

Art. # 1006, 8 pages, <http://www.sajournalofeducation.co.za>

University-affiliated schools as sites for research learning in pre-service teacher education

Elizabeth Henning

Centre for Education Practice Research, University of Johannesburg, Soweto Campus, South Africa
ehenning@uj.ac.za

Gadija Petker and Nadine Petersen

Department of Childhood Education, University of Johannesburg, Soweto Campus, South Africa

This article proposes that the 'teaching/practice schools' formally affiliated to initial teacher education programmes at universities, can be utilised more optimally as research sites by student teachers. The argument is put forward with reference to the role that such schools have played historically in teacher education in the United States (US), and more recently, in the successful Finnish teacher education system, in which research is highly valued as a requisite part of a teaching qualification. The authors propose that the single component of these schools, which has historically distinguished them from schools for work integrated learning (WIL), is that they are also research spaces and have retained some of the 'lab' character of earlier schools, such as the one established by John Dewey. In such schools, the authors argue, students learn to be reflective practitioners by positioning themselves as researchers, who reflect on practice in a research-rich environment. In a pilot study, the authors found that university and school personnel hold different views about research in the schools. The article recommends that careful consideration be given to the research function in these public schools as part of teacher training.

Keywords: activity systems; Dewey; experimental schools; Finland; lab schools; practice schools; practitioner research; reflective practice; teacher education; teaching schools

Introduction: Research Skills for Reflective Practice

In a search of the best ways in which to learn the practice of teaching, some teacher education systems, such as those in the US, Finland and Canada, and of late also in the United Kingdom (UK) and Norway, have opted for close collaboration with a specific type of school, known variously as an "experimental school", a "lab school", a "professional development school", a "practice school", a university "training school" or a "teaching school". Such schools have, historically, served as sites of practice learning for education students, and also as research sites, where experimental classroom work has been documented, and where different aspects of school life and of child development have been studied at close quarters (Bonar, 1992; Harms & De Pencier, 1996; Mayhew & Edwards, 2007; Wilcox-Herzog & McClaren, 2012). In a recent strategic policy framework document for the South African teacher education sector, the South African department of higher education and training (DHET) and the department of basic education (DBE) together introduced the notion of such schools into the public education system of the country. The framework document refers to these schools as *teaching schools* (Department of Basic Education & Department of Higher Education and Training, 2011). The plan is that such schools will be affiliated to universities in the same way that teaching hospitals are affiliated to universities where health practitioners are educated.

The reasoning behind this type of framework is that pre-service education students still vulnerable to the hardships of the profession (Henning & Gravett, 2011), need secure places to practice. These would be places where they can also learn from good example, in well-functioning schools, where they can also get to know a school and its inhabitants more intimately than they would, for example, in professional practice schools (Weber, 1996), where student teachers learn by way of WIL. In getting to know a school at close quarters, the argument is forwarded that student teachers will learn the workings of a school, with its inside structures, dynamics and relationships (Niemi & Lavonen, 2012). In such primary schools they will also learn about child development, and observe how the same cohort of children grow and develop through several years. In high schools, they will, similarly, learn about adolescent development. Many of the US lab schools are known for their contribution to child studies, with the work of Bandura, on observational learning, and Flavell's research on metacognition and theory of mind, having been conducted in the Bing School at Stanford University (Elicker, Barbour, McBride, Groves, Horm & Stremmel, 2008). There is currently a South African instance of how these schools might become sites for educational research, in the form of a programme of research on mathematical (specifically numerical) cognition of young children at a school in Soweto (Henning, 2013).

Much of what student teachers learn in these schools is by exposure to and investigation of practice, but, specifically, exposure in a trusted and somewhat protected environment, where they can safely test their pedagogy under the watchful eye of mentor teachers and university lecturers, as is the case in practice schools in Finland (Niemi, 2011). This is the type of argument one will hear from experienced teacher educators, who know this bilateral set-up well. Jari Lavonen, who heads the teacher education department at the University of Helsinki believes that this type of practice learning is a crucial part of Finland's much-admired teacher education system

(Lavonen, pers. comm., 20 November 2013, 3 September 2014). Other researchers from Finland agree and add that it is the *research basis* of the teacher education that has contributed to its success (Kansanen, 2003, 2005, 2007; Niemi, 2007, 2011; Niemi & Lavonen, 2012; Sahlberg, 2011; Westbury, Hansen, Kansanen & Björkvist, 2005) as does, Raiker (2011), a British researcher, who has studied teacher education in Finland in some depth.

On the website of the International Association of Laboratory Schools (<http://laboratoryschools.org/>), the stated aim of schools affiliated to teacher education programmes is also clearly stated: the schools are seen as safe places for learning to be a teacher, and they are also a place where experimental work and research can be done. Although there has been a sharp decrease in the number of lab schools in the US (Tanner, 1997), arguably, because they are not public schools, and because funding is a major challenge, the ones that remain active continue to espouse some of the ideals of the early lab schools. The best known example is the Dewey Lab School, which was founded in 1884 (Harms & De Pencier, 1996), and the Lincoln Lab School at Teachers College at Columbia University, which was founded in 1917.

In the 1920s and 1930s the Lincoln School was the most closely watched experimental school in the educational world, making solid contributions in the work of laboratory schools. It provided a select number of Teachers College students with clinical teaching experience, engaged in curriculum design and development, and provided an observation and demonstration site for teachers from around the United States and abroad. Its own experimental research institute promoted staff development and student teaching, and it distributed its printed materials in national journals and in mass mailings to schools throughout the United States (Lincoln School, n.d.).

Two aspects of teaching schools stand out: 1) they are regarded as ‘protected’ learning spaces where students of education are mentored and coached and 2) they are ‘experimental’. Experimental in this sense means that in these classrooms, under the watchful eye of mentor teachers and the monitoring of student activity by university lecturers, the students can try novel ideas and test their skills and where they can conduct systematic inquiries as well. During their clinical training, student teachers can begin to build their own repertoire of pedagogic tools, while being nurtured to do this competently, if not as yet out in the broader professional world. By the same token, the teachers at these schools can conduct research too, and can utilise the help of academic staff at the university and use its resources (Mölläviitta, pers. comm., 21 November 2013). In Finland, research competence is a primary requirement of a teaching qualification (Jyrhämä, Kynäslähti, Krokfors, By-

man, Maaranen, Toom & Kansanen, 2008; Kansanen, 2005, 2007; Niemi, 2011; Sahlberg, 2011). At schools in that country, it is not unusual to observe teachers gathering data and working experimentally with university colleagues in shared research projects (Mölläviitta, pers. comm., 21 November 2013). A substantial number of teachers in Finland do this research towards a doctoral study (PhD). University researchers also use the opportunity of working on research projects in such controlled environments, where they can utilise existing large corpuses of data.

For education systems, too, such schools hold specific promise and benefit (Niemi, 2009, 2011). New ideas about assessment can, for example, be tried in controlled conditions.¹ Case studies and pilot investigations can be conducted in an environment where much data already exists, ready to be inserted into new studies where needed. In-depth inquiries into classroom practice and emergent pedagogical content knowledge of pre-service teachers can be systematically observed over time to inform policy too. According to Niemi (2009), in a system such as that of Finland, where all universities that educate teachers are linked to a “practice school”, data from the various schools and universities can be utilised to search for patterns of successful teacher education. We would argue that in the South African educational system, which remains in transition, much evidence-based research (Phillips, 2000, 2014) is required for large-scale systemic interventions.

In a current study of a teaching school, the research focuses on what students learn in the school and what the role of peers, mentor teachers and university lecturers are in their blending of the world of practice with what they have learned in the university classroom. This research is conducted in a collaborating project with a university in Finland, investigating the role of the bilateral team members from the school and the university, and how the school serves as site of learning practice for them. We propose that the schools, as practice sites, can become a fertile ground for developing critical reflection skills about teaching, based on research skills. Our argument is that *reflective practice*, especially as espoused by Dewey (see Doll, 2004, referring to Dewey, 1933) resembles the research/inquiry process in the social sciences (Phillips, 2014). Dewey’s notion of the “five phases of reflective thought” comprises a systematic set of actions that require a well-trained ‘scientific eye’ and include:

1. A *suggestive phase*, where the mind leaps too quickly to a possible solution;
2. An *intellectualisation phase*, where the difficulty felt is turned into a problem to be solved;
3. A *hypothesis-forming phase* to act as guide for close observation and data gathering;

4. A *reasoning phase*, where the mind logically examines;
5. A *testing by overt action phase* where corroboration, verification, or failure occur (Doll, 2004:53).

On this view, it can be said that a teacher gathers data and searches for practical solutions to problems as she continues through the daily work. Moreover, it would make practical sense to immerse pre-service teachers in *research of practice*, with the aim of teaching them research skills. These skills can be their *tools for reflective practice*, where they will need it as practitioners – in the classroom. In the Deweyan tradition (Dewey, 1938; Phillips, 2014) student teachers thus learn to problematise their practice, and to frame the problems they encounter in classrooms within the theory that they study. In the tradition of American pragmatism, this would mean that “ideas are to be evaluated in terms of their consequences and we can test those consequences for their usefulness” (Doll, 2004:53). Taking this view further, one can argue that a reflective practitioner is thus also a classroom ‘pragmatist’, first finding out what works, and then doing it. Anni Loukomies, a training school teacher and a university lecturer in Finland, argues that the most important question one can ask a teacher or a student teacher about any classroom activity is, “why are you doing this?” Furthermore, the response from the teacher or the student, she says, should provide both a theoretical and an empirical reason (Loukomies, pers. comm., 29 August 2014).

Teaching Schools as Part of a System

Because teaching schools are variously connected to different systems, some systemic perspective on their role can be fruitful. They are not insulated spaces. Our theoretical position on the systemic connection of teaching schools is located in theories that were spawned by the legacy of Vygotsky’s work, especially as propounded by Engeström (2001, 2011). He developed a heuristic device, known as an *activity system*, with which one looks upon human activity as a ‘system’ of people, artefacts, signs and events. The system comprises: 1) an acting *subject*, 2) who utilises *tools and signs*, to 3) act upon an *object*. In terms of a teaching school, the acting subjects can be seen as the university students, using all that the school can offer in terms of signs and tools to achieve their goal/objective of becoming a teacher-researcher. However, Engeström has added to these three dimensions, which, argues Cole (1998:218-219), come from the early “Russian cultural historical psychologists [who] used a triangle to picture the structured relation of the individual to the environment that arises *parri parsu* with artefact mediation”. Engeström inserts the notions of: 1) a *community*

such as school staff and learners); 2) *rules of activity* (such as curricula, policies and frameworks); and 3) the *division of labour* (knowing who is responsible for which actions and identifying where the power of the activityⁱⁱ is located) into the heuristic. An *activity system*, as thinking device, or “gaze” (Wardekker, 2008) can, furthermore, assist in identifying contestations and tensions in the system and in whatever interventions take place within it and also in its intersection with other systems:

Interventions take place in complex and multi-layered activity systems, rife with recurring problems that are conceptualized [sic] as contradictions inherent in the structuring of the system. Interventions themselves are contested spaces, filled with tensions and resistance from a range of stakeholders (Gutiérrez & Penuel, 2014:20).

Looking at new teaching schools in South Africa from such an “intervention” perspective, we make the point that if a country’s education authorities go to the trouble of establishing teaching schools at all teacher education institutions, it can be of benefit if at the same time, the stakeholders in the (systemic) enterprise can all increase their research competence. We argue that with that may come, concomitantly, also an increase in their (critical) reflective action capability, so as to engage in the activity of learning to be a teacher with knowledge and discretion.

We thus argue that research skills can add to critical reflection capabilities with which to see the tensions in an activity system of a school more clearly. Doing this may also assist in seeing the contestations of the various intersecting activity systems that impact a student *learning in a teaching school* (Figure 1). This would include skills, not only for the student teachers, but also for the mentor teachers at the school, as well as the faculty lecturers, all of whom would be team members in the same overall project of inquiry. Thus, within the limits of the convergent activity systems shown in Figure 1, one can ask the question of how research skills can add to powerful teacher education and how can they be used to highlight areas of tensions and contradiction (Engeström, 2001, 2011).

In the US, many lab schools have now closed down (Kochan, 1997). It may not have been only financial constraints that caused their closure, but it could be due to the fact that they have stopped to function as laboratories for thinking in and on practice: “During the past three decades, laboratory schools progressed from being innovative leadership sites for experimentation and demonstration to being maligned as irrelevant and unreal” (Kochan 1997:19). On the other hand, the oldest teaching training school in Finland, at the University of Jyväskylä, was founded in 1866. It developed in much the same way as the

Dewey Lab School, which grew into the Chicago Institute of Education. It continues to publish in much the same way as the school at Teachers College at Columbia University did in earlier years.

The University of Jyväskylä Teacher Training School has its own publication series. The series includes reports and articles from research, experimental and development projects implemented in the school, mainly written in Finnish. Several University of Jyväskylä students also complete their theses at the Teacher Training School, and they are assessed by

their respective departments (University of Jyväskylä, n.d.).

A Pilot Inquiry

We now report briefly on a pilot study that examined the views of mentor school teachers and teacher educators on the topic of research in teaching schools, guided by the question: how do teaching school stakeholders view the relationship between *teaching practice* and *research* in teaching schools?ⁱⁱⁱ

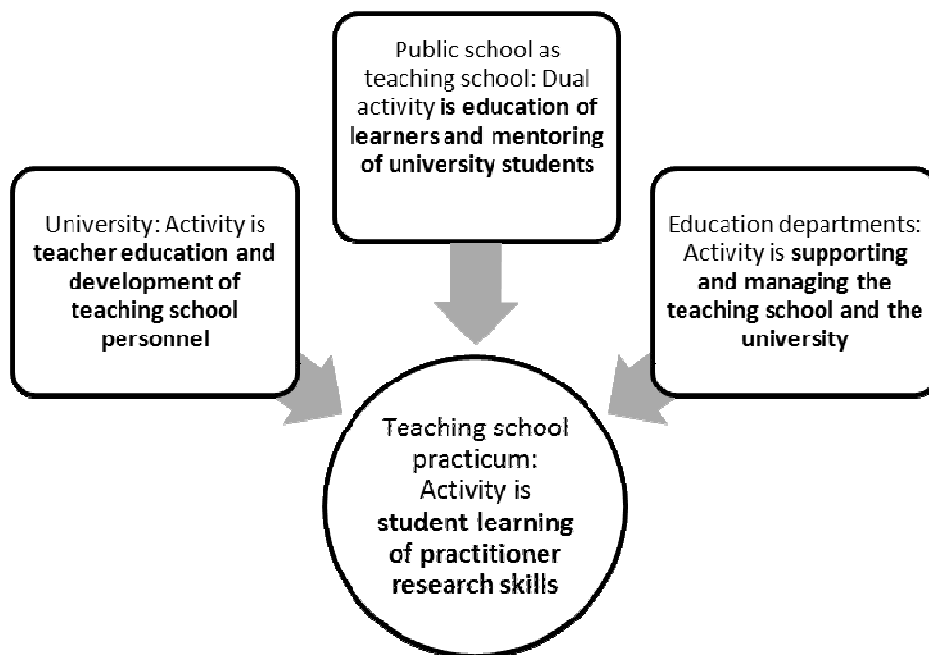


Figure 1 Convergence of ‘activity systems’ for research-oriented teacher education

Participants and Data Collection

We conducted the inquiry as part of the preparation for a questionnaire that we developed to do a comparative study of student learning at teaching schools in Finland and in South Africa. We set the following questions for interviews with 17 teacher educators in universities and mentor teachers in teaching schools in the US, Canada, Finland and South Africa:

1. How do you see research in teaching schools (or lab schools, or practice schools)?
2. Describe:
 - i. the research in which you have participated in a teaching school;
 - ii. the research in which you would like to participate in a teaching school.
3. Say why you agree (or disagree) that research should be part of the brief of such schools.
4. What is your view on student teachers’ reflective practice ability?

5. What is your view on student teachers’ ability to apply their theoretical knowledge in their reflection on practice?
6. What is your view on students’ ability to conduct research in a school?
7. What is your view on teaching school teachers’ capability to conduct research in their classroom or in their school?

The interviews were conducted via *Skype*[®], e-mail, or in person, over a period of two months towards the end of 2013, and at the beginning of 2014. Interviews lasted between 20 minutes and three hours. We utilised transcriptions of voice recordings, e-mail written responses and interview notes.

Data Analysis

The recorded interview data were first grouped per question, and scrutinised to see which parts of the data were optimally usable. Non-usable data, such as

talk diversions to non-related topics, were discarded. The criterion for usability was whether the responses addressed the primary research question in some way, and if it could potentially be used as *discourse markers* from which to construct the items of the questionnaire. These interviews were, thus, one avenue of preliminary item construct validation in preparation for the survey questionnaire.^{iv} Other measures taken to strive for a reliable process and trustworthy/valid findings were that all documentation was filed and a 'chain of evidence' or 'audit trail' (Merriam, 1998), which can therefore guarantee the ability to recount the steps taken.

After the initial selection of usable utterances the data were coded per utterance, the size of which varied from short phrases to multiple sentences. Altogether 23 codes were awarded, after having labelled the utterances, utilising the help of an additional researcher in the team. The same procedure was followed as with the coding, but in this round of analysis, the code 'names' were collapsed into only four categories in what grounded theory methodologists (Strauss & Corbin, 1999) would refer to as *axial coding* subsequent to *open coding* (see Table 1), and which Miles and Huberman (1994) suggest should serve as *data displays*. Henning, Van Rensburg and Smit (2004) suggest a specific process of analysis, which we followed.

Before the categories and their constituent codes were examined to identify a pattern, we discussed the data with one researcher in Finland. We then utilised the 'gaze' of activity theory (Wardekker, 2008) as organising tool, with which to construct a pattern. Alongside this, we searched for evidence (or counter evidence) that might relate to our argument about reflective practice in the tradition of reflective practice as propounded by Deweyan pragmatism (Phillips, 2000). The data analysis was thus both inductive (coding utterances and collapsing the codes into categories), and deductive (using a specific theoretical 'gaze' to order the empirical pattern).

The Findings

The pattern that we identified/assembled across the interviewee responses was that research is viewed as a somewhat vague and also contested characteristic of teaching schools. There were varying views from different countries, indicative of their teacher education practice (see Table 1). The four respondents from Finland voiced their opinion strongly, saying that their education reform since the 1970s has been based on the principle that all teachers will have a *research-oriented view* of their practice, and need to learn the skills for it in the teaching schools. They referred to the fact that students submit a research

dissertation as part of the requirement for their professional degree qualification. Other respondents were less adamant about this, and viewed research from different positions. Two respondents from leading lab schools in the US emphasised the research in *child development, conducted by academics*, but paid less attention to the need for students to learn to conduct classroom research. Three Canadian respondents mentioned the opportunity for students to develop *researcher practitioner skills*. Except for the respondents from Finland, there was general agreement about students' limited ability to conduct research, to reflect on their practice skilfully, and to *theorise their practice* on the basis of their studies in the programme. This is also their view on the teachers in the schools. The eight South African respondents' main emphasis was on the *state of (un)readiness of teachers* to take on the brief of mentor teachers with regard to research. They pointed out that teachers would need development programmes, and alluded to the multiple tensions with the local districts, and the provincial education department as an inhibitor.

The pattern that we saw across the data was that ideas about academic research skills and skills for reflection in daily practice were not aligned, except in the views of the participants from Finland, and to a lesser degree, the respondents from Canada. We would argue that some of the tensions we noticed may be due to the concepts of reflection and of research not being aligned for some respondents.

These findings have urged us to pursue this topic further, and to advocate for more emphasis on research in undergraduate education of teachers,^v but specifically on the possibilities for using such skills as tools for classroom reflection upon practice.

Discussion: Practitioner Research and Learning to be a Reflective (Critical) Practitioner

It is notable that the respondents did not see the relationship between *reflective practice* in the pragmatist tradition (Dewey, 1933) and *research competence*. In other words, for most of the participants research was not highlighted in any way as a way of learning to be a reflective practitioner. This gives us reason to propose that teaching schools should be purposefully defined as spaces of learning, to conduct *practitioner research* as part of learning to be a *reflective practitioner*. In the pragmatist tradition, "the value of an idea lies in the consequences resulting from a person's acting on the idea" (Doll, 2004:510). Dewey's "Five Aspects of Reflective Thought" (1933:106) shows much resemblance to the scientific method in the social sciences (Phillips, 2014), which he also pioneered.

Table 1 Example of data analysis with data extracts: eight codes in four categories*

Category	A. Research is conducted by 'academics'	B. Students learn research skills as part of their degree qualification, but only some transfer it to classrooms	C. Students conduct some practitioner research, but do not align it with teacher reflection skills	D. Teachers lack research competence
1. Research is scientific work	Teachers are academics who teach in a school.	Our teacher education is research-based. This means our teachers are researchers.	They do research as practitioners and there is some science to that.	We can't do research.
2. Never conducted research	I never learned to do it – this research.	I don't think what I have done is really research. I just assess the children.	I have never seen a student in the school doing research.	I have two degrees but I have not done research in the school.
3. Research is (only) empirical	You have to learn research methods and statistics.	They learn methods of research and use them in their practice training.	In the schools they do research for their thesis.	We only learn interviews.
4. Teachers are like lab assistants	We help professors to do their research.	Of course teachers help the students and each other and they help the lecturers too.	We feel we help the researchers from the university but, me, I am not a researcher.	Most of us we only help the lecturers but we are not the researchers.
5. Research on assessment is important	The researchers who come here like to know about our assessment.	It is one of the areas that students like to research in the schools.	They have no choice it is part of their training to be a classroom researcher.	We learn to use the data from the ANAs. The district tells us how to use it.
6. Teaching schools are for teaching and learning	There is the view that too much research comes in the way of the essential work of schools – including lab schools.	Yes, we see schools have to be about learning but, yes, we also see that good teaching is about being able to research or to investigate the teaching – so even learning – you have to have an attitude of looking for measures to describe it.	The central focus of a school is learning (and teaching) but to be critical about both you need to do some research to find out what is going on behind the books and the computers. I know, but I don't do that. I am always too busy. There is too much paper work.	We are always busy with teaching and managing the school and where will we have time to learn research – even although we know it is important.
7. Research on financial resources of teaching school	Lab schools always have to have professionals investigating the material resources.	There are some students who like to research management and administration, even financial plans of a school and we say it's okay.	I think class teachers are too busy to worry about the school's money.	As a school leader I am expected to do research on the state of affairs of the school's money. But it is just reporting and watching. It is not real research.
8. Research on teacher education in teaching school	The professors who come here want to see if their programme is working.	There are some joint projects, like the one we have in South Africa and in South Korea and other places, where we want to see how our teacher education is working in the practice schools.	In Canada it is important to give account of all additional programmes, so one area on which we focus is how the students look at their own work.	There is a lecturer, who has tried to make us researchers, who can evaluate the teacher education, but we can only give practical advice.

*There were altogether 23 codes

In this lies the essence of our reasoning about why research ought to be a main focus in teaching schools. It may also be a reason why teacher education in Finland is so fruitful. The history of successful and enduring teaching schools have one thing in common: they see teachers as researchers *in/for* the profession and *of* the profession.

The Chicago Institute grew out of a small progressive elementary school (Harms & De Pencier,

1996) founded by Dewey. Perhaps in South Africa, institutes of educational research might be able to grow out of the affiliations between universities and teaching schools. In teaching, the practice and the research of teaching, the advisement of Hannele Niemi (2009) to the Teacher Education Policy in Europe (TEPE) group is worth noting. At a TEPE meeting, she argued that a competent teacher ought to be able to analyse a classroom situation like a re-

searcher and then reflect and take action: “teacher competence must include a readiness to analyse a situation like a researcher, draw conclusions, and take action”. The correspondence of what she says with Dewey’s ideas about reflective practice is clear - the nature of the first teaching schools of the 19th century may have a message for 21st century teaching schools.

Toom, Kynäslathi, Krokfors, Jyrhämä, Byman, Stenberg, Maaranen and Kansanen (2010:333) have this to say about research-oriented teacher education: “the aim is not to produce researchers, but rather to provide students with skills and knowledge to complete their own studies, observe their pupils, and analyse their thinking”.

Acknowledgement

The research is conducted with a grant from the National Research Foundation (South Africa) for partnership with an institution in Finland: Grant number UID85731 for Prof. Nadine Petersen.

Notes

- i. As South African researchers, we cannot help wondering if an in-depth pilot study of the annual national assessments (ANAs) in the country would have taken off in the way it did, if a panel study in such a school had been conducted beforehand over a number of years.
- ii. The English language does not capture the concept of ‘activity’ as well as some other languages, such as German (*Tätigkeit*, or ‘doingness’), in translation from the original Russian.
- iii. The programme of research has been certified by the Ethics Committee of the Faculty of Education of the University of Johannesburg in a programme of research on teaching schools.
- iv. The questionnaire has since been completed and trials were conducted with it in Helsinki and in Johannesburg in February and March 2014. A meeting took place in September 2014 in Helsinki to finalise the questionnaire.
- v. As a result of this pilot study, 11 undergraduate students now receive National Research Foundation bursaries to support their participation in research projects in the research centre on the Soweto campus.

References

- Bonar BD 1992. The role of laboratory schools in American education. *National Association of Laboratory Schools Journal*, 17(1):42–53.
- Cole M 1998. *Cultural psychology. A once and future discipline*. Cambridge, MA: Harvard University Press.
- Department of Basic Education & Department of Higher Education and Training 2011. *Integrated Strategic Planning Framework for Teacher Education and Development in South Africa 2011-2025*. Pretoria: Department of Basic Education & Department of Higher Education and Training. Available at <http://www.education.gov.za/LinkClick.aspx?fileticket=SE/qk1OumtE%3D>. Accessed 28 October 2014.
- Dewey J 1933. *How we think. A restatement of the relation of reflective thinking to the educative process*. Boston: DC Heath.
- Dewey J 1938. *Logic: The theory of inquiry*. New York: Holt, Rinehart & Winston.
- Doll W 2004. The culture of method. In WE Doll, MJ Fleener, D Trueit & J St. Julien (eds). *Chaos, Complexity, Curriculum, and Culture: A conversation*. New York: Peter Lang.
- Elicker J, Barbour N, McBride B, Groves M, Horm D & Stremmel A 2008. *Child development in laboratory schools: Using applied developmental science as a framework for increasing research viability*. Paper presented at the biannual Conference on Human Development, Indianapolis, IN.
- Engeström Y 2001. Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1):133-156.
- Engeström Y 2011. From design experiments to formative interventions. *Theory & Psychology*, 21(5):598-628. doi: 10.1177/0959354311419252
- Gutiérrez KD & Penuel WR 2014. Relevance to practice as criterion for rigor. *Educational Researcher*, 43(1):19-23.
- Harms W & De Pencier I 1996. *Experiencing education: 100 Years of learning at the University of Chicago Laboratory Schools*. Chicago, IL: University of Chicago Laboratory Schools.
- Henning E 2013. Forging a research community of practice to find out how South African children make their world mathematical. *South African Journal of Childhood Education*, 3(1):141-155. Available at <http://www.uj.ac.za/EN/Faculties/edu/CentresandInstitutes/UJICE/SouthAfricanJournalofChildhoodEducation/Documents/SAJCE%20june%202013.pdf>. Accessed 28 October 2014.
- Henning E & Gravett S 2011. Pedagogical craft and its science: Janus-faced in pre-service teacher education. *Education as Change: Journal of Curriculum Research*, 15(S):S21-S33. doi: 10.1080/16823206.2011.643617
- Henning E, Van Rensburg W & Smit B 2004. *Finding your way in qualitative research*. Pretoria: Van Schaik.
- International Association of Laboratory Schools. Available at <http://laboratoryschools.org/>. Accessed 2 October 2013.
- Jyrhämä R, Kynäslähti H, Krokfors L, Byman R, Maaranen K, Toom A & Kansanen P 2008. The appreciation and realisation of research-based teacher education: Finnish students’ experiences of teacher education. *European Journal of Teacher Education*, 31(1):1–16.
- Kansanen P 2003. Teacher education in Finland: Current models and new developments. In B Moon, L Vlăsceanu & C Barrows (eds). *Institutional approaches to teacher education within higher education in Europe: Current models and new developments*. Bucharest: UNESCO.
- Kansanen P 2005. The idea of research-based teacher education. In E Eckert & W Fichten (eds). *Schulbegleitforschung. Erwartungen - Ergebnisse*

- *Wirkungen (Trans. School leadership research. Expectations – experiences – actions)*. Münster: Waxmann.
- Kansanen P 2007. Research-based teacher education. In R Jakku-Sihvonen & H Niemi (eds). *Education as a Societal Contributor. Reflections by Finnish educationalists*. Frankfurt a.M.: Peter Lang.
- Kochan FK 1997. Laboratory schools: Roses by another name. *National Association of Laboratory Schools Journal*, 21(2):16–18.
- Lincoln School n.d. *PocketKnowledge*. Available at <http://pocketknowledge.tc.columbia.edu/home.php/browse/39834>. Accessed 1 December 2013.
- Mayhew KC & Edwards AC 2007. *The Dewey School: The Laboratory School of the University of Chicago, 1896 – 1903*. London: D. Appleton-Century Company, Inc. Available at <https://archive.org/stream/deweyschoolthela008095m/bp#page/n15/mode/2up>. Accessed 28 October 2013.
- Merriam SB 1998. *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Miles MB & Huberman AM 1994. *Qualitative data analysis: An expanded sourcebook* (2nd ed). London: Sage.
- Niemi H 2007. *Teachers of the future. A research-oriented attitude towards their work*. Keynote address at the meeting of the Teacher Education Policy in Europe group.
- Niemi H 2009. *What is quality teacher education? How to define it and how to achieve it*. Keynote address at the “Conference on Quality in teacher Education, Umea University, 18-19 May.
- Niemi H 2011. Educating Student Teachers to Become High Quality Professionals – A Finnish Case. *Center for Educational Policy Studies Journal (CEPS)*, 1(1):S43-66. Available at http://www.pedocs.de/volltexte/2012/6064/pdf/CEPS_2011_1_Niemi_Educating_Student_D_A.pdf. Accessed 5 November 2014.
- Niemi H & Lavonen J 2012. Evaluation for improvements in Finnish teacher education. In J Harford, B Hudson & H Niemi (eds). *Quality Assurance and Teacher Education: International Challenges and Expectations*. Oxford: Peter Lang.
- Phillips DC 2000. *The expanded social scientist’s bestiary*. Lanham, MD: Rowman and Littlefield.
- Phillips DC 2014. Research in the hard sciences, and in very hard “softer” domains. *Educational Researcher*, 43(1):9-11. doi: 10.3102/0013189X13520293
- Raiker A 2011. *Finnish University Training Schools: principles and pedagogy*. Available at http://www.beds.ac.uk/_data/assets/pdf_file/0003/83433/finnishmodel-110713-finland-v2.pdf. Accessed 8 October 2013.
- Sahlberg P 2011. *Finnish lessons. What can the world learn from educational change in Finland?* New York: Teachers College Press, Columbia University.
- Strauss A & Corbin J 1999. *Basics of qualitative research techniques and procedures for developing grounded theory* (2nd ed). London: Sage Publications.
- Tanner LN 1997. *Dewey’s laboratory school: Lessons for today*. New York: Teachers College Press.
- Toom A, Kynäslathi H, Krokfors L, Jyrhämä R, Byman R, Stenberg K, Maaranen K & Kansanen P 2010. Experiences of a research-based approach to teacher education: suggestions for future policies. *European Journal of Education*, 45(2):331-344.
- University of Jyväskylä n.d. *University of Jyväskylä Teacher Training School (Normaalikoulu)*. Available at <https://www.norssi.jyu.fi/esittely-ja-yhteystiedot/info-1/university-of-jyvaeskylae-teacher-training-school-normaalikoulu>. Accessed 6 September 2014.
- Wardekker W 2008. *African perspectives of cultural-historical and activity theory*. Discussant of symposium at the tri-annual conference of the International Society for Cultural and Activity Research, San Diego CA, 8-12 September.
- Weber A 1996. Professional development schools and university laboratory schools: Is there a difference? *Professional Educator*, 18(2):59–65.
- Westbury I, Hansen SE, Kansanen P & Björkvist O 2005. Teacher education for research-based practice in expanded roles: Finland’s experience. *Scandinavian Journal of Educational Research*, 49(5):475–485.
- Wilcox-Herzog AS & McLaren MS 2012. Lessons Learned: Building a better laboratory school. *NALS Journal*, 4(1): Article 3. Available at <http://digitalcommons.ric.edu/nals/vol4/iss1/3>. Accessed 3 December 2013.