WAIKATO JOURNAL OF EDUCATION
TE HAUTAKA MĀTAURANGA O WAIKATO

Waikato Journal Of Education

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What evidence-base do we need to build a stronger theory-practice nexus?

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Abstract

This paper begins by reviewing the historic and current needs and problems associated with connecting theory and practice, and then moves to a brief discussion of current research on quality teaching, and factors that affect learning. An argument is put forward on how we can learn from other disciplines. Next, the case is made for thinking more about moderation and its relationship to standards. The paper concludes with a call for developing better vehicles for communication, a description of some innovative approaches to this issue using ICT, and some ideas on where to next.

Introduction

My mother's name was Sophie. She was born in a time and place that did not permit her to become what she wanted to be: a teacher. This did not prevent Sophie from being a stunning teacher at home, especially when it came to making sure homework was done on time and in full. Nor did it prevent her from regaling us with stories about going to school in the 1920s. From what I could tell, this mainly involved walking to school barefoot 10 miles in the snow uphill each way, while holding a hot potato to keep her hands warm. Sophie's point was that we had it so much better than she ever did. She wanted us to maximise every moment of our education so that we could realise our dreams.

Sophie's education did not benefit from a sound connection between theory and practice. Looking back, I realise that even my school years fell short in this area. Sure, there was some educational research when I started school. For example, after kindergarten (Year 1 in New Zealand), I was put into a new experimental class that combined 10 first grade and 10 second grade students. Mrs Kaminski (I lived in fear that my dad, always the comedian, would make good on his vow to call her Mrs GoOutski) was told simply to teach us as one group. Mrs Kaminski had to leave at the end of the year, because she was 'showing', and the experiment was abandoned. I remember being bored to tears in second grade, which used all of the same books, materials, and content that I'd already covered in the experimental class. So much for

my experience with bringing educational research into the classroom, admittedly over half a century ago.

Fast-forwarding to when I was an undergraduate, behaviourism was the rage. In my first classroom experience, the requirement for my university course was to set up what is known as a token economy system. I worked with a little boy who could not sit still. I set up an elaborate system with a chart to award stars that permitted puzzle pieces to be put in place and that culminated in receiving a coveted orange yo-yo, if the puzzle were completed successfully by the end of the two weeks that I was in the classroom. Once I was back at university, the associate teacher reported that the child's behaviour was worse than it had ever been and that I should tell my lecturer that experimentation in her classroom was no longer welcomed. Looking back, I can understand her position.

Fast-forwarding again, how far have we come in our efforts to link theory and practice? I argue that it is not far enough. Too often, the relationship between theory and practice can be likened to children at a middle school dance. The girls line up on one side of the gym, the boys on the other. They'd like to get together, but crossing the gym floor can be filled with uncertainty, and sometimes the pairings that result are less than optimal. It seems timely to take a closer look at how to bring bridge the gap in a way that benefits all concerned.

Problems with connecting theory and practice

Before I go much further, I want to clarify that I reside on what is often considered the dark side: I'm a research methodologist by training. I've never been a classroom teacher, other than at the tertiary level. What I know about life at the chalkface comes from years of working with teachers and in initial teacher education, providing in-service for teachers, engaging in research alongside teachers, and listening to their experiences.

Even though I sit on what might be considered a less than objective perch, I'm willing to admit straight off that at least half of the problem has to do with the researchers. Historically, I would argue that educational researchers have been driven by their own interests and theories, or the 'theory du jour'. Their focus has been on dissemination of their results, with a healthy dose of 'do this because we know what's best'. The role of the classroom teachers has been to submit to being researched on, accept the results and then implement the imparted wisdom. When things don't work out, researchers are mystified.

We need to move away from dissemination and towards facilitation. That means that researchers and teachers need to work collaboratively. This will require a different approach to training both researchers and students in our initial teacher education programmes. Researchers need to learn how to listen and ask the important questions of teachers. What are the issues that you are concerned about? What are your constraints? What are your goals? How do cultural considerations factor into what you are doing? Researchers can then build the teachers' responses into researchable questions to help teachers investigate the issues, interpret the findings, and test whether the results are valid in practice. Researchers don't need to abandon rigorous research methods and state-of-the art statistics, but they do need to allow the questions from those in the field to drive the research—not the other way around. They also need to acknowledge that simplicity can be effective, especially when working alongside those whose hearts do

not leap into overdrive with the prospect of using the Rasch model. It would be beneficial if, instead of having a mindset of research to practice, researchers developed a complementary mindset of practice to research.

The other half of the problem resides with the teachers. Teachers tend to be wary of research and researchers, perhaps due to the ivory tower syndrome just described. Maybe, though, their cautious attitudes are also due to a lack of background and experience with research. I'm not saying that teachers have to be trained researchers, but they do need to be taught how to recognise an issue, ask the pertinent questions that will permit an exploration of that issue, be able to conduct an examination of the issue or ask for help in examining it, try a solution, and evaluate the results. I think we are making some strides in this direction, but we aren't there, yet.

Too often, teachers accept information from providers of professional development as acceptable alternatives to research findings, or worse, as more relevant than research. A word of caution: Beware of those who know the truth. There is no miracle PD. As Charles Payne (2008) wrote in his book *So Much Reform, So Little Change*, schools cannot solve their problems through buying into one of these programmes. Now, I am not against professional development; in fact, I think we need more of it, especially in targeted areas. However, too often we follow a fad that turns out to be, well, a fad. The big winner is the provider, who gets a lot of money for something that promises more than it could ever deliver, all backed by anecdotal evidence offered by … the provider. If I sound cynical here, forgive me. (This might be a good time to point out that we were asked to be provocative in these papers!)

To recap so far, I am not making the case that researchers and teachers ought to be equal. They aren't and shouldn't be equal. As a researcher, I know a lot more about how to design and carry out a study than most teachers do. And most teachers know a lot more than I do about what actually goes on in a classroom and where they could use a bit of an assist. Vive la difference! But we need to get together on the dance floor. We need to engage in relevant and useful research together. It is only through partnerships that we can focus on what John Easton (2012) referred to as "problems of practice" more than "problems of interest" (p. 5). As Easton pointed out, practitioners are more likely to act on research outcomes if they have been involved with them from the start, from planning the research through to helping make sense of it.

Quality teaching and factors that affect learning

This section will be brief. When I wrote the original abstract for the conference, it seemed like a good set of topics to have in this paper. Since then, just scratching the surface of the literature on quality teaching and factors that affect learning would take a couple of lifetimes to assimilate, much less condense into one section of a 4,000 word paper. Three things are clear in the literature, though. First, there is a high correlation between teacher quality and student achievement. Second, expert teachers know how to do more to support student achievement than do novice teachers. Third, we need more research to help us identify what quality teaching is, understand what affects learning and communicate what we find to our initial teacher education students. Those are important issues that researchers and teachers working together can help to identify.

Learning from other disciplines

It seems to me that in much the same way that teachers are a bit wary of researchers, educators in general tend to think of education as distinct from other disciplines, even those that have professional practice components. As a result, we tend to look with suspicion at research from other fields. Psychology, in particular, falls in this category. In fact, we can learn a lot from research that has been conducted in other disciplines, even psychology.

Earlier, I stated that expert teachers are better at supporting student achievement than are novice teachers. This is not news. Research on expert-novice differences has a long history in psychology (see e.g., Chase & Simon, 1973). Recently, Timperley (2012) has challenged the field to work towards shifting teacher candidates from being novices to routine experts to adaptive experts. I argue that we might look to the literature in psychology for some assistance in accomplishing that goal. Constructs like automaticity, efficacy and motivation have been researched extensively and also could well inform how we engage with initial teacher education students. For example, Kirschner, Sweller and Clark (2006) have sparked an ongoing debate in educational research circles by challenging whether cognitive load theory argues against problem-based learning/discovery learning/inquiry learning/constructivist learning. The point is that we need to take a hard look at our biases against research from related disciplines. Three additional examples will illustrate.

The first example is from what Angela Duckworth and her colleagues at the University of Pennsylvania have termed *academic grit* (Duckworth, Peterson, Matthews, & Kelly, 2007). Academic grit is defined as "perseverance and passion for long-term goals" (p. 1087). Research on grit has shown that it is not correlated with intelligence; it is correlated with conscientiousness. There is evidence that grit predicts success better than IQ, self-control or grade point average across groups as diverse as adults, Ivy League undergraduates, West Point cadets and National Spelling Bee contestants in the United States. Interesting, isn't it? I'm sure we can all think of someone we know who 'made it' by dint of sheer hard work. That's grit. In fact, Duckworth et al. argue that when the going gets tough, those with grit rise to the challenge. They keep the goal in mind, the effort sustained, and shake off boredom or setbacks. I'm guessing that grit might be related to Csikszentmihalyi's (1990, 1996) concept of flow, where you are so engrossed in the moment that you lose sense of time or place. Flow is a feeling of being in the zone. Like grit, it involves having goals, dealing with feedback and intrinsic motivation. But unlike grit, flow also includes having a sense of control over what you are doing, a lack of self-consciousness, and sense of positive well-being. Both grit and flow can lead to mastery of material, which can only be helpful in education. We may want to look more into these.

The second example comes from the field of creativity. It's time to resurrect educational creativity. I'm familiar with the arguments against creativity in the classroom (see Smith & Smith, 2010). I recognise that time is not on the side of creativity for classroom teachers. There are myriad skills and content to be taught, and if a method that is tried and true works, why mess with it? So, although teachers will profess that creativity is good, they also tend also to see it as disruptive if it interferes with keeping their students—and their students' emotions—on task and under control.

In a recent study (Smith & Smith, 2010), 48 teachers and principals in New Zealand were interviewed in small groups and asked, "What kinds of school and classroom activities do you engage in that are creative?" The responses fell into four categories. First was using a particular programme or concept, such as Multiple Intelligences (Gardner, 1983, 1993) or De Bono's Thinking Hats (1992). Second was engaging in specific techniques with their students, like brainstorming, mind maps, collaborative activities, science fairs, writing poetry or stories, and making art. Third was being open to students' ideas. This is encouraging, as teachers can use students' ideas to gauge where they are in relationship against where they need to go. However, it is still reactive rather than proactive. Fourth was engaging in creative teaching through searching for ideas, such as from other teachers or online. Therefore, a creative idea didn't need to be new, so much as new to the teacher using it. I'm all for sharing.

What stands out here, though, is the lack of … creativity. We *have* creativity in education—early childhood education and gifted and talented programmes thrive on creative ideas. But too often creativity is pushed aside ("that's a good idea but we'll have to get to it later") or is a consolation prize ("good idea, too bad it didn't work").

Creativity should be part of everyday learning and teaching. I'm not suggesting that teachers put creativity above curriculum. I am suggesting that researchers and teachers working together can develop a definition of creative teaching that takes into account what teachers actually do in the classroom and what they have to accomplish. They can work on how to include creativity in its rightful place as an essential element in the development of skills like problem solving (Makel, 2009; Renzulli, 1992). They can develop ways for creativity to be taught, encouraged, enhanced and developed. Cropley (2012) has called for creative pedagogy and creative assessment to be part of effective teacher training. If creativity can be shown to be valuable, educators will sit up and take notice of it, and our students will benefit.

The third example comes from the field of the psychology of aesthetics. Results from an observational study (Smith & Smith, 2001) at the Metropolitan Museum of Art in New York City demonstrated that, on average, visitors to the museum spent 27.2 seconds before six masterpieces before moving along (the median amount of time was 17 seconds). Visitors reported that it was the cumulative effect of looking at many works of art that led to getting the most out of their total experience. This made us realise that the total museum visit was the unit of analysis and not the individual work of art. In another study at the Met (Smith & Smith, 2003), in the didactically designed *Origins of Impressionism* exhibition, we showed that three factors affected learning: spending a moderate amount of time in the exhibition—not too much and not too little, talking with others about the works, and making connections by moving back and forth among rooms in the exhibition to review the works of art.

So what does all of this have to do with education? Consider these:

Totality—Classrooms are a unit. They are comprised of a number of children with different needs, a variety of cultures, maybe different languages and so on. Each individual child is complex and lovely and perhaps presents a set of unique challenges. The teacher needs to know how to blend the needs, cultures and languages to the best advantage of learning for all, in totality. Researchers and teachers can work together to examine how to accomplish that.

Time—A teacher has a finite amount of time during the school day, whether with the class as a whole, groups of children or individual children. Time is spent directly

teaching, co-constructing, guiding learning, assessing, giving feedback, managing and doing the thousands of things that teachers do each day. Working with researchers, teachers can evaluate how to make the most of the limited hours in the day.

Talk—Communication is key. Teachers need to talk to students, parents, other teachers, the principal, parents, whānau, Board of Trustees members and stakeholders. Students need to talk to each other. Parents need to talk with the teacher and with their children. If we drew a diagram of who needs to talk with whom in a school community, there would be circles with arrows pointing all over the place. But it isn't just talking; *how* we talk and *what* we say is important. Teachers and researchers can investigate how to best communicate among all of those circles.

Tie Together—We all know that reviewing material and making connections help to solidify learning. Questions such as, when is the optimal time to review? What should be reviewed? How much should teachers guide individuals or collaborative groups in making connections? How important is explanation in all of this? Or feedback? Can examples from other cultures—of the students in a class or beyond—contribute to understanding? I'm sure that teachers could generate a list of questions to study with researchers, around making connections to enhance learning.

Moderation, standards, and research

National Standards are here. Moderation is part of National Standards. This paper is not about debating the good, the bad or the in-between of either. The point for this paper is, as my friend and colleague Professor Emeritus Bob Wilson from Queens University in Canada says about judgements related to assessments, *standards aren't necessarily standard*. We can engage in moderation until the cows come home, but until we do a lot more focused research around it, we're going to have documents like *National Standards: School Sample Monitoring and Evaluation Project 2011* (Ward & Thomas, 2012) reporting, "There was considerable variability in the accuracy of teachers' ratings against the National Standards for individual work or assessment samples" (p. 2). Working together, teachers and researchers can examine moderation practices and make suggestions for future practice. Smith's (2003) alternative conceptualisation of reliability as one of having *sufficiency of information* should be factored in to the discussion. His approach argues that reliability theory, in terms of making judgements on students' work, requires having enough information to make appropriate decisions.

The consequence of not working together to solve this issue could be the push for a national test. And teacher accountability measures. Outcomes from No Child Left Behind (NCLB; H.R. 1-107th Congress, 2001) should be enough to warrant our attention. My colleagues in the assessment community in the United States affectionately refer to NCLB as "no psychometrician left unemployed". Really, we don't want to follow that act. We also might take a look at The Bill and Melinda Gates Foundation's Measures of Effective Teaching Project (MET; 2010). The MET project examined six urban areas of the States, and promised to "provide a new knowledge base for practitioners and policymakers who are trying to strengthen the teaching profession" (p. 4). The MET's goal is to inform how to close achievement gaps across teachers by determining the characteristics of an effective teacher and finding ways to identify the most effective and least effective teachers. Reports on results are available on the foundation's website (www.gatesfoundation.org). There are an impressive number of universities and organisations involved in this research; however, this is another case of

practitioners being researched on, not with, those conducting the research. This is not a model that we should emulate in New Zealand.

Some suggestions and where to next

Teachers and researchers each bring strengths to the table and it's time that we recognise that, work together and gather data. Anecdotal evidence is not going to win the day. Anecdotes can be part of research, but the accusation that there's a lot of navel gazing going on has some foundation in fact. We also have to get over the inferiority complex we have in New Zealand about how we stack up on the international education stage. It's not being a tall poppy to crow about what we have and what we do. When I present at conferences around the world and especially in the States, people in attendance are astounded over our educational structure, our coverage of a wide number of curriculum areas, our lack of mandates in terms of who, how and when we assess our students. I am often asked, "How do you get away with it?!" We have a basically good educational system. Sure, it needs some improvement, and definitely more funding, but we can't do the former or appeal for the latter without first gathering the data needed to launch the arguments. That requires building a new identity in our educational community. So, how do we get there?

Researchers and teachers need to build partnerships and decide on the critical areas in education that need immediate attention. I doubt anyone would be against any of the National Education Goals (Ministry of Education, 2004). But we don't currently have a good programme of research with teachers and researchers working together on relevant, useful and usable goals. As Easton (2011) has pointed out, it's time to "move beyond trying to discover 'what works' to learning about why, when, where, for whom, and under what conditions" (p. 3).

Next, we need to make some changes to our initial teacher education programmes. It isn't enough to use research in our teaching; we need to build research into the experiences of our students. We need to ensure that classroom teachers feel prepared to investigate a question, know when to ask for some assistance, and feel comfortable working with a more experienced researcher. We can't achieve that in three-year programmes. It's time to require postgraduate teacher education qualifications.

We also need to have better vehicles for communication. Teachers are most likely to read trade publications; researchers are most likely to publish in scholarly journals. There are good reasons for both of those. Until teachers become more comfortable with research and researchers get credit for publishing in other than peer-reviewed journals, we're stuck. We need to develop a peer-reviewed, plain language platform that teachers and researchers can contribute to and understand. We also need to pay more attention to technology and incorporate it in our collaborative efforts. (I'll confess to a bit of hypocrisy here. I am not on Facebook. I do not Tweet. I am not, in this lifetime, likely to engage with either. I have a love-hate relationship with email. I can barely operate my mobile phone. And, I'm hopeless with our digital camera.)

In his keynote at the EARLI SIG1 2012 Linking Multiple Perspectives on Assessment Conference, Professor Dr Joseph Kessels related a conversation he had with his nephew about school and technology. Kessels reported that his nephew said, "School is the time when I'm offline". I'm guessing that that young man could show us a thing or two about how to communicate. We'd do well to pay attention. It isn't

enough to simply post things online, even though we are all Internet scavengers when it comes to hunting down ideas for teaching. What we need is to engage more with what we do online, providing feedback and then building on what we learn.

At the University of Otago College of Education over the past year, we've been teaching using a technique that we're calling 'Byte Me'. In four of our large group papers, the lecturer meets with the full class roughly four times over the semester. The remaining group lectures are done via technology called Screencast-O-Matic (http://www.screencast-o-matic.com/). Lecturers create 10–12 minute segments that students can watch on any mobile platform. These screencasts show the lecturer as a 'talking head' and include PowerPoint slides, embedded clips or pretty much whatever needs to be included. Within the segments, students receive challenges to work on, which form the basis for tutorials. We engaged in some research around this and found that the students enjoyed the short segments, being able to watch segments anytime, anywhere, as many times as they liked, and that they weren't tied to attending a large lecture at a specific time every week. Lecturers found the technology easy to use and enjoyed the format, too.

Conclusion

In closing, I would like to note that Sophie did not like her name. Her mother called her Elvira (which she also thought was no bargain). When Sophie started school, she was told that Elvira was actually her middle name. The teacher insisted on calling her by her proper first name as shown on her birth record. Sophie was never sure of her real birthdate, either, having always celebrated on one day but learning when she applied for a passport that the recorded date was a few days later (probably due to a midwife not getting to the town hall immediately after her birth). We don't have such uncertainties any more. We don't need to have them with how we combine theory and practice, either. So, let's see what we can do to get everyone on the dance floor together. We'll all win, especially our students.

By the way, my dad's name was Thomas, and under his picture in his junior high school yearbook was the caption, "Why teachers turn grey". But that's a story for another paper.

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