# Overview of the New Methods for New Methods Doctoral Education Project

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Human and social sciences are complex fields in which many variables impact upon outcomes. Education data, whether cognitive, affective, behavioural, or social, are nested (e.g., students within classes within schools within districts, etc.), longitudinal (i.e., repeated measures that may or may not be equated), incomplete (i.e., many missing data points), and highly interconnected (i.e., multi-causal, multi-collinear). Thus, organisational learning in education requires students and analysts to have sophisticated quantitative data analysis techniques (e.g., psychometric test equating, structural equation modelling, hierarchical level modelling, missing value analysis, and propensity score analysis) so as to appropriately address the data that provide answers to questions about learning within schooling. Indeed, many analysts consider such social fields like education, despite the perception that they are the ‘soft’ sciences, to be the hardest fields to research (Berliner, 2002; Phillips, 2014; Wieman, 2014). However, the vast majority of doctoral students in education begin with inadequate preparation to tackle the problems of large and complex data and consequently only a minority end up being capable of such analyses.

Furthermore, in the early 21st century, it would seem that human and social conditions are changing rapidly meaning that accepted and conventional means of investigation may need to be updated to cope with changing circumstances (Walker & Dimmock, 2002). A key contemporary change is increased globalisation and cross-cultural or cross-linguistic interactions which change both the conditions of inquiry and the validity of extant research methods. This is further complicated by modern advances in electronic communication technologies (e.g., online and open source software, smart phone applications, mobile computing, etc.) and knowledge stores (e.g., online encyclopedia, tutoring programs, etc.) which support collaboration and learning. These factors mean that multiple and plural methods of research have become the accepted best practice for scientific research in these domains (Berliner, 2006; Jones & Cleveland-Inners, 2004; Larson & Besett-Alesch, 2000; Maxwell, 2004; Page, 2001; Peacock, 2001; Siegel, 2006). It also means that new methods of research are constantly being developed. These methods range from interventionist/experimental and statistical to highly personal and interpretive or hermeneutic. While new research paradigms (e.g., indigenous research) have developed valid protocols for data collection (e.g., Denzin, Lincoln, & Smith, 2008), they do not necessarily have well-developed analytic procedures. This general problem is especially relevant for young researchers working in challenging contexts.

Doctoral level education is considered gold standard in the preparation of young researchers for independent empirical investigations in the human and social sciences. A major objective of doctoral education is the development of researchers who have deep understanding of the conceptual and philosophic underpinnings and competence with the technical aspects of multiple and diverse methods of inquiry, evaluation, and discovery (Berliner, 2006; Jones & Cleveland-Inners, 2004; Larson & Besett-Alesch, 2000; Maxwell, 2004; Page, 2001; Peacock, 2001; Siegel, 2006).  Three models of researcher development dominate contemporary doctoral education: (1) the British model relying predominantly on supervisors to provide substantive and methodological training; (2) the American model requiring two years of course work, with a strong emphasis on research design and statistical analysis, before empirical work; and (3) a technology-assisted, self-directed model arising from the proliferation of online tools (e.g., VassarStats, Trochim’s Research Methods Knowledge Base, Fourmilab, etc.). The range of methods that could be used to teach research and data analysis methods are constrained by organisational factors such as inadequate funding, institutional traditions, and faculty ability to deliver advanced instruction. The challenge for higher education is that current approaches to preparing new researchers may not adequately teach doctoral students the full range of diverse methods or skills needed to judge the validity of methods and/or results from so many methods, or the ability to develop and evaluate new methods.

In general, the US model of doctoral education provides 2 years of compulsory course-work as a prerequisite for thesis research. The degree to which that model is sufficiently robust to prepare candidates for the future work demands as organisational data and technical analysts is unknown. However, it is unknown whether this approach would be appropriate or sufficient in itself.  Successful programs in Germany in teaching advanced doctoral data collection and analysis methods (e.g., DiPF Frankfurt or IPN Kiel) make use of external funding (Leibniz Institute) to ensure a wide range of skills are taught by experts independent of number of enrolments or instructor institutional affiliation. The University of Maryland requires its educational psychology doctoral students to complete courses in measurement and statistics so that they graduate with both a master’s degree in quantitative research methods and a doctoral degree in educational psychology. A quasi-Delphi study of graduate supervisors in the UoA faculty of education (Brown, 2014) concluded that there was considerable agreement as to the importance of students’ personal attributes (e.g., perseverance, self-regulation, communicative, and intellectual capability), but nearly total disagreement as to the relative priority of a wide range of technical data collection and analysis methods (e.g., historical document analysis, structural equation modelling, grounded theory analysis). The study concluded that in terms of research methods instruction, the data collection and analysis skills were highly teachable, unlike the personal attributes which were unlikely to be easily contained within a methods course curriculum. Consistent with this result, Prof David Boud of Deakin University (personal communication, 2 December 2015) has suggested that, rather than courses in methods, doctoral students instead need to develop personal skills and understanding of academic and research processes.

With growth in PhD enrolments, especially from overseas, there has been increasing demand for more instruction in methods. The current model of methodology instruction through supervision is extremely time-intensive and restricts our ability to develop the strengths we have. The time has come to revisit how we teach research.

Berliner, D. C. (2002). Educational research: The hardest science of all. *Educational Researcher, 31*(8), 18-20

Berliner, D. C. (2006). Toward a future as rich as our past. In C. M. Golde, G. E. Walker & Associates (Eds.), *Envisioning the Future of Doctoral Education: Preparing Stewards of the Discipline* (pp. 268-289). San Francisco, CA: Jossey-Bass.

Denzin, N. K., Lincoln, Y. S., & Smith, L. T. (Eds.). (2008). *Handbook of Critical and Indigenous Methodologies*. Los Angeles, CA: Sage.

Jones, T., & Cleveland-Inners, M. (2004). Considerations for the instruction of research methodologies in graduate-level distance education degree programs. *Turkish Online Journal of Distance Education, 5*(2), 40-48.

Larson, L. M., & Besett-Alesch, T. M. (2000). Bolstering the scientist component in the training of scientist-practitioners: One program’s curriculum modifications *The Counseling Psychologist, 28* (6), 873-896.

Maxwell, J. A. (2004). Causal explanation, qualitative research, and scientific inquiry in education. *Educational Researcher, 33*(2), 3-11.

Page, R. N. (2001). Reshaping graduate preparation in educational research methods: One school's experience. *Educational Researcher, 30*(5), 19-25.

Peacock, J. R. (2001). Program evaluation: Meeting the applied research educational needs of master's level students in gerontology. *Educational Gerontology, 27*(7), 583-596.

Phillips, D. C. (2014). Research in the hard sciences, and in very hard “softer” domains. *Educational Researcher, 43*(1), 9-11. doi: 10.3102/0013189x13520293

Siegel, H. (2006). Epistemological diversity and education research: Much ado about nothing much? *Educational Researcher, 35*(2), 3-12.

Walker, A., & Dimmock, C. (2002). Moving school leadership beyond its narrow boundaries: Developing a cross-cultural approach. In K. A. Leithwood & P. Hallinger (Eds.), *Second International Handbook of Educational Leadership and Administration*. Dordrecht, NL: Springer.

Wieman, C. E. (2014). The similarities between research in education and research in the hard sciences. *Educational Researcher, 43*(1), 12-14. doi: 10.3102/0013189x13520294