.

Drawing on the various experiences described in this paper, we offer the following assertions about our practice that we think are important in shaping the way we think about, and practice, our teaching about teaching science.

- More is less - attempting to 'cover the curriculum' leads to superficial learning. Therefore exploring less content in more detail through genuine learning experiences leads to more meaningful understanding, hence less becomes more.
- Creating learning experiences for student-teachers is important in helping them to understand content/concepts; confusion can be a valuable starting point for understanding. At the same time, these experiences help student teachers make sense of learning itself.
- Learning to teach from a real world perspective sets the learning in a meaningful context.
- In teaching about teaching, it is crucial that teacher educators give student-teachers access to their pedagogical reasoning and seriously attempt to make that which is implicit in their practice explicit.
- Creating meaningful teaching about teaching means the teacher educator(s) need to be in the learning not just directing the learning.
- Seeing your practice through others' eyes is crucial; a valued critical friend can lead to collaborative reflection rather than individual 'rationalisation' of practice.
- Risk taking is as important in teaching as it is in learning.
- Modelling offers valuable opportunities for student-teachers to see 'into' their teacher educators' practice but should not be seen as an invitation for mimicry or imitation.
- Teacher educators should continually question the 'taken for granted' in their own practice and their student-teachers' learning.
- Intellectual challenge can not be confronted by 'defensive' responses if genuinely shared adventures in learning are to be encouraged.

As we foreshadowed at the start of this paper, self-study offers one way of reconsidering and learning from practice so that one might better understand what it is that genuinely occurs through their own practice. An important component of this methodology is to better see one's practice through others' eyes and our student-teachers certainly offer a diverse audience for this.

In considering that which has shaped our practice, we have been reminded of events and episodes when once we were science teachers. As teacher educators, there is a need to be able to

articulate the underpinnings for our practice and to add to the knowledge base of teaching about teaching. Through the self-study methodology initiated in this study, we have begun to do this in our own practice and hope it helps others to reframe their understanding of practice in similar ways.

Therefore, we would encourage other teacher educators to begin to document and describe what it is that they have come to understand in their teaching about teaching so that an articulable knowledge base of teacher education may begin to be recognised and documented. This we believe is important if the responsibility for teaching about teaching is to be valued in the teaching profession as well as in Faculties of Education. As teacher educators it is crucial that we practise what we preach. Knowing how we practice is an integral component of that message.

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