

Chapter 1

Introduction: Evidence as a Research Problem in Teacher Education Research

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In the spring of 2010 we sent out a call to Canadian teacher education scholars to submit draft papers for a book project on “The Question of Evidence in Research in Teacher Education in the Context of Teacher Education Program Review in Canada”. The call asked our colleagues to respond in their draft papers to one or more of the following questions that would frame the topic of the planned book:

- What counts as evidence in educational and related social science research?
- What can and should count as evidence in research and legitimate knowledge particularly in the diverse areas of teacher education?
- What research evidence is actually used in teacher education program review processes at Canadian universities, and what decisions and processes guide the use of research?
- What are the issues and challenges of relating research to policy and program decisions?

With this book our intention is to provide Canadian teacher education practitioners, scholars, and those interested in improving teacher education with a compendium representing necessary conversations among Canadian scholars about the nature of research and scholarship about practices, programs and purposes of teacher education. The book is particularly concerned with the complex questions about the relationships between research, program review and development, and how we ought to understand evidence and its role in assessment of and judgements about teacher education programs.

As it was the case with last year’s book project (see Falkenberg & Smits, 2010), the project that resulted in this present book involved a working conference with face-to-face meetings of the authors of the draft papers. The working conference provided for both an opportunity to engage with colleagues’ ideas on and thinking around the topic of the book project and an opportunity to engage in smaller groups with each others’ draft papers, which were circulated to all participants prior to the working conference (see www.umanitoba.ca/education/TEResearch/Conference%202010.html). Following the work-

ing conference authors developed the draft papers into fully developed papers that then underwent a blind peer-review process. The final papers resulting from this process make up the other 17 chapters of this book.

We have arranged the 17 chapters in alphabetical order by the last name of the first author of a chapter to do justice to the often overlapping issues addressed within the same chapter and across chapters. The abstracts at the beginning of each chapter should give the reader a sufficient overview over what she can expect of the respective chapter. In this introductory chapter we will discuss the issue of evidence as a research problem for teacher education research with the intention of introducing the reader of this book to some of the core issues around the book's topic – at least as we have identified them. In our introduction we will also make ample reference to chapters in this book to identify for the reader chapters in which the respective issue is illustrated or further discussed. Considering the extensity of the topic of the book, our discussion of some of the issues linked to the topic can neither be extensive nor intensive, however, we hope that this chapter will provide the reader with a framework of ideas that allow her to see to what aspect(s) of the topic each of the chapters in this book contribute. In this chapter “teacher education” is always referring to pre-service teacher education.

Teacher Education Research: Soft and Applied

Labaree (2004), drawing on Becher's (1989) work, characterizes educational research and its findings in two ways. First, educational research is a “soft” science and has the following characteristics (in opposition to the “hard” sciences like physics; Labaree, 2004, pp. 63-65):

- the area of inquiry is considerably less clearly defined;
- it is more difficult to produce findings that are reproducible;
- supporting causal claims is particularly difficult;
- there is a far less solid and generally accepted foundation upon which further research can build.

Labaree (p. 64) suggests that two particularities in the field of educational studies especially contribute to these characteristics of the research within the field: (1) educational research deals generally with some aspects of human behaviour, intentions, interests, motivation, and so on; (2) normative issues and issues of purpose are involved not just through the subjectivity and agency of the researchers but also and particularly of those who are studied in educational research.

Second, educational research is an “applied” science (in opposition to the “pure” sciences), the features of which Labaree (2004) characterizes as follows:

- the research focus is on “practical issues arising from specific contexts” (p. 56);
- research success is measured in terms of “whether or not a particular approach works in a particular setting better than alternatives that are available at the time in question” (p. 66).

These general characteristics of teacher education research have some consequences for the findings that we can expect from the research and the evidence that we can claim supports those findings (Labaree, 2004, pp. 66-67):

- findings are by nature not causal and generalizable, but rather tentative and contextual;
- the foundations of the discipline are constantly rebuilt, leading to a multitude of research approaches and views of what counts as evidence for what.

Teacher education research, as a form of educational research, shares all those characteristics, and seeing teacher education research in this light helps us understand what we can and should expect of findings from teacher education research and the evidence that supports those findings. Following, we like to make the case for some of those characteristics as characteristics of teacher education research.

As a specific area of inquiry teacher education research is, arguably, less clearly defined than areas of educational research that are more definable in and bounded by disciplinary terms. Traditionally, teacher education programs have consisted of departments and courses based on particular disciplines such as psychology, history, sociology, philosophy, and so on. Each of those disciplines has epistemological and historically bounded frames of study, which establish paradigmatic frameworks for inquiry and determine what constitutes evidence and truth. As Taylor (1995) suggests, such paradigmatic ways of thinking are foundational to epistemology and to what counts as knowledge: “Epistemology would ultimately make clear just what made knowledge claims valid, and what ultimate degree of validity they could lay claim to” (p. 2). For example, educational psychologists work, generally, within a paradigmatic frame with which psychology in general identifies, although the focus is on educational or pedagogic phenomena. Likewise, those scholars who study history of education or the sociology of education are bound in their inquiries by the dominant paradigms of those scholarly pursuits. It would take a further and more elaborate discussion to analyze how such paradigmatic approaches to research have impacted practices of research in teacher education faculties, but as some scholars have noted, research that has sought legitimacy in terms of paradigms of specifically-defined disciplines have made problematic interpretation and understanding of “(professional) practice”, which is the domain, in professional terms, of those whose dominant interests and responsibilities are that of educating and preparing teachers (Condliffe Lagemann, 2000; Dunne, 1993; Labaree, 2004). To note the kind of paradigmatic issues that complicate research in education is not to question the legitimacy of certain paradigmatic approaches, but it is to ask, then, what legitimizes research into the specific practices of teacher education, and the concern about how we might best understand – and justify – programmatic approaches and reform of practices. A major contribution of the papers in this book is the recognition of the complexity of research into teacher education, and that it is difficult if not impossible to argue for singular approaches to research in teacher education. The discussions provided in the chapters complicate the nature of research in teacher education for several reasons. Because teacher education prepares teachers for entering into a profession that is contextually, historically and politically bound and influenced, research into it is an enterprise fraught with difficulties and challenges, as the contributors to the following chapters illustrate.

The sheer diversity and complexity of the enterprise we call “teacher education” creates a number of challenges. Teacher education prepares teachers for entering into a profession, and in principle all aspects of that profession are potentially of interest to the preparation of teachers and, thus, teacher education research. However, how far the reach should reasonably go is most likely controversial among teacher educators, who are generally the teacher education researchers. For instance, for some researchers, issues of social justice and empowerment are central issues for teaching and, thus, teacher education scholarship (e.g., Kincheloe, 2003), while for others those aspects are not in focus when they consider the professional knowledge for classroom practice of expert teachers (e.g., Loughran, 2010).

As the chapters that follow illustrate, questions of program development are increasingly challenged with questions of culture, social issues and indeed purposes germane to a changing world: a partial list would include issues of social justice, understanding the other, the challenges of particular contexts, changing technologies, and the impact of globalization and shifting economies. For many teacher educators, those areas of concern have become legitimate foci of research. Yet at the same time, a challenge for research in teacher education is how such understanding of larger contextual forces can be applied to the preparation of teachers and the nurturing of good practices. Such tensions between contexts, and how one applies understandings of what is required for teachers as they enter the profession is one of the key tensions evident in the ensuing discussions. It has become a rather common trope, not only in teacher education, but in other professions as well, that we need more research in order to improve practice. Evidence-based practice has as an underlying assumption that research findings can be applied objectively in designing and implementing approaches to professional preparation.

What we offer in this book is not a questioning of the necessity for research, but as a whole, the various discussions in the chapters do question a simple linear and causal construal of a research-into-practice model. The question that hovers over all the discussions is what constitutes the role of research, and to what extent research can function as warrant for making decisions about programs and practices. It is the idea that there is unassailable evidence which can determine practice that is under question. It is to say rather, as the Italian philosopher Vattimo (2011) writes, citing Heidegger, that “science doesn’t think” (p. xxx). Vattimo argues that we cannot simply ascribe the truth of our practices to science or the application of science without appealing to what he terms “the paradigmatic horizon within which every correspondence is verifiable” (p. xxxiii). In asserting that science does not think, Vattimo echoes Gadamer’s (1989) defense of practice in terms of *phronesis*, which means that we cannot simply take theory (or “research”) as the truth of things without a careful attunement to the very contexts that demand careful attention and understanding. Justifying his title, “a farewell to truth”, Vattimo explains, “leave is taken of truth as the objective mirroring of a datum that, to be adequately described, must be fixed and stable” (p. xxxii).

Teacher education research does not generate reproducible findings – thus, the findings are not generalizable – because the findings are always tentative and contextual, since the context in which we and our graduates teach are not at all “fixed and stable”. There are at least the following three challenges to generating reproducible / generalizable findings in teacher education research. First, teacher education research is undertaken in specific contexts involving specific program designs and socio-cultural conditions and humans with specific life-histories, intentions, aspirations, skills, attitudes, capacities, and so on. Teacher education research (as an applied science) is not undertaken in laboratories under controlled conditions –

because findings from such research contexts would be very limited in value to programs that exist within their specific contexts. Let us consider the findings of teacher education research on difficulties in changing beliefs in teacher candidates discussed in Richardson and Placier (2001, pp. 915-916) – an aspect of learning to teach that is crucial to the education of teachers. The studies the authors discuss all inquire into teacher candidates' learning after they were exposed to quite different learning experiences, and they all use quite different tools and, thus, data to assess if and to what degree a change in beliefs has occurred. Some of the studies suggest the possibilities of changing teacher candidates' beliefs (relative to their respective learning experiences and the assessment tools used) and others did not find (substantial) change in beliefs. Teacher education research – as Labaree has characterized soft sciences – deals with human behaviour, intentions, motivation, as well as the central value question of what teacher education should teacher candidates prepare for. If one asks a generalized question like “Can teacher candidates' beliefs be changed through teacher education programs?” one should not be surprised to get contradictory findings and to see a variety of learning experiences and assessment tools used, which leads us to the second challenge.

Second, teacher education research – as Labaree has characterized applied sciences – is generally undertaken to find out “what works” in the preparation of teachers relative to the context at hand and what one considers the goals of teacher education to be. For that reason we should not be surprised – to take up the example of the studies in Richardson and Placier (2001) again – to see the use of different learning and teaching interventions and assessment tools in the different studies, because those studies are undertaken to be able to respond to different contexts, including different ideas about what beliefs should be changed in teacher candidates. For instance, Korthagen's (1988) study, which is discussed in Richardson and Placier (2001, p. 915) inquired into the possibility of developing reflective capacities in “[teacher candidates] in his reflective teacher education program” (p. 915; see Korthagen, 2001). His finding that “[teacher candidates] who come into the program without reflective orientations do not gain very much from teacher education courses that emphasize reflection” (Richardson & Placier, 2001, p. 915) is *directly* only relevant to his own teacher education program.¹ A number of chapters in this book illustrate that teacher education research generally is not just done within specific contexts (first challenge), but that the research is also done for a particular purpose, namely to find out “what works (better)” in those particular contexts. For instance, Bullock and Russell (chapter 3) and Thomas (chapter 18) argue that and illustrate how self-study of teacher education practices can be used to inquire into “what works” of a teacher educator's pedagogy and into one's assumptions about teaching that sometimes are in the way of enacting “what works”. Poth (chapter 14) and Mueller, Willard-Holt, and Buzza (chapter 12), for instance, use each a particular model for program assessment in order to identify “what works” and what does not (relative to identified goals) within a particular set of courses or a particular program as a whole, respectively.

So far, the argument presented has drawn on what is (currently) actually done in teacher education research, characterizing a particular cultural practice of research in teacher education. But identifying these features of the cultural practice of teacher education research does not mean that teacher education research cannot *in principle* generate reproducible / generalizable findings. Now we want to make the case that that is not possible *in principle*. One reason is that

¹ Further below we will discuss in what ways general findings like the one coming out of Korthagen's (1988) study can be useful in other contexts.

in teacher education research human qualities are involved in a central way, which makes the patterns and regularities needed to get reproducible / generalizable findings – assuming that there are such patterns and regularities in the first place – far too complex to capture in a way that would allow meaningful general principles. For instance, in educational psychology generalized principles of constructivism *as a theory of learning* are well supported by research findings. However, moving from educational psychology into the practice of teaching, which is a central domain of teacher education, there are less generalizable principles for teaching in accordance with constructivist principles.² The second reason lies in the fact that teacher education research, as teacher education itself, is saturated with normative questions and decisions: “As a field, we suffer from enduring disagreement about what counts as a valid outcome [of teacher education] and about how to measure those outcomes that do count” (Kennedy, 1996, p. 121). Disagreements at such a fundamental level do not allow for generalizable findings of the type that can be found in the natural sciences.³ A number of chapters that describe actual program review processes illustrate the saturation of teacher education with value questions and decisions that impact the consideration of research findings (see, for instance, Goodnough, chapter 7; Hirschhorn & Kristmanson, chapter 8; Riches & Benson, chapter 16).

As Labaree (2004) has noted, research in education has traditionally relied on a model of science based on the natural sciences for its seeking of legitimacy. Gadamer (1989) has emphasized that when we talk about practice, “we have been forced [by what he calls the “modern notion of science”] in the direction of thinking about the application of science” (p. 69) as the model of our own practices as researchers and teacher education practitioners. The question, then, arises how one can understand what seems to be “generalities” in teacher education research like those about general qualities of powerful teacher education programs drawn from studying powerful teacher education programs (see, for instance, Darling-Hammond, 2006a). They cannot be understood as generalities in the same way as generalities can be understood in the “hard” sciences. In the natural science model, evidence is indeed intended as being generalizable across contexts, and in that way also serves predictive functions. But as Flyvbjerg (2001) suggests, in the social or human sciences a different rationality is at work, one that requires the exercise of certain kinds of intellectual “virtues” which cannot be contained only in dispassionate application of evidence to particular contexts. A first issue, then, is that a “powerful teacher education program research” is full of value judgments in the sense just discussed: The decision on which US teacher education programs were to be studied as powerful programs by Darling-Hammond and her collaborators was based on “extensive review of evidence, including a nationwide reputational survey of researchers, expert practitioners, and scholars of teacher education; interviews with local employers about whom they prefer to hire and why; and outcomes from prior surveys of program graduates” (Darling-Hammond, 2006a, p. 16). The second issue is that although Darling-Hammond (2006a, p. 41) provides a list of “common components of powerful teacher

² See, for instance, Tobias and Duffy (2009) for a more recent documentation of the controversy about the idea of “constructivist instruction”.

³ This statement should not be understood as prejudging a case for viewing the natural sciences as a human endeavour full of value judgments as well. The statement, though, does claim that teacher education research is *comparatively* far less suitable for generalizable findings than the natural sciences are.

education”, how those features materialize in the specific teacher education programs varied quite a bit (p. 17); in other words, if there are generalities identified (at least in this line of research), those generalities are not directly “translatable” into any arbitrary teacher education context as would be expected from findings that could be considered generalizable.

How, then, can and should generalities, like the general qualities of powerful teacher education presented by Darling-Hammond (2006a) be understood despite, or maybe more because of, all those qualifications? One general quality of the powerful teacher education programs that Darling-Hammond and her collaborators have identified is that those programs have “a common, clear vision of good teaching that permeates all course work and clinical experiences” (Darling-Hammond, 2006a, p. 41). Such a generality cannot tell us what such a common vision should look like or in what way it should permeate the whole program; rather, this generality tells us that the powerful teacher education programs identified in the study have this general feature in common and that this fact should *sensitize* us to the question whether and how our own programs have a common and clear vision of good teaching that permeates course work and the practicum and to the possibility that our programs not having such a clear vision might be linked to them not being so powerful. Such focused sensitivities help us respond *more intelligently* to the challenges we face in our own efforts to improve our programs *within the specific contexts they are embedded in*. In other words, the type of generalities generated in teacher education research provides us with the foundation for *practical wisdom* needed in all fields of applied knowledge (see, for instance, the case studies in Schwartz & Sharpe, 2010), rather than with a blueprint of what all powerful teacher education programs have to look like. This view of the role of generalities in teacher education research as a basis for the enactment of practical wisdom in teacher education seems also to be taken by Zeichner (2005), when he writes:

Research can help us think about teacher education in more useful ways and can offer guidance as to practices effective in accomplishing particular goals, but it cannot tell us everything to do in teacher education programs or in the policy arena. (p. 739)

The already referenced value-saturation of teacher education presents, finally, the third challenge to any generalizability of teacher education research findings. This value saturation leads to shifting foundations of the field with quite different research approaches, which Labaree (2004) has identified as characteristic of educational research in general. This challenge will be discussed further in a different context below.

Also, teacher education research does not generate causal relationships, at least not in a general sense that would allow transferring findings from the specific context in which the findings were generated to other specific contexts. Kennedy (1999; see also Kennedy, 1996) discusses five teacher education research genres based on studies that all contribute to the question what impact teacher education has on teacher candidates: multiple regression research, follow-up surveys, comparative studies, experimental research, and longitudinal studies of change. In Kennedy’s assessment, only two of them (experimental research and longitudinal studies of change) have any chance at getting at causal relationships between being enrolled in a teacher education program and good teaching. However, even in the case of those two, any claim of a causal relationship, she argues, can only be a weak one. Experimental research does not address the whole program but rather particular components, and the

changes made as part of the experiment are only of short duration. Longitudinal studies, on the other hand, can generally only involve a small number of teacher candidates and, thus, cannot support any general causal relationship between the enrollment of a teacher education program and a graduate's teaching practice, for instance.

That teacher education research is a soft and applied science is not because those doing teacher education research decided that that is what they want it to be. Rather, teacher education research is a soft and applied science because teacher education is concerned with soft and applied knowledge. If you want to insert new window glass into a frame, you would not use a hammer to do so, at least not the kind of hammer you use for driving a nail into a four-by-four. You would not do that because you cannot handle such a hammer, but rather because it is the wrong tool for the job; the job requires different tools. The soft and applied sciences need to develop and embrace their own methodologies that might be quite different from those that people in the hard and pure sciences find appropriate to generate hard and pure knowledge.

However, soft knowledge does seem to be less acknowledged in the Canadian public discourse. For instance, as we write this introduction, the Globe and Mail has just started a once-a-week series "Time to Lead: Building a New Canada", in which the national paper "will explore Canadian innovation – and the people behind them – that are changing the landscape in five key sectors" ("Time to Lead", 2011). Those key sectors are: wind power, health care, energy, transportation, and biotechnology. Where are the innovations from the social sciences or education that help build a new Canada? Taking the notion of soft and applied knowledge seriously, one can only hope the public discourse recognizes what Berliner (2002) has said about the academic discipline – education – that is both soft and applied:

Educational research is considered too soft, squishy, unreliable, and imprecise to rely on as a basis for practice. . . . But the important distinction is really not between the hard and the soft sciences. Rather, it is between the hard and the easy sciences. Easy-to-do science is what those in physics, chemistry, geology, and some other fields do. Hard-to-do science is what the social scientists do and, in particular, it is what we educational researchers do. In my estimation, we have the hardest-to-do science of them all! (Berliner, 2002, p. 18, as quoted in Labaree, 2004, pp. 68-69)

This perspective about education being a hard-to-do science, however, comes with the *research methodological responsibility* to design research studies well. Kennedy (1999) makes this very point when discussing research that is concerned with the question whether teacher education makes a difference to the teachers' teaching:

The sad fact is that poorly designed studies are not merely *nominformative*. Often, they are *misinformative*: by failing to document the content and character of teacher education programs, they confuse quantity with quality. By failing to consider what teacher candidates know or think prior to participating in teacher education, they may over- or under-estimate the contribution of teacher education. By failing to consider the context in which teachers are teaching, they may confuse the effects of the current teaching context with the effects of the earlier teacher preparation. When they study only handfuls of teachers, they cannot tell us how widespread their observed changes are likely to be. (p. 104)

It is the complexity of aspects that require consideration that make (teacher) education research such a hard-to-do science.

The Relevance of the Evidence Question

In the previous section we addressed some fundamental issue around the *evidence question*: What can and should we expect from teacher education research for the purpose of guiding our decisions concerning the pre-service education of teachers? In this section we discuss *the relevance* of this question: Why should we bother with the question in the first place? The evidence question, we argue, is relevant for several reasons, each generally linked to the interests of a particular group.

First, the evidence question should be relevant to *teacher education researchers* for reasons all foundational questions are relevant to a discipline. While foundational questions are generally not at the centre of a field of inquiry, they do deal with the foundations of a discipline upon which the work of the discipline is built. How foundational the evidence question is for the discipline of teacher education research should have become clear from the implications discussed at the end of the previous section.

Second, the evidence question is also of great relevance to *the teaching profession* as a whole. Cochran-Smith (2001) has characterized the questions that have driven reform in teacher education – and, thus, teacher education research – in the USA over the last sixty years. She has identified four different focus questions of which the following three are of interest here:

1. *The Attribute Question*: "What are the attributes and qualities of good teachers, prospective teachers, and teacher education programs?" (p. 4)
2. *The Effectiveness Question*: "What are the teaching strategies and processes used by effective teachers, and, what teacher education processes are most effective in ensuring that prospective teachers learn these strategies?" (p. 4)
3. *The Knowledge Question*: "What should teachers know and be able to do" and "What should the knowledge base of teacher education be?" (p. 4)

Cochran-Smith identifies each of the focus questions as the prominent one driving teacher education research and reform during a particular time in the history of teacher education in the USA. It is not clear to what degree there is a match between those phases and any phases in Canadian teacher education research, but it seems reasonable to assume that all of these questions have played and might currently play a role in Canadian teacher education research, since the question what knowledge and attributes teachers need in order to teach effectively is so fundamental for all teacher education programs and course instructors as is the question of how we know that our teacher candidates are successfully learning. The three research questions suggest the importance of the evidence question for the teaching profession. The teaching profession should and can expect from teacher education research that they help establish a research-based foundation for teaching as a profession in its own right, requiring certain attributes and having a certain knowledge-base as is characteristic for other professions (see, Darling-Hammond & Bransford, 2005).

Third, the evidence question is also relevant to society at large. As a mainly publicly funded endeavour, university-based teacher education is to be accountable to the public for the “success” with which university-based teacher education programs prepare teachers for the Canadian school system. In the USA teacher education in general and university-based teacher education in particular have been for a while under heavy criticism and even existential threat (see, for instance, Darling-Hammond, 2000; and Ballou & Podgursky, 2000), and accountability has been understood as having to justify (university-based) teacher education’s very existence. In the Canadian socio-political and cultural context, university-based teacher education is well established and governmental accountability measures for teacher education programs are more about the provision of general expectations concerning particular program features. What the Canadian society should expect from Canadian teacher education research is that it provides not just support for what those general expectations should reasonably be in the first place, but also that it provides teacher education institutions with an understanding of how to meaningfully design its programs relative to the desired purposes and how to achieve those purposes.⁴ As Cochran-Smith (2005) – with reference to Cuban (2004) – states, “contrary to the popular belief that accountability is a relatively new development in education, public schools have, in actuality, never been ‘unaccountable.’ Rather, Cuban argues, definitions of accountability and quality schooling have changed” (p. 411). The evidence question, thus, becomes important for a notion of accountability that is built on evidence, and sometimes, it seems, provincial governments need to be reminded of the importance of such an aspect of accountability toward the public as Thomas’s chapter (chapter 18) reminds us with reference to the situation in Quebec.

Forth, the evidence question is relevant to *faculties of education* as institutional parts of universities. Universities are places of research but they are also places of teaching, and if it were not for the latter, many components of the former would not exist – at least not in the way they currently do. Faculties of education as the academic units that deal professionally with educational issues should be called upon by the university to provide the expertise for the teaching components of a university’s obligations toward the public, although, to our knowledge that generally does not seem to happen at Canadian universities. Identifying what can and should be expected from teacher education research should be, thus, of great importance to faculties of education in relation to their (potential) role within the university. It is in the interest of faculties of education to claim their status as the academic unit that can and does provide expertise in educational matters, and responding to the evidence question is central to that claim. This is also important for faculties of education’s own obligations toward the school teaching profession, which might involve teaching arrangements or program designs that run counter to common university practices as defined by other faculties. The tensions that can come from attempts by faculties of education to overcome constraints set by traditional university teaching practices are discussed to some degree in Dillon and O’Connor (chapter 5).

Finally, the evidence question should be of greatest relevance to *teacher education programs*. This point seems self-evident, and a number of chapters in this book illustrate this point quite vividly (see, for instance, Goodnough, chapter 7; Maynes & Hatt, chapter 11; Riches &

⁴ This should not suggest that there is a linear means-end relationship between research findings and decisions around teacher education programming or teaching in teacher education programs; see the discussion below.

Benson, chapter 16). Here we only want to point out that the argument that teacher education research is relevant to teacher education program reform does not mean that *in actuality* faculties of education use teacher education research for their program reform activities. As Dillon and O'Connor (chapter 5) wonder: "Why does it seem to be the case that *despite* such evidence most teacher education programs are still not using such evidence for program design?" (p. 80). Reading all the chapter contributions carefully, what we can determine is that it is not possible to generate a body of evidence that can be objectively applied, but that it is our very interests and our participation in the work in which we are engaged in that is itself a source of how we might think about our work. Taylor (1995) puts this evocatively:

Plainly we couldn't have experience of the world at all if we had to start with a swirl of uninterpreted data. Indeed, there would be no 'data,' because even this minimal description depends on our distinguishing what is given by some objective source. (p. 11)

While there is probably little disagreement about the general idea that research evidence is and should be important for any professional undertaking, including teacher education, challenges around the role, status, form, and so on of research evidence in and for teacher education emerge once one inquires deeper into different aspects of the notion of evidence in the context of teacher education research, which, both Taylor (1995) and Gadamer (1989) suggest, requires a much more reflexive stance, one that asks how we ourselves are already implicated in multiple ways of interest and participation.

The kind of research the chapters in this book offer follow Gadamer's (1989) explication of practice: that it does "not consist simply in the circumstance that one reflects upon the attainability of the end that he thinks is good and then does what can be done" (p. 81). Instead, as Gadamer suggests, practice – as practical reason – is not motivated by epistemological or utilitarian goals and desires, but rather, by trying to decide what can best be thought of as possible and oriented to what we believe points to the good in things. Such a form of reflection is necessarily context dependent. In Gadamer's words, "practice consists of choosing, of deciding for something and against something else, and in doing this a practical reflection is effective, which is itself dialectical in the highest measure" (1989, p. 81). "Dialectical" refers in this sense to an attunement to the particular in terms of place and time, and how that both informs theoretical understandings and our responsibilities to think about what are the best courses of action within the situations in which we find ourselves. It is in this sense that we might also understand "application": not as the application of theory to practice, but to see it as a process that is integral to fostering questions that may disturb the taken-for-grantedness of the everyday contexts in which we work.

Both Gadamer (1989) and Taylor (1995) suggest that coming into understanding about the practices and events that characterize our responsibilities is a deeply participational activity. Each of the chapters that follow illustrate this in diverse ways. Research and how we understand research is a practice of what Gadamer calls "social reason": we work with others in trying to make sense of the contexts in which we work, and that the forms of knowledge we generate (evidence) requires good judgement about what it means and how it can be used, but in concert with all of those with whom we share responsibilities for teacher education. Following Flyvbjerg (2001), the kind of research required in teacher education is not simply

about generating evidence, but rather to deal with questions like what is most desirable and why and to what and by what are we oriented in our decision-making?

We briefly want to discuss the implications of this further with the help of the following questions: “Evidence *for whom?*”, “Evidence *for what* (purpose)?”, and “Evidence *of what?*” As before, we will draw on some of the chapters in this book for illustrative purposes.

Evidence for Whom?

The chapters in this book illustrate the range of those for whom evidence from teacher education research does, can, and should count. There are, first and foremost, teacher education faculties as a whole, which should be interested in research evidence for program review and reform purposes. Most chapters in this book discuss issues around evidence for education faculties (chapters 2, 4, 6, 7, 8, 10, 11, 12, 13, 15, 16). Second, teacher educators themselves should be interested in research evidence to develop their pedagogy and other aspects of their course teaching, for instance through self-study of teacher education practices (Bullock & Russell, chapter 3; Thomas, chapter 18), through a developmental evaluation approach (Poeth, chapter 14), or through narrative research (Li, Nelson, Young, Murphy, & Huber, chapter 9). Third, universities at large should be interested in teacher education research. In Canada, other faculties than faculties of education are involved in the preparation of teachers through the requirement that teacher candidates have successfully completed course work in a teachable subject or teachable subjects. Proulx and Simmt (chapter 15) draw attention to mathematics teacher education research that questions the appropriateness of this particular division of labour among faculties in the preparation of teachers. Dillon and O’Connor (chapter 5) discuss the question why teacher education programs do not seem to have the features that research on effective teacher education programs suggest they should have, and they reference teacher education scholarship that identifies conditions within the university at large that (can) constrain teacher education programs and faculty in implementing the identified features. Roger, Maubant, Lacourse, and Correa Molina (chapter 17) discuss teacher education programs in the larger context of professional education at universities in general. Fourth, ministries of education – and by extension professional colleges of teachers in the provinces where those exist – who establish certification and accreditation requirements, should take note of teacher education research, as is strongly argued for in Thomas (chapter 18). There is one group that should take note of (pre-service) teacher education research but is not mentioned in any of the chapters: school divisions. The most prominent area in teacher education research that school divisions should be interested in is research concerning the practicum component of teacher education programs. However, school divisions who take the idea of professional development schools (see, for instance, Darling-Hammond, 2005) or the idea of a “continuum of teacher development” (see, for instance, Falkenberg, 2010; Feiman-Nemser, 2001) seriously should have an interest in teacher education research, because of the integration of the pre-service and in-service aspect of teacher development within these two ideas.

Some issues arise when considering the question for whom the evidence from teacher education research does, can, and should count. First, groups external to teacher education research, like provincial governments, might take teacher education research seriously, but do

not view teacher education research and its findings as what they have to be taken as, namely as a soft and applied science that generates soft and applied knowledge. This is currently a particular problem in the USA, where research standards of hard and pure sciences are used to measure teacher education research studies and their findings (see, for instance, Cochran-Smith & Fries, 2005, pp. 46-47).

Second, while teacher education research should be important to some groups, it does not mean that it is. On the one hand, this means that already generated evidence from teacher education research is not considered by those groups; on the other hand it means that teacher education research is not considered an important means to generate evidence that should be considered important. Thomas (chapter 18) and Proulx and Simmt (chapter 15) provide illustrative examples for the former. Thomas (chapter 18) suggests that teacher education research findings have not been considered at all in the recent changes to teacher education by the government of Quebec. Proulx and Simmt (chapter 15) suggest that evidence in mathematics teacher education is not taken seriously in faculties of education and the university at large when designing teacher education programs. Martin and Russell (chapter 10) provide an illustrative example for the latter case. They discuss what they see as a general neglect of researching teacher candidates' learning during their practicum despite the clear evidence of the perceived importance of the practicum experiences by teacher candidates.

Third, to what extent and in what ways groups do consider teacher education research depends greatly on the socio-cultural context at a given time. In the USA there have been ongoing demands for research evidence for the effectiveness of university-based teacher education (see, for instance, Cochran-Smith, 2006; Wineburg, 2006). In Canada, on the other hand, there is no indication that university-based teacher education is in any existential danger; provincial governments and professional colleges of teachers hold teacher education programs to account through certification requirements and program accreditation, which leave faculties of education with a lot of flexibility in designing their programs. This stark contrast in the role of teacher education research for program accountability is due to and an indication of quite different socio-cultural contexts in both countries. Roger et al. (chapter 17) consider in their discussion the move of teacher education from normal schools to faculties of education in Quebec in 1969. This move does not just *reflect* a particular socio-cultural and socio-political context in Quebec at that time – which the chapter discusses – but it has also *created* a new socio-cultural context for teacher education in Quebec by placing it into a university context where research is an integral part of the functioning of the academic units that constitute the university.

Fourth, the consideration of teacher education research evidence is always a consideration *by someone*, which implies the importance of the *process* of considering evidence. Bullock and Russell (chapter 3) illustrate this point when they discuss the scenario of someone becoming defensive because of what is presented as the problem to be addressed. What this process of considering evidence looks like, so Bullock and Russell's argument, is shaped by our own framework of how we engage with problems and learn from our engagement with problems. Hirschhorn and Kristmanson (chapter 8) consider the role of anecdotes as evidence for teacher education program changes in the context of their own teacher education program. The cases they discuss illustrate how different standards for the process of considering evidence lead to quite different views on the role of anecdotes in teacher education program changes. (It might be that the cases discussed in Hirschhorn and Kristmanson (chapter 8) are illustrative examples for the use of different frameworks of how to engage with problems

discussed in Bullock and Russell (chapter 3).). Finally, the account of the carefully constructed process of revising the teacher education program at Memorial University by Goodnough (chapter 7) illustrates how important the process of considering evidence is.

Evidence for What (Purpose)?

The chapters in this book illustrate the range of purposes for which evidence from teacher education research can, is, and should be used. First, there is the general purpose of a faculty-driven teacher education program review for which evidence is sought – which is the purpose most often addressed in the chapters in this book (chapters 4, 5, 7, 8, 10, 11, 12, 13, 14, 15, 16). Second, the issue of research evidence for an externally (government) driven teacher education program review is addressed in Thomas (chapter 18). Third, evidence sought for the purpose of improving teacher education practices – as distinct from evidence sought for program design – is addressed in Bullock and Russell (chapter 3), Poth (chapter 14) and Thomas (chapter 18). Fourth, Barter (chapter 2) discusses a study that seeks evidence for the purpose of better understanding the teaching context for teacher candidates, in this case, the teaching context in rural settings. Fifth, a number of chapters discuss explicitly the issue of evidence for the purpose of assessing the implementation of a revised or newly created teacher education program (chapters 4, 8, 10, 12). Next to these five more general purposes of seeking evidence from or through teacher education research, two chapters address more specific purposes. Ferguson, Wiebe and MacDonald (chapter 6) and Li et al. (chapter 9) discuss evidence for the purpose of understanding teacher identity development in teacher candidates; in addition, Li et al. (chapter 9) discuss evidence for the purpose of understanding the negotiations of a curriculum of lives within a faculty of education.

Some issues arise when considering the question for what (purpose) evidence from teacher education research is considered. First, for some of the purposes listed above, like internally or externally driven teacher education program reform, a more systematic and programmatic approach to inquiring into central issue of teacher education program design seems to be the best approach (see Falkenberg, 2008; Zeichner, 2005). Generally, however, it seems that what drives teacher education research in Canada is a researcher's or a group of researchers' research agenda that might or might not have one of the larger purposes in mind or might or might not link with the research purpose of other researchers or groups of researchers. Teacher education research as a soft science with multiple and over-time shifting foundations develops research genres of which Kennedy (1996) writes:

Researchers within each genre tend to build on other work within their genre more than on work in other genres. Most of them represent communities of scholars who share a set of norms and values and who share a particular view of, and interest in, teacher education. (p. 122)

Some chapters in this book illustrate this very situation.

Second, the question for what purpose we want to find evidence is crucial when considering evidence. If that would not be the case, Bullock and Russell (chapter 3) would not need to make the case that self-studies of teacher education practices should be acknowledged as being quite relevant for teacher program review. As Cochran-Smith's (2001) historical

analysis of the research questions that guided research in teacher education in the USA illustrates (see above), one and the same purpose can morph into quite different research questions that provide evidence for quite different things. For instance, let us assume that the purpose for which we want to find evidence is to improve teacher education by finding evidence for what competencies teacher candidates need at the time of graduation. If we frame the research question as an “attribute question” (see above), our research looks for evidence for what attributes good teachers have; if we frame the research question as a “knowledge question” (see above), our research looks for evidence for what good teachers know.

Third, once one moves from more general purposes for which one needs evidence from teacher education research, like the purpose of designing an effective program, towards more specific ideas about what that actually means, networks of quite varying assumptions (Quine & Ulian, 1970) become apparent.⁵

The different ways outcomes are being constructed in teacher education rest on differing assumptions about what teachers and teacher candidates should know and be able to do, what K-12 students should know and be able to do, what counts as evidence of ‘knowing’ and ‘doing,’ and what the ultimate purposes of schooling should be. Different premises about the purposes of schooling mean different ways of demonstrating that teacher education programs and procedures are ‘accountable,’ ‘effective,’ or ‘value-added.’ (Cochran-Smith, 2001, p. 12)

Thus, preferences for one rather than another network of assumptions involve ultimately value rather than empirical judgments, as Cochran-Smith (2001) – with reference to Hiebert (1999) – points out:

Standards, the rightness or legitimacy of priorities and goals are questions of value and belief rather than questions of evidence that can suggest educational policies based on varying levels of confidence. Values questions, of course, cannot be settled empirically. It is important to acknowledge, however, that in some cases, policies and practices are driven more by values than by empirical evidence, and, as I indicate throughout this article, all policies and programs of research are ideological in a certain sense. (Cochran-Smith, 2001, p. 5)

With value issues being an integral part of teacher education research, “research” needs to be understood in a wider sense than to just be “empirical research” and needs to include scholarship based on, for instance, philosophical inquiry (e.g., Bubules & Warnick, 2006).⁶ Furthermore, all evidence from teacher education research needs to be qualified to a set of assumptions which cannot be justified by referencing “empirical findings”.

Forth, the previous issue makes clear how closely the question “Evidence for what (purpose)?” discussed here is linked to the question discussed previously (“Evidence for whom?”): those who are interested in evidence from teacher education research have particular

⁵ For another illustrative example for the value-dependent view of teaching see Falkenberg (2007), where the argument is advanced that different assumptions about the human condition lead to different views of teaching as a moral endeavor and, thus, different foundations for teacher education.

⁶ From a much broader perspective – the perspective of all social sciences – this point is also made by Flyvbjerg (2001).

value-based sets of assumptions upon which their interests are based; those assumptions shape their view of what research evidence should be considered.

Evidence of What?

The chapters in this book illustrate the range of what evidence is sought for in teacher education research (we list here a selection only): evidence of what effective teacher education programs look like (chapter 5); evidence of teacher candidates' learning in a teacher education program (chapters 5, 10, 12, 13); evidence of teacher identity development in teacher candidates (chapter 6); evidence of teacher educators' assumptions about learning (chapter 3); evidence of what evidence is or is not used in teacher education program design (chapters 15 and 18); evidence of a more equitable admission practice (chapter 4); evidence of stakeholders' views about aspects of teacher education (chapters 2, 7, 11, 14); evidence of teacher educators' views of desired qualities of beginning teachers (chapter 11).

It is probably for the question "Evidence of what?" where the status of teacher education research as a soft and applied science plays the most prominent role. Because in soft and applied sciences different foundations of the discipline and different research approaches exist side by side within the discipline, what evidence is needed for a given purpose is judged quite differently, depending on a researcher's (or research interpreter's) foundational assumptions for the discipline. For instance, let us take the question of what impact teacher education programs of a certain type have on teacher candidates' learning to teach? This question provides us with a response to the question "Evidence of what?": We are looking for evidence of the impact teacher education programs of a particular type have on teacher candidates' learning to teach. Viewing teacher education as a soft and applied science, however, suggests that how this "what" is actually understood and translated into actual research studies will depend on the foundational assumptions and the general research approach one subscribes to. Let us illustrate this point. As already referenced above, Cochran-Smith (2001) has distinguished three different focus questions for teacher education research: the attribute question, the effectiveness question, and the knowledge question. Each of those research focus questions interprets what "learning to teach" means in a different way. From the attribute question's perspective, learning to teach means developing the attributes and qualities of a good teacher. From the effectiveness question's perspective, learning to teach means becoming competent in enacting the teaching strategies and processes used by effective teachers. Finally, from the knowledge question's perspective, learning to teach means that they know and are able to do what is codified as the knowledge and abilities for the teaching profession. While all these questions are linked, they are, nevertheless, grounded in a fundamentally different way of understanding what "learning to teach" means, and, thus, what teacher education programs would focus on. For instance, the first question emphasizes much stronger than the others the quality of a teacher as a person (focus is on *being* a teacher), while the second question emphasizes much stronger the actual practice of teaching (focusing on *teaching as a practice*).

The matter becomes even more complex – as it is to be expected for the soft and applied science of teacher education – if one considers the different ways in which each of the three questions can further be divided based on additional assumptions. For instance, what would best measure teachers' knowledge and abilities (third focus question)? Are we looking

for evidence for teacher knowledge and abilities through written teacher tests? through understanding performances (Perkins, 1992, p. 77-79; Cochran-Smith, 2001, pp. 20-29)? Or should we assess knowledge and ability through its impact on student learning?

In addition to these different conceptualizations and operationalizations, there are also a number of different research approaches used to address the question of what impact teacher education programs of a certain type (or teacher education programs generally) have on teacher candidates' learning to teach. Kennedy (1996, 1999) has discussed studies that could be drawn upon to respond to the question, and she identified (as mentioned above) five different "research genres" in teacher education. As Kennedy has suggested, each of these genres focuses on a different aspect of teacher education and makes different assumptions about what evidence counts toward a valid response to the question. The discussion in Li et al. (chapter 9), which shifts the impact question from teacher candidates' learning to teach toward teacher candidates' identity formation and the focus from causal links between program features and program impact to the negotiations of "curriculum lives" of teacher candidates within a teacher education program, lead to quite different perspectives of what evidence is important and, even, what should count as evidence in the first place.

Evidence as a Basis for Teacher Education Program Improvement / Reform

In this final section we like to list a number of points that we see are suggested by or are linked with the discussions in the preceding sections for the issue of using evidence for teacher education program improvement or reform.

First, teacher education research is a soft science, which, as such, constantly rebuilds its foundations and has, thus, a multitude of research approaches. The term "soft" is not meant to denigrate teacher education research, but it is to speak for its complexity and that it cannot simply function only in terms of a natural science model; it affirms the limits of generalizable forms of knowledge within teacher education. Even if all the chapter contributors do not necessarily or explicitly make this argument, the very grounds of their concerns and interests speak to complexity and a questioning of theory into practice rationality. In each of the following chapters context is paramount. The authors write of the complexity of the environments in which we work, and the temporality of experiences, in conditions that are always shifting. What we study is not simply the facts of something, but as Ferguson Wiebe and MacDonald (chapter 6) note, "we ought to explore the mental, emotional, physical, moral, ethical, even spiritual processes of what transpires in our classrooms as part of the lived experience of becoming teachers in our program" (pp. 87-88).

Complicating research into teacher education further, several of the ensuing discussions raise issues that cannot be reduced to discovering the right evidence for the resolution of the issues they raise. For example, several of the authors refer to issues such as accountability, and the question of how teacher educators may speak to the truth of practice. The discussions about accountability and the question of "standards" for practice raise issues not so much of "evidence" but rather more for how we make good judgements, and indeed how we speak for issues that ask us to negotiate exercises of power and authority. Along similar lines, several of the chapters raise the question of what constitutes "professionalization" of teaching, and how

that is not a question that can be resolved by research but one that is deeply historically, culturally and certainly politically construed. The question might then well be, how we as teacher educators speak to that question, and with what authority.

Since teacher education research cannot avoid these difficult challenges, it should use them to its advantage and use multiple measures to assess whatever aspect needs inquiry into. The multiple-measures approach to evaluate the Stanford Teacher Education Program (Darling-Hammond, 2006b) can serve as an illustrative example. To assess outcomes of the program, a set of different research and assessment strategies were used. To track teacher candidates' learning, a multitude of data were collected: perceptual data through surveys and interviews with teacher candidates to assess their perception of their own learning; independent measures of their learning like pre- and posttests, performance assessment, work samples and observational data; post-graduating observation data of teacher candidates' classroom teaching.

Second, if teacher education research as a field of inquiry involves a range of different "research genres", as Kennedy (1996, 1999) has illustrated, and if, as the first point has argued, the field of teacher education wants to benefit from the multitude of research approaches, then the work done across the different research genres and approaches should be *bridged* in a way that allows the linking of their respective findings. Such bridging needs people who do the actual bridging, implying that researchers are needed who transcend particular research genres to help make sense how research within each genre contributes to an overall picture of the issue under investigation, and to an understanding of the possibilities and limitations of each genre. Kennedy's (1996, 1999) work illustrates what such bridging can look like.

Third, and linked to the second point, having such a diverse range of research approaches in teacher education, the field of inquiry would greatly benefit from a more intentionally coordinated and more systematic research effort around issues of particular interest to teacher education. For instance, Zeichner (2005) provides a number of recommendations that, if implemented, would work toward a more intentionally coordinated and more systematic research efforts in teacher education research. His recommendations include: linking research studies stronger to theoretical frameworks; using a more consistent definition of terms; and "[developing] more *programs of research* in teacher education where researchers consciously build on each other's work to pursue a line of inquiry" (p. 742).

Fourth, if teacher education research generates soft and applied knowledge that is tentative and contextual, the best knowledge to inform a teacher education program is knowledge that gives consideration to the particular context of the particular program, in other words, knowledge that is locally generated. Such locally generated knowledge, in particular if it is generated in light of "generalities" generated in other teacher education research studies, form the very basis for making wise decisions in teacher education as discussed above. This means that teacher education programs should be involved in systematic and *on-going* research about the appropriateness of the learning experiences that the program provides to its teacher candidates relative to what are considered the desired outcomes of the program. At the time a program is put in place, the impact of the program cannot be known, the appropriateness of the program relative to the given contextual parameters cannot be known, and so on, which means that faculties of education need to systematically and on an ongoing basis inquire into the program's *contextual appropriateness*. Also, new faculty joining a teacher education program, new teaching practices used in courses, and other changes within a program over often short periods of time change the context for the program, which, in turn, require new soft and

applied knowledge. Self-study of teacher education practices (Bullock & Russell, chapter 3) and a developmental evaluation system (Poeh, chapter 14) are examples of ways in which faculties and individual teacher educators can engage in on-going research about the appropriateness of teacher candidates' learning experiences. Cochran-Smith and the Boston College Evidence Team (2009) illustrate the "institutionalizing of inquiry and evidence" into the culture of teacher education at Boston College.

Fifth, and linked directly to the previous point, if faculties of education are to engage in systematic and on-going research about the contextual appropriateness of their teacher education program, the program structure needs to be flexible enough for the program to be able to respond to evidence generated through the local research undertaken – within the larger picture generated by teacher education research as a field of inquiry. In other words, teacher education programs should be designed in a way that allows the enactment of practical wisdom. One way in which a program can build in flexibility is by creating space for *pilot projects* within the larger program that are created to experiment with alternative ways of creating meaningful learning experiences for teacher candidates.

Sixth, the foundations of teacher education and teacher education research – as was argued is the case for all soft and applied sciences – are constantly rebuilt, leading to alternative or complementary research approaches and teacher education practices and program designs. Embracing this situation as an integral part of the discipline *requires* a well developed sub-field of inquiry in the foundations of teacher education and teacher education research. Considering how value-laden the soft and applied knowledge is that teacher education research generates for teacher education practice(s), inquiries into the foundations of teacher education practice(s) and teacher education research are not a side issue within teacher education (research) that we can get to if we have some extra time. Rather, those inquiries provide us with the understanding *necessary* to make us wiser teacher education researchers and wiser "users" of teacher education research by making us more sensitive toward (the functioning of) the often hidden assumptions that are made in teacher education practices and research and the tentative and contextual nature of the knowledge that teacher education research generates.

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