

Introducing New Practices in a Teacher Education Classroom

Lessons Learned, Insights Gained

Tom Russell, Andrea K. Martin, & John Loughran

This self-study report documents and analyzes the impact of teaching a secondary-level, subject-specific (physics) curriculum and methods course over two terms (eight months) of a four-term program of initial teacher education. Having conducted self-studies of specific aspects of his practice previously, Tom set out to understand more about the impact of his course on his students' professional learning. Andrea and John were recruited as critical friends. Following Vick's (2006) conclusion that teacher educators typically do little to address the theory-practice divide, this study was framed by two essential theoretical perspectives. Teacher educators Hagger and McIntyre (2006) set out the differences between propositional knowledge (theory) and craft knowledge (constructed in practice) in learning to teach. Cognitive scientist Willingham (2009) sets out nine cognitive principles and their implications for teaching and learning in the classroom. Clearance was obtained from the university's ethical review board.

Aim/Objectives

The aim of this self-study was to document students' responses to new pedagogical practices in terms of their perceptions of the impact on the quality of their professional learning, with explicit attention to propositional and craft knowledge in teaching physics and to efforts to enact one of Willingham's (2009) nine cognitive principles. Another goal was to model ways that a teacher can identify and authenticate the craft knowledge learned from teaching experiences.

Willingham (2009, p. 3) states the first of his cognitive principles as follows: "People are naturally curious, but we are not naturally good thinkers; unless the cognitive conditions are right, we will avoid thinking." Earlier, he described it in these words:

People do not spontaneously examine assumptions that underlie their thinking, try to consider all sides of an issue, question what they know, etc. These things must be modeled for students, and students must be given opportunities to practice— preferably in the context of normal classroom activity. (Willingham, 2007, p. 18)

With a longstanding interest in the importance of metacognition in teaching and learning to teach, having a significant period of in-class discussion at the end of every class seemed worth exploring.

Tom introduced three new practices on the first day and studied the impact of those practices

throughout the course:

1. Use the term “Book Knowledge” in place of “Theory” and the term “Craft Knowledge” in place of “Practice.”
2. Spend the last 15 minutes of every 2-hour class in a discussion of what candidates had learned and how they had learned it.
3. Invite everyone in the class to participate in Tom’s self-study of his teacher education practices through 36 classes spanning two academic terms (September 2018-April 2019).

The Data section that follows the discussion of Methods provides evidence about the impact of each of these three new practices.

An Unexpected Writing Challenge

Some teacher educators will understand some or all of the three new practices; others may disagree with some or all. These new practices were inspired by previous experiences and reading. One challenge in writing about the effects of these practices arises from the positive responses from virtually all 13 members of the class. The data that follow are judged to be trustworthy by virtue of the high degree of consistency across the students’ comments and Andrea’s presence as Tom’s internal critical friend at more than half the classes. In a world in which teachers’ practices are typically private to the eyes of the students, it feels a bit awkward to write about students’ consistently positive responses.

Methods

As a highly-trusted colleague, Andrea agreed to act as an internal critical friend, following my progress and challenging me to dig more deeply into my practices. As a trusted international colleague, John agreed to act as an external critical friend, offering comments on the data analysis and conclusions. The qualitative methods of self-study research (LaBoskey, 2004) were used to identify patterns and themes in a range of data, including a personal journal, recordings of discussions with the internal critical friend, students’ anonymous comments at the end of each class, notes of individual conversations with students, excerpts from students’ assignments (quoted anonymously with explicit permission), and video recordings of all classes. The data sets included:

- A personal journal of before-class plans and after-class notes about events in 36 classes between September 2018 and April 2019.
- Recorded discussions with the internal critical friend, who attended about half of the 36 two-hour classes. We met informally after every class attended by the critical friend.

- Students' anonymous "tickets out of class" (or "exit cards") collected at the end of each class to report the main point taken from each lesson and topics to be explored further.
- Excerpts from students' email messages, in-class writing, and written assignments that speak to their interpretation of class discussions and activities.
- Videorecordings of all classes.

Data: The Impact of Three New Practices

Three new practices were the focal points of this self-study. Each is introduced with a brief explanation followed by a table of written evidence from the participants and then a summary of what was learned.

Book Knowledge and Craft Knowledge as Replacements for Theory and Practice

In the first class, I suggested that we replace the familiar terms "theory" and "practice" with the terms "book knowledge" and "craft knowledge." I substituted book knowledge for Hagger and McIntyre's (1996) propositional knowledge to keep the terms as clear and straightforward as possible. I have long accepted teacher candidates' views that practicum experience is more powerful than the content of many education courses. Schön's (1983) "reflection-in-action" is much more relevant to the experience of personal professional practice than are the reflective papers frequently assigned in some of their courses. Framing class discussions in terms of two different categories of knowledge seemed likely to improve understanding of the tension between courses and practicum experiences. When teacher candidates returned from their first practicum (6 weeks), the discussion focused on their development of craft knowledge. Later, in Class 17 (midpoint of the course), they spent an hour in class typing responses to a list of previously prepared questions, one of which was about the value of the terms Book Knowledge and Craft Knowledge. Table 1 provides examples of their responses. Appendix 1 lists the questions we constructed together as possible topics for their hour of writing.

Table 1

Teacher Candidates' Comments about Book Knowledge and Craft Knowledge

They both represent teachers' essential knowledge, and understanding both terms gave me some ideas on what I should aim to learn and how I can learn them. Understanding Craft Knowledge helped me to transform everyday experience during the practicum into intuitive and reflective learning and thus bring positive changes and stronger results on my performance.

The terms Book Knowledge and Craft Knowledge have been critical to my understanding of the teaching process. This is because they delineate two concepts which are quite distinct, yet integral to the art of teaching. The concepts that we learned in class (Book Knowledge) could not impart Craft Knowledge, and this became clear immediately upon teaching my first lesson during my practicum.

Using the terms Book Knowledge and Craft Knowledge has been helpful to me because they distinguish between two modes of knowledge that we use to help navigate the world of teaching. Craft Knowledge allows us to construct a model of how to teach from experience based on differing circumstances, whereas Book Knowledge is too vague to be of any sort of practical importance. At the point where Book and Craft Knowledge contact is where it has been most important for me as an educator.

The terms book knowledge and craft knowledge have helped to differentiate between the two types of knowledge that we are learning in the B.Ed. program. They are more helpful terms to understand the difference between most of what we are learning in class, versus the knowledge being learned while on practicum and also sometimes in class. They have provided a better way for me to understand the difference between theory and practice in teaching.

The initial impact seemed positive, as the term “craft knowledge” seemed intuitively related to practice and required little explanation. Those who chose to write about the use of these two terms at the midpoint of the course spoke positively about them. Written work submitted through the course often used both terms spontaneously.

Metacognitive Discussion Time at the End of Every Class

Fifteen minutes before the end of the first class, I invited participants to move tables into a circle to discuss what we had learned and how we had learned it. Although I did not describe the discussions as metacognitive until later, I began with the questions “What have we learned?” and “How did we learn it?” The nature of the discussions evolved as the students’ participation and enthusiasm confirmed that they wanted it to be a permanent feature of the class. The following data were also collected in Class 17 from the writing of free responses to questions they chose to write about (see Appendix 1).

Table 2

Teacher Candidates’ Comments about Class Discussions

The end-of-class discussions (and accompanying exit cards) have been excellent for consolidating my teaching experiences and take-aways from class. They have allowed me to capture essential Book Knowledge during a discussion or lesson and reflect on Craft Knowledge from my practicum.

I have found the end-of-class discussions to be one of the most valuable contributions to my program so far. The relaxed, informal tone of the discussions allows us to feel comfortable bringing up anything we wish to discuss.

I appreciate the informality of it all. In so many other courses there are pressures to withhold one's true feelings about a certain topic or how they're feeling. I think these ending discussions provide an exceptional environment where we, as teacher-candidates, can speak freely about what we find useful and find a support system that validates our feelings/anxieties about teaching.

I value the discussions because it allows for time to touch on the main points over again. Personally, I find I remember more from these discussions than I do for any other class because we have time to understand, think, and discuss what we have learned.

The discussions have helped me to recognize different perspectives on learning and thus moved me to deeper levels of reflective practice. Also, the discussions allow me and other teacher candidates a sense of ownership in the class and learning. With that, I feel more engaged in learning.

Having these discussions (maybe more generally, having this class) has been one of the only helpful things that I've taken from the program thus far.

I feel like the end-of-class discussions are where I think the most critically and deeply about my educational beliefs.

These representative comments were more positive than I could have imagined; I would recommend this practice to any teacher educator. By good fortune, none of the students had a class immediately after my class. As a result, we were able to shift the start time from 8:30 a.m. to 9:00 a.m. About one-third of the way into the course, the end-of-class discussions began to run 30 to 45 minutes rather than 15; all were free to leave at any time. Halfway through the course, the students asked if they could generate a list of topics for future discussion. From that point we discussed their questions in the order they suggested, and Andrea became an additional resource for some discussions. In class 35, the discussion lasted 2.5 hours with everyone present.

Declaring at the Outset a self-study of Practices Throughout the Course

On Day 1, I explained that I had obtained ethical clearance for a self-study of my teaching practices throughout the course; all students signed a consent form to participate. More than seven months later, at the end of Class 32, I invited students to respond in writing to four questions about the course. I was particularly interested in their responses to the first-day introduction of my self-study, so I placed it second in the list of four to avoid suggesting it was the question of greatest interest. Other questions asked about their Big Picture ideas from the course, about what they expect to do differently as a result of the course, and about whether the professor had pushed their thinking too much or too little.

Table 3

Teacher Candidates' Comments about their Professor's Self-Study

In our second class on the first day we met in September, I explained that I was planning to study my own practice in my last year as a teacher educator. Everyone signed a consent form to participate. Do you remember what your reaction was to that idea? Has it affected how you have looked at this course over the last 8 months?

I remember being blown away by this idea The idea of still trying to study yourself and learn and experiment with new concepts even in your final year earned a lot of respect.

My reaction was to be extremely impressed that he is studying his teaching the year before he retired. He is one of the only profs in this program who practices everything he preaches and as a result, I have deeply respected both him and this course from day one.

A mix of confusion and inspiration! Inspiring that you were willing and enthusiastic to continue studying your practice even beyond retirement. It set the tone for the year as well, demonstrating the importance of recording our own attitudes and practice.

It has helped me look at this course as only the beginning of my development as a teacher. You continuing to study your own practice has helped me to see this course as a starting point to continuously develop my own teaching.

One response was different

It hasn't really. Isn't the best experiment where the participants aren't consciously aware of it so they are not to bias the results? I didn't have much of a reaction while I signed it.

During the course I made little reference to the self-study; Andrea's frequent presence of and the daily use of a videocamera could have reminded them of the study. I was impressed that their responses indicated such positive reactions to the idea; of course, I was pleased that they linked it to the importance of their studying their own teaching. The reference to the significance of modeling teaching practices in class seemed particularly important, as teachers are so easily criticized for not practicing what they preach. The one different response is typical of the intellectual stance taken consistently by one member of the class.

Trustworthiness

The two critical friends (see Schuck & Russell, 2005, for a detailed exploration of this term) contributed significantly to the trustworthiness of the study. The presence of the internal critical friend (Andrea) in more than half of the 36 classes proved invaluable; this extended commitment seemed a great improvement on the idea of a critical friend who attends only once, occasionally, or not at all. Beyond listening to what I saw as interesting, Andrea gained for raising additional issues and was not about to be misled in any interpretations or conclusions.

If our overall assessment of a study's trustworthiness is high enough for us to act on it, we are granting the findings a sufficient degree of validity to invest our own time and energy, and to put at risk our reputations as competent investigators. (Mishler, 1990, p. 419)

Shenton (2004) indicates that trustworthiness should be addressed in terms of credibility, transferability, dependability, and confirmability. This self-study's credibility is enhanced by multiple data sources and the perspectives of two critical friends.

Serendipity provided further evidence of dependability and confirmability when Tom was absent for a week as a consultant to a study in Chile, missing Classes 20 and 21. Arrangements were made for one member of the class to operate the videocamera to ensure a complete video record of the course. For these two classes, students met on their own at the usual time. Spontaneously, near the end of Class 20, they began to discuss their experiences in the course. Table 4 summarizes the main points of that discussion.

Table 4

Discussion of the Class Experience in Professor's Absence

We're all mature professionals—want to be teachers, here for a reason, all really engaged in becoming the best teachers we can.

Would you go to other classes if the professor wasn't there? What is it about this class vs. our other classes?

Reaching out to us in the summer made a difference: he showed that he cares, no other prof did that, the way he started.

We have intrinsic motivation to come to this class, no stress over marks, or being judged or critiqued by profs, enjoy being with like-minded individuals.

This is the only place to discuss issues freely; in any other class I'd be called a pariah.

How did we get here? If we expressed our opinions in [course x], we would have been massacred.

Elsewhere, course content is laid out as "this is the gospel." He started to critique the B.Ed. program (as needing more practicum), so it was O.K. for me to open up.

His placement in the room—in all other classes, it's "sage on the stage." They seem to glory in being in charge vs. his sitting with us and attending to what we want to get out of this class.

He wants us to be responsible for ourselves; he doesn't force attendance.

That sense of calm, he's always got it. When teachers make a big fuss, they don't seem as competent and I don't have as much respect for them.

Being absent from two classes midway through the course proved unexpectedly productive; in planning with them what they would do in my absence, they could see that my assumption was that it was perfectly obvious that they would continue to work together without me. Their friends not in this class seemed unable to believe that a class would meet without the teacher. The range of their positive comments was encouraging and similar to comments made on the course evaluations at the midpoint and end of the course.

Outcomes: Lessons learned, Insights Gained

1. The terms "craft knowledge" and "book knowledge" are productive alternatives to the traditional terms "practice" and "theory."
2. There seem to be few opportunities where teacher candidates can discuss issues important to them; they can learn a great deal by listening to and responding to each other. Discussion time at the end of every class can develop a clearer understanding of what it means to learn to teach.
3. Declaring at the outset that one is studying one's own teaching and inviting class members to be participants can have a significant positive impact for the duration of a course.
4. Modeling teaching practices and providing in-class activities to enact them is more effective

than telling about and recommending such practices.

5. Establishing a climate where there are no wrong answers and where it is O.K. to be wrong can pay big dividends.
6. Communication by email before a course begins is noticed and welcomed.
7. Visitors (colleagues, national, international) are welcomed when they attend a class with an interest in studying teacher education practices and candidates' responses to their program.
8. A colleague attending many classes in the role of a critical friend can contribute significantly, both in one-on-one conversations and in group discussions.
9. Individuals learning to teach pay close attention to how they are being taught.
10. Activities that teach about teaching can be more productive than lectures about teaching. Enacting new teaching practices in the teacher education classroom has a significant impact.
11. Speaking explicitly about metacognition at appropriate intervals and encouraging metacognitive perspectives can help to develop the big picture and to make one's teaching practices more transparent.

Advice to a Teacher Educator Planning to Introduce New Practices

This self-study was such a positive personal experience that Tom feels compelled to offer the following advice to any teacher educator intending to introduce one or more new practices in the teaching of a particular course.

- Apply early for ethical clearance by the university. The request for clearance typically requires an account of literature supporting the new practices.
- Identify a critical friend who can attend the first class and at least some subsequent classes.
- Introduce new practices on the first day of class, with emphasis on enacting the practices rather than explaining them at great length.
- Make a video-recording of the first class and at least some subsequent classes.

- Occasionally, rather than frequently, find ways to probe students' responses to a particular new practice.
- At the first sign that the new practice is not being as productive as hoped, discuss your impression with the class and invite them to decide if it should be continued, modified, or dropped. Whatever the decision, document the reasons.
- New practices feel risky and uncomfortable, yet they model what we expect new teachers to do in their own classes.

This entirely positive experience in the last course that I taught before retirement made me wish that I had conducted such a structured self-study much earlier in my career; of course, it also made me grateful that I did it before it was too late.

Conclusion

Vick's (2006) observation that teacher educators do little to address the theory-practice divide takes on new meaning when approached from a self-study perspective. It seems common for teacher educators to tell their students about teaching and to even formally present on the issue of the theory-practice divide. As this self-study makes clear, studying one's teacher education practices can shift notions of theory and practice from a dichotomy to a more meaningful and useful continuum. Introducing three new practices generated responses more positive than could have been hoped. Introducing them on the first day of class and providing explicit rationales seemed to be critical factors in their impact. Emphasizing learning from professional experience, encouraging discussion with metacognitive implications, and studying my own teaching practices as they began theirs proved to be a powerful combination.

Two critical and long-time friends were also central to the success of this Self-Study of teacher education practices. Andrea kept Tom honest and focused; the number of classes she attended was an unexpected but very productive surprise. Twenty-five years ago, John had observed all of Tom's classes in one term; his extensive knowledge of self-study of teacher education practices provided valuable suggestions at the big-picture level. The experiences of this self-study encourage us to recommend that others risk the introduction of informed new practices, to do so in the first class, and to use self-study methodology to identify the effects. Finally, a critical friend who can personally attend a significant portion of classes is invaluable for many reasons, including the overall trustworthiness of the research.

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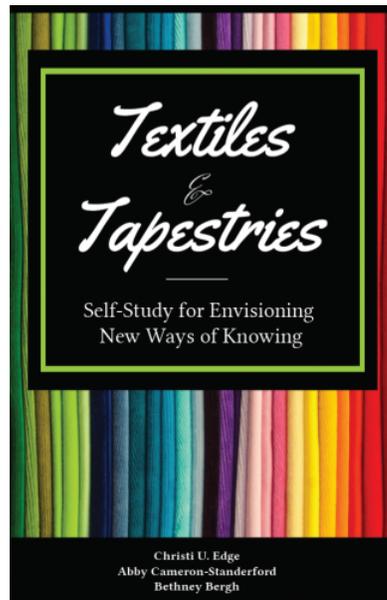
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Appendix 1. Questions Available for Writing in Class 17 (end of the first term)

- How have the terms Book Knowledge and Craft Knowledge been helpful to you in understanding the processes of learning to teach?
- How have end-of-class discussions contributed to your program experiences so far?
- If you were in charge of the B.Ed. program, what changes would you like to make?
- What role does math play in a physics classroom?
- What are Book and Craft Knowledge and how have these concepts affected your understanding of pedagogy?
- What is a significant takeaway from Knight's *Five Easy Lessons* and how would you use that takeaway in your classroom?
- What is your view of the ultimate point of education?
- Why are we pushing qualitative understanding over quantitative knowledge?

- How can we best deal with classroom misconceptions?
- How necessary is it for every class or lesson to be engaging?
- What is the biggest lesson you took from your practicum?
- Why do we do P.O.E.s [Predict-Observe-Explain] over demos?
- What does craft knowledge mean to you and how can you develop it in your teaching?
- What are some actions you can take to promote equality in your classroom?
- How did you develop craft knowledge during your practicum?



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