

## **Data-driven guidelines for high quality teacher education<sup>1</sup>**

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*In this paper, key findings of the other papers forming this symposium are examined in terms of implications for teacher education (mainly preservice but with some reference to inservice also). Located in the context of the poor empirical base for teacher education and the contested normative terrain that characterises this field, eight major findings from the SIPA study are addressed with specific implications considered. For instance, demonstrating the relative lack of high quality pedagogy for indigenous students and those from low SES backgrounds highlights a need to ensure that teachers understand and know how to include more challenging and meaningful work for these students. In identifying the relative impact of significance, quality learning environment, and intellectual quality for different groups of students, new ways are identified to focus teachers' energies to support the high quality achievement of all students. By demonstrating the relationship between teaching quality and student achievement, teachers' needs in relation to pedagogy are highlighted. Next we return to an adjudication of the normative debate based on the strong empirical data that underpins the findings, arguing that all three key positions in the debate (which emphasise content knowledge, teaching skill or social justice) are necessary components of high quality teacher education.*

### **Teacher education context**

The empirical research basis for much of what we do in teacher education is limited, sketchy and, where available, often based on small scale case studies and practitioner-led studies, involving teacher educators examining aspects of their own programs or practice (Cochran-Smith and Zeichner, 2005; Gore and Griffiths, 2003; Wilson, Floden and Ferrini-Mundy, 2001).

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<sup>1</sup> As part of a symposium, this paper should be read in conjunction with the other papers presented; the complete series is: GRI07282, LAD07283, AMO07284 and GOR07285.

The links between teacher education, teaching practice, and student outcomes are similarly under-researched and hard to define (e.g., Meiers and Ingvarson, 2005) despite their necessary position at the heart of teacher education efforts.

In this context, much of what is argued, and much of what happens, in teacher education is based on normative views and assumptions which are contested within academia and beyond. Furthermore much of what happens in teacher education is considered inadequate or inappropriate by practising teachers and the broader community. One need only examine political views as reported in the media and professional and community perspectives as documented in reviews of teacher education (e.g., Ramsey Review, 2000). Note however that these views, like many within academia, often rely more on assertion and argument presented in the form of submissions about the state of teacher education than on any strong empirical evidence.

*Key positions in debates about the purpose of teacher education*

Focusing on the academic field for the purpose of this paper, several scholars (e.g., Zeichner, 2003; Kirk, 1986; Feiman-Nemser, 1990) have documented three key positions in debates about the fundamental purposes and nature of teacher education: a view that what matters most is the teacher's deep knowledge of the field being taught (liberal and discipline-based education); a view that knowledge of how to teach is most critical to successful teaching and learning (scientific and/or apprenticeship approaches to learning to teach); a view that teachers ought to be concerned with the social justice implications of their work. Gore (2001) has argued that all three positions are important in teacher education but, as has characterised the field, her arguments were only minimally informed by strong empirical data. Zeichner and Conklin (2005) have put this situation succinctly: "Although there may be good moral, ethical, and political reasons for promoting particular models of preservice teacher preparation, it is not possible at this time to settle the debates about program models on the basis of empirical research alone" (p. 704). Zeichner and Conklin (2005) further argue that "one obvious way to move beyond a situation of extreme relativism with regard to the aims that should be emphasized in teacher education programs is to begin to examine how the realization of certain aims in the preparation of teachers influences student learning" (p. 702). The few studies that have examined the impact of teacher education or its components on student learning have used gains in standardized test scores as the measure of student learning. Our research, which uses Authentic Achievement as the primary measure of student learning, offers a different and broader conceptual base for addressing the impact of teaching or teacher education on learning.

In this paper, we draw on preliminary findings from a large scale longitudinal study into the relationships between teacher learning, the quality of pedagogy, and the quality of outcomes for students, to explore implications of these findings for the structure and substance of teacher education programs (with particular interest here in preservice teacher education). The study, titled *Systemic Implications of Pedagogy and Achievement for NSW Public Schools (SIPA)*, has been tracking three cohorts of students, totalling around 3000 students, as they progress through four years of schooling between 2004 and 2007 in a diverse sample of schools from throughout the state of NSW, Australia. With prior achievement and demographic data available for every student, we have been able to document aspects of the quality of pedagogy received by these students using instruments associated with the NSW Quality Teaching model. These instruments guide the coding of classroom practice and assessment tasks on three dimensions of quality: the intellectual quality of students' learning

experiences; the quality of the pedagogical environment for supporting student learning, and; the significance of learning experiences. Student performance on measures of “Authentic Achievement” (Newmann, Marks and Gamoran, 1996) have been used in these analyses. The findings summarised below draw on the observation of 191 lessons, the analysis of 95 assessment tasks (created by 121 teachers), and the authentic performance found in 2913 pieces of student work (produced by 1912 students) during the 2005 data collection period. Details of the data analysis that underpins this paper are elaborated in three related papers on: the social distribution of the quality of pedagogy according to school and class demography (Griffiths, Amosa, Ladwig, & Gore, 2007); links between the quality of pedagogy and quality of achievement for the entire sample (Ladwig, Smith, Gore, Amosa, & Griffiths, 2007); and links between pedagogical quality and achievement for different groups of students (Amosa, Ladwig, Griffiths, & Gore, 2007).

As the last of four papers produced for this symposium, this paper has as its primary purpose a consideration of implications of the findings for teacher education. Note that we are not suggesting that empirical research is the only basis for developing guidelines for teacher education. Normative debates about moral, ethical, and political issues cannot be fully resolved by such research and such debates should not be discounted (Zeichner, 2005). Our argument is that, as a field, teacher education has tended to err on the side of advocacy over evidence. This paper is intended to contribute to correcting the balance. There is not scope within this paper to re-present the data that underpin each of the findings. Instead, we present the major findings as eight key statements and encourage the reading of the symposium papers as a set.

## **Findings and implications**

### **SIPA Finding 1: The quality of pedagogy in the participating schools overall is not high and there is limited variability, especially in the quality of assessment tasks.**

With broad evidence from many different studies conducted around the world that the quality of teaching matters for students, it follows that teacher education must place priority on preparing teachers who can deliver high quality pedagogy and provide all students with quality learning experiences. Given that the quality of pedagogy is not high, as measured by our instruments, and that variability in quality is relatively low, it is reasonable to conclude that teacher education is not yet consistently producing teachers who deliver this quality. While measurement issues in relation to reliability and validity, and occupational conditions, no doubt play a role in the quality we are seeing, our conclusion is that teacher education could and should be doing more to support teacher development in pedagogy.

Most teacher educators would say that they already address pedagogy as a significant part of their programs, which begs the question as to what is done in the name of pedagogy. We argue that advocating a single approach to teaching (such as constructivism) or providing some study of classroom management is inadequate preparation in pedagogy. Instead, if the quality of pedagogy is to improve in general, we argue for teacher education that develops a deep conceptual understanding of what pedagogy is and means (Smagorinsky, Cook, & Johnson, 2003), as well as very practical assistance with lesson, unit, and task design based on teachers’ deep conceptual understanding of knowledge, teaching, learning, and context.

*Implication: Pedagogy must be a major focus of teacher education programs.*

**SIPA Finding 2: There is no relationship between the quality of teaching, using our measures, and years of teaching experience.**

*Implication: Preservice teacher education is critical in ensuring good quality pedagogy and good quality inservice teacher education (professional development) in pedagogy is needed for all teachers.*

Despite common perceptions that early career (beginning) teachers are lacking knowledge and skills, our measures yielded no statistically significant relationship between years of experience and quality of teaching (Gore, Williams, & Ladwig, 2006). This lack of relationship may be indicative of (among other things such as issues related to school culture) the low impact of many professional learning activities on pedagogy, or of the limited professional development in pedagogy that many teachers have experienced. If pedagogical quality is to be high/improved, and if years of experience do not necessarily lead to better quality teaching, then the preservice preparation of teachers who deliver high quality pedagogy becomes all the more critical and professional development for practicing teachers must play a role in assisting teachers to improve the quality of pedagogy. This finding is consistent with prior research showing no significant relationship between years of experience and teacher effectiveness, student achievement, or equity (Bressoux, 1996; Pass, Riccomini, & Switzer, 2005). While growth in confidence has been associated with years of teaching experience, confidence is not a reliable measure of competence (Cady, Meier, & Lubinski, 2006).

*Implication: Preservice teacher education is critical in ensuring good quality pedagogy and good quality inservice teacher education (professional development) in pedagogy is needed for all teachers.*

**SIPA Finding 3: There is no consistent relationship between the quality of tasks and quality of classroom practice.**

Pedagogy in the SIPA study is measured in terms of both classroom practice and assessment practice. Finding no relationship between the quality of tasks and quality of classroom practice for individual teachers is somewhat surprising. The finding may be indicative of a lack of conceptual coherence to what teachers are doing, that is coherence between what they do in class and what they expect of their students, which in turn may indicate a more technical (getting through the syllabus) than thoughtful (what am I wanting my students to learn?) approach to teaching.

The role of externally developed assessment tasks in these analyses must also be considered. That is, the significant number of teachers who are submitting tasks for research purposes that they have not designed themselves, readily explains the random nature of these data.

*Implications: Teacher education needs to ensure that teachers are skilled and thoughtful in selecting, planning and designing meaningful, challenging and connected learning experiences, including both class activities and tasks. The lack of consistency found in our study may be a function of the fragmented nature of many teacher education*

*programs (Feiman-Nemser and Buchmann, 1985; Zeichner and Gore, 1990; Dickson and Smagorinsky, 2006; Howey and Zimpher, 1989; Goodlad, Soder and Sirotnik, 1990). This finding reiterates calls made elsewhere in the teacher education literature for better integration of teacher education or professional development program elements coupled with a clear shared vision of good teaching (King, 2002; Russell, McPherson, & Martin, 2001; Zeichner, Miller, & Silvernail, 2000) and high standards (Tobias, 1999), and for better training for teachers directly focused on assessment (xxx). Volante (2006) has demonstrated that student teachers themselves recognize the importance of program coherence. It is our supposition (to be tested) that the traditional components of teacher education programs-- discipline studies, educational foundations, curriculum methods, professional practice and practice teaching-- have not yet been adequately integrated in many teacher education institutions.*

**SIPA Finding 4: The quality of pedagogy is poorest for Indigenous and low SES students, with little difference in the quality of pedagogy by sex or English language background.**

In teacher education courses on the sociology of education or in more specific studies of equity and social justice, there has been a proliferation of concern for the full range of groups of students, marked by social difference, that have come to be identified, as least in Australian social policy, as 'equity target groups.' This label typically encompasses at least students of Indigenous descent and low socio-economic backgrounds, students from non-English speaking backgrounds (though variably and inconsistently defined), students with disabilities, boys and/or girls. In our analyses of the quality of pedagogy by social group, we found minimal differences for groups according to student sex or English language background, but substantial differences in the quality of pedagogy received by Indigenous and low SES students when compared with their peers.

*Implications: We need to ensure that teachers understand the importance of and know how to include more challenging and meaningful work for Indigenous students and students from low SES backgrounds. Attention to the broader range of equity groups may be warranted but our data indicate that the most urgent needs in education equity relate to improving the quality of teaching for Indigenous and low-SES groups.*

*The existing fragmentation of teacher education programs which separates social justice issues from pedagogical ones (which are even separated from curriculum matters and classroom management) (Zeichner & Gore, 1990; Villegas & Lucas, 2002; Gore & Parkes, in press), means that many teachers don't (a) recognise the consequences of their teaching decisions and behaviours or (b) know how to change them for greater success, since the fragmented structure discourages a relational understanding. The integration of social justice course components or activities with other foundations and methods work in teacher education is critical if teachers are to develop the dispositions and skills to begin to address the achievement of these student groups.*

**SIPA Finding 5: The social distribution of pedagogy is most powerful at the class level rather than school level. That is, differences in the quality of pedagogy delivered to different student groups (by SES or ATSI indicators) are greater between classes than between schools.**

Interventions and policy initiatives aimed at school improvement do not necessarily translate into practice in every classroom or with every teacher; indeed, they hardly impact on practice at all. Aside from staffing implications within schools (which teachers are assigned to which classes) and implications for school leadership (leverage and strategies to improve quality across a school), a critical implication of this finding for teacher education relates to supporting **all** teachers to provide the kind of education needed by their students.

The potential for high quality pedagogy in schools with high ATSI and/or low SES populations is also evident in our data (see Finding 6) – that is, high quality teaching can be done with positive effects in terms of student performance. The extent to which teacher dispositions relate to this social distribution of pedagogy highlights the role of teacher education programs in building deep understanding of disadvantage and increasing teachers' expectations of students from these backgrounds. Poplin and Rivera (2005) report that “too often, inadequate results of particular children or groups of children have caused teachers to lower their requirements for rigor rather than intensifying their efforts to teach” (p. 33).

In light of these data, high standards of achievement for all graduates of teacher education programs must be set and monitored. With (increasingly?) fragmented teacher education programs and poor resourcing of teacher education leading to, for instance, greater casualisation of teacher education faculties and mounting pressure to find short cuts in delivery of programs, a challenge for teacher educators is to be able to confidently attest to the preparedness of all of graduates to be able to deliver good teaching for all students. Teaching Standards go part way toward seeking quality control, but we argue that greater specification of quality in teaching (as found in the Quality Teaching model) would strengthen this aspect of the performance of teacher education institutions and their graduates.

*Implication: Teacher education must directly address all teachers' understandings of disadvantage and expectations of students from these backgrounds.*

**SIPA Finding 6: Better quality pedagogy is correlated with better student performances, including better performances for low SES and ATSI students.**

The quality of pedagogy matters, and matters most (that is, yields the greatest gains) for students from these social groups. The positive gains for low SES and ATSI students when the quality of pedagogy is higher are hugely significant in educational terms and further demonstration of what is possible when the teaching is good.

*Implication: Teachers need to know what good pedagogy is, know how to deliver good pedagogy, believe in themselves and their students, recognize the difference that good pedagogy can make for all students, and develop strategies to help overcome the very real material and cultural obstacles to good pedagogy in disadvantaged contexts. This set of standards for teacher education requires a focus not only on what teachers “know and are able to do”, but also on what teachers believe. While changing dispositions is notoriously difficult, to the extent that Haberman (1995), for instance, argues that dispositions must be assessed at the point of recruitment into teacher education programs, we argue that teacher education needs to develop ways to more adequately address and affect teacher beliefs. Kagan (1992), in a synthesis of literature on teacher beliefs, argues that “if a [teacher education] program is to promote growth among*

*novices, it must require them to make their preexisting personal beliefs explicit; it must challenge the adequacy of those beliefs; and it must give novices extended opportunities to examine, elaborate, and integrate new information into their existing belief systems...Similarly, we cannot expect any program of inservice teacher education to effect change in teachers' behaviours without also effecting change in their personal beliefs" (p. 77).*

**SIPA Finding 7: Prior achievement has an overwhelming influence on the quality of pedagogy students receive.**

This finding highlights the role that teacher expectations plays in the quality of pedagogy students receive (see Oakes, Gamoran and others).

*Implication: A responsibility of teacher education programs is to demonstrate these relationships between expectations and quality of pedagogy to students/teachers, drawing on data such as ours, so that teachers can recognize their role and their potential in overcoming differential expectations, and differences in the quality of their teaching, based on students' prior achievement and intersections with SES, ATSI backgrounds etc.*

**SIPA Finding 8: Quality Teaching has significant effects above and beyond prior achievement.**

Despite some limitations of the data, such as the mediocre quality of pedagogy overall and the relative lack of variability in quality (Finding 1), we have been able to demonstrate that Quality Teaching, as manifest in assessment tasks, impacts positively on student authentic achievement. When Quality Teaching is higher, student achievement is higher. (Note that Newmann et al.'s studies show transferability of authentic achievement to achievement on conventional standardized and basic skill testing).

If Quality Teaching is to have greater effect, teacher education, both preservice and inservice, needs to more powerfully shape teachers' knowledge, skills and dispositions so that Quality Teaching can be more consistently produced at higher levels.

*Implication: The Quality Teaching model with its strong and comprehensive conceptual base and practical specification of high quality teaching is worth pursuing in teacher education in light of these data that show improved performance and a narrowing of fundamental equity gaps in Australian education.*

**Which approach to teacher education?**

Prior to summarizing specific implications for the structure and substance of teacher education programs, we return to our opening reference to debates about which kind of teacher education ought to be supported – one that emphasizes preparation in the discipline/s to be taught, preparation in professional skill and knowledge, and/or one that emphasizes social justice. In our assessment, the data presented in this symposium and summarized in this paper indicate that all three positions on the purposes of teacher education are necessary. A *commitment to social justice* is essential if achievement gaps are to close and particularly if the quality of pedagogy for Indigenous and low SES

students is to improve, but teachers also need to know *how to teach* (construct tasks, deliver lessons, inspire and motivate, and so on) and need to know *what* they are teaching if they are to ensure high intellectual quality of the kind we have found to be related to improvements in student performance. In our view, arguments about which approach to teacher education matters most are moot. It is our contention that the SIPA data presented here highlight the unlikelihood that any single approach can adequately prepare teachers. A similar argument is mounted by Poplin and Rivera (2005) who call for teacher education programs where teachers emerge “committed to confronting social inequities, skilled in teaching academic knowledge, convinced that poor and marginalized students can learn, and acquainted with teachers who can and do teach them effectively” (p. 28). Zeichner and Conklin (2005) also conclude their recent review of research on teacher education programs with the observation that characteristics of effective teacher education programs can be present in programs with very different structures. Instead they name such characteristics as “a clear and common vision of teaching and learning” in all courses and field experiences, “carefully supervised clinical experiences, and strong preparation in content knowledge” (p. 701) as more significant than program structure.

### **Guidelines for teacher education**

A synthesis of the points made in the main section of this paper provides a tentative template for the refinement of teacher education programs. The key points made require that teacher education programs:

- 1) Ensure a focus on pedagogy, grounded in empirical research and a strong conceptual basis for understanding pedagogy;
- 2) Assist teachers to develop a strong knowledge base in the areas they teach;
- 3) Assist teachers to develop skills in lesson, unit and task design; in building relationships with students, colleagues and communities in which they work; and, in the delivery of learning experiences;
- 4) Provide powerful learning experiences that can shape teachers’ dispositions toward high levels of commitment to, and responsibility for, student learning, particularly for Indigenous and low SES students. These points are also made by Poplin and Rivera (2005), who argue for “Teaching teachers how schools have perpetuated the achievement gap and other social inequities and how these may be overcome,” “inspiring teachers with the details of schools that are eliminating achievement gaps, ” and “encouraging teachers to develop the attitudes and dispositions necessary to do the hard work to help all students achieve”(p. 35), and Darling-Hammond (2006), who calls for “explicit strategies to help students confront their own deep-seated beliefs and assumptions about learning and students and to learn about the experience of people different from themselves” (p. 7);
- 5) Increase the integration of course components and teacher learning experiences; Smagorinsky, Cook and Johnson (2003) argue that “University programs create a more fertile setting for preservice teachers’ concept development when they provide a coherent curriculum in which a conception of teaching is emphasized over time, considered and extended in terms of a variety of questions, and grounded in school-based experiences” (p. 1427);
- 6) Take responsibility for ensuring the preparedness of all graduates.



In addressing these points, some substantive concerns with many teacher education programs must be acknowledged. Most critical among these are:

- the teaching of social justice courses in either dogmatic or simplistic ways that prevent serious engagement with the issues or in ways that fail to connect theoretical perspectives with the realities of schools and communities;
- the grasping at fads and quick fixes as tools for teachers, in the face of a weak knowledge base for teaching;
- imploring teachers to teach well with inadequate specification of what good teaching looks like and how it can be achieved;
- modeling pedagogy that largely fails to meet criteria of IQ, QLE, and S.
- mis-teaching, on the basis of little evidence, what makes a difference for different cohorts of students. That is, creating certain untested myths about what works in different contexts. Our data show for example that of the three dimensions of Quality Teaching, 'Significance' which is widely advocated as a way of connecting Indigenous students with schooling was in fact the least powerful of the three dimensions in its impact on outcomes for those students.
- confronting teacher dispositions. With data showing that students with lower prior achievement receive lower quality pedagogy, there are clear messages about the need to address teachers' role in the production of social inequality.

## **In conclusion**

We close this paper with a challenge in the form of the following observation and question. The observation: much of what we have outlined above is consistent with what has long been argued is needed in teacher education. The question: If we (as a field) know, and have known for some time, what is needed for teacher education to be effective and morally defensible, why hasn't it happened? In answering this question, we suggest a need to look inward by acknowledging the limits to good teacher education that are based in teacher educators' own knowledge, skills and dispositions, and in the cultures and traditions associated with teaching and teacher education. Zeichner (2005) identifies research on teacher educators as a current gap in the field:

More research is needed examining the consequences of who is teaching a particular program component (e.g., a methods course or foundations course), who is using a particular instructional strategy, or who is supervising a student engaged in field experience in a school. In what ways does it matter if the instructors and supervisors in preservice programs are permanent faculty, academic staff, and adjunct faculty, or doctoral students? What are the characteristics of teacher educators, and how do various demographic and quality indicators associated with teacher educators (e.g., years of teaching experience and type of graduate program) influence the character and quality of instruction in teacher education programs? (p. 747)

Our data, at the very least, confirm the urgency of the endeavour to improve what we provide in the name of teacher education.

## References

- Amosa, W., Ladwig, J., Griffiths, T., & Gore, J. (2007). Equity effects of Quality Teaching: Closing the gap. Paper prepared for presentation at the annual conference of the Australian Association for Research in Education, Fremantle.
- Bressoux, P. (1996). The effects of teachers' training on pupil's achievement: The case of elementary schools in France. *School Effectiveness and School Improvement*, 7(3), 252-279.
- Cady, J., Meier, S.L., & Lubinski, C.A. (2006). Developing mathematics teachers: The transition from preservice to experienced teacher. *The Journal of Educational Research*, 99(5), 295-306.
- Cochran-Smith, M., & Zeichner, K. M. (Eds.). (2005). *Studying teacher education: The report of the AERA Panel on Research and Teacher Education*. Mahwah, NJ: Lawrence Erlbaum.
- Darling-Hammond, L. (2006). Constructing 21<sup>st</sup> century teacher education. *Journal of Teacher Education*, 57(3), 300-315.
- Dickson, R., & Smagorinsky, P. (2006). Are methods enough? Situating English education programs within the multiple settings of learning to teach. *English Education*, 38(4), 312-328.
- Erebus International. (2005). Review of the recent literature on socio-economic status and learning. Darlinghurst: NSW Department of Education and Training: Equity Programs and Distance Education Directorate.
- Feiman-Nemser, S. (1990). Teacher preparation: Structural and conceptual alternatives. In W. R. Houston (Ed.), *Handbook of research on teacher education* (pp. 212-233). New York: Macmillan.
- Feiman-Nemser, S., & Buchmann, M. (1985). Pitfalls of experience in teacher preparation. *Teachers College Record*, 87(1), 53-65.
- Goodlad, J. I., Soder, R., & Sirotnik, K. A. (1990). *The moral dimensions of teaching*. San Francisco: Jossey-Bass.
- Gore, J. M., & Griffiths, T. (2003). Beyond words and numbers: Towards a more productive agenda for teacher education in literacy and numeracy. In W. Louden, et al (Eds). *Prepared to Teach: An Investigation into the preparation of teachers to teach literacy and numeracy*. Canberra: Department of Education, Science and Training.
- Gore, J.M. (2001). Beyond our differences: A reassembling of what matters in teacher education. *Journal of Teacher Education*, 52(2), 124-135.
- Gore, J. M., Ladwig, J. G., Lingard, R., & Luke, A. (2001). *Final report of the Queensland school reform longitudinal study*. Brisbane, Qld: Education Queensland.
- Gore, J., and Parkes, R. (in press). On the mistreatment of management in teacher education. In J. Sumsion and A. Phelan (Eds). *Provoking absences: Critical readings in teacher education*, New York: Sense Publications.
- Gore, J., Williams, C., and Ladwig, J. (in press). Pedagogy and teacher induction: A critical moment in professional learning. *The New Educator*.
- Griffiths, T., Amosa, W., Ladwig, J. & Gore, J. (2007). Equity and pedagogy: Familiar patterns and Quality Teaching based possibilities. Paper prepared for presentation at the annual conference of the Australian Association for Research in Education, Fremantle.
- Haberman, M. (1995). *Star teachers of children in poverty*. West Lafayette, IN: Kappa Delta Pi.
- Howey, K.R., & Zimpher, N.L. (1989). Preservice teacher educators' role in programs for beginning teachers. *The Elementary School Journal*, 89(4), 451-470.
- Kagan, D.M. (1992). Implications of research on teacher belief. *Educational Psychologist*, 27(1), 65-90.
- Karabel, J., & Halsey, A.H. (Eds.) (1977). *Power and Ideology in Education*. London: Oxford University Press.
- Ladwig, J. G., & Amosa, W. (2005). Pedagogy for equity: What works for whom? Paper presented at the annual conference of the Australian Association for Research in Education, Sydney.
- Ladwig, J., Smith, M., Gore, J., Amosa, W., & Griffiths, T. (2007). Quality of pedagogy and student achievement: Multi-level replication of authentic pedagogy. Paper prepared for

- presentation at the annual conference of the Australian Association for Research in Education, Fremantle.
- McInerney, P. (2006). Blame the student, blame the school or blame the system?: Educational policy and the dilemmas of student engagement and student retention - a Freirean perspective. Paper presented at the annual conference of the Australian Association for Research in Education, PLACE .
- McNeil, L. M. (2000). *Contradictions of school reform: Educational costs of standardized testing*. New York: Routledge
- Meiers, M., & Ingvarson, L. (2005). *Investigating the links between teacher professional development and student learning outcomes*. Barton, ACT: Australian Government, Quality Teacher Program.
- Munns, G. (2005). School as a cubbyhouse: Tensions between intent and practice in classroom curriculum. *Curriculum Perspectives*, 25(1), 1-12.
- New South Wales Aboriginal Education Consultative Group Incorporated, and New South Wales Department of Education and Training. (2004). *Report of the review of Aboriginal education, Freeing the spirit: Dreaming an equal future*. Darlinghurst: New South Wales Department of Education and Training.
- Newmann, F. M., Lopez, G., & Bryk, A. S. (1998). *The quality of intellectual work in Chicago schools: A baseline report*. Chicago: Consortium on Chicago School Research.
- Newmann, F. M., Marks, H. M., & Gamoran, A. (1996). Authentic pedagogy and student performance. *American Journal of Education*, 104(4), 280-312.
- Pass, S., Riccomini, P.J., & Switzer, D.M. (2005). A case study documenting experience and its impact in the classroom. *International Journal of Social Education*, 19(2), 88-101.
- Poplin, M., & Rivera, J. (2005). Merging social justice and accountability: Educating qualified and effective teachers. *Theory into Practice*, 44(1), 27-37.
- Ramsey, G. (2000). *Quality Matters. Revitalising Teaching: Critical times, critical choices. Report of the Review of Teacher Education*. Sydney: NSW Department of Education and Training.
- Rowan, B., Correnti, R., & Miller, R. J. (2002). What large-scale, survey research tells us about teacher effects on student achievement: Insights from the *Prospects* study of elementary schools. *Teachers College Record*, 104(8), 1525-1567.
- Russell, T., McPherson, S., & Martin, A.K. (2001). Coherence and collaboration in teacher education reform. *Canadian Journal of Education*, 26(1), 37-55.
- Smagorinsky, P., Cook, L.S., & Johnson, T.S. (2003). The twisting path of concept development in learning to teach. *Teachers College Record*, 105(XX), 1399-1436.
- Teese, R., & Polesel, J. (2003). School effectiveness and structural inequality. In R. Teese & J. Polesel (Eds.), *Undemocratic schooling: Equity and quality in mass secondary education in Australia* (pp. 185-198). Melbourne: Melbourne University Press.
- Tobias, S. (1999). Some recent developments in teacher education in mathematics and science: A review and commentary. *Journal of Science and Technology*, 8(1), 21-31.
- Volante, L. (2006). Essential elements in teacher education: Preservice student perspectives. *Alberta Journal of Educational Research*, 52(2), 167-181.
- Wilson, S.M., Floden, R.E., & Ferrini-Mundy, J. (2001). *Teacher preparation research: Current knowledge, gaps and recommendations*. Seattle, WA: Center for the Study of Teaching and Policy.
- Zeichner, K. M. (1993). Traditions of practice in U.S. preservice teacher education programs. *Teaching and Teacher Education*, 9(1), 1-13.
- Zeichner, K.M. & Conklin, H.G. (2005). Teacher education programs. In M. Cochran-Smith & K.M. Zeichner (Eds.), *Studying teacher education: The report of the AERA Panel on Research and Teacher Education*. Mahwah, NJ: Lawrence Erlbaum.
- Zeichner, K.M., & Gore, J.M. (1990). Teacher socialisation. In W.R. Houston (Ed.), *Handbook of research on teacher education* (pp. 329-348). New York: Macmillan.
- Zeichner, K., Miller, L., & Silvernail, D. (2000). *Studies of excellence in teacher education*. Washington, DC: American Association of colleges for Teacher Education.