

References

Adler, S.A. (1990). The reflective practitioner and the curriculum of teacher education. *Journal of Education for Teaching*, 17(2), 139-150.

Akbari, R. (2007). Reflections on reflection: A critical appraisal of reflective practices in L2 teacher education. *System*, 35, 192-207.

Aldridge, J.M., Fraser, B.J. & Sebela, M.P. (2004). Using teacher action research to promote constructivist learning environments in South Africa. *South African Journal of Education*, 24(4), 245-253.

Alvesson, M. & Sköldbberg, R. (2000). *Reflexive methodology, new vistas for qualitative research*. London: SAGE Publications Ltd.

Archer, E. (2009). *Introduction to Atlas.ti: Guidance, tips and tricks to facilitate analysis and professional presentation* (3rd ed.). Pretoria: University of Pretoria.

Artzt, A. F., Armour-Thomas, E. & Curcio, F. R. (2008). *Becoming a reflective mathematics teacher*. New York: Lawrence Erlbaum Associates.

Attard, K. (2008). Uncertainty for the reflective practitioner: A blessing in disguise. *Reflective Practice*, 9(3), 307-317.

Baba, T. (2007). Japanese education and lesson study: An overview. In M. Isoda, M. Stephens, Y. Ohara & T. Miyakawa (Eds.), *Japanese lesson study in mathematics*, (pp. 2-7). Singapore: World Scientific Publishing Co. Pty. Ltd.

Barnett, C. (1998). Mathematics teaching cases as a catalyst for informed strategic inquiry. *Teaching and Teacher Education*, 14, 81-93.

Bartlett, S. & Burton, D. (2006). Practitioner research or descriptions of classroom practice? A discussion of teachers investigating their classrooms. *Educational Action Research*, 14(3), 395-405. DOI: 10.1080/09650790600847735.

Bernard, H.R. & Ryan, G.W. (2009). *Analyzing qualitative data: Systematic approaches*. California: Sage Publications.

Bogdan, R.C. & Biklen, S. K. (2003). *Qualitative research for education: An introduction to theories and methods*. (4th ed.). Boston: Pearson Education Group, Inc.

Boon Tiong, H. (2001). *Practicing reflective teaching: A personal journey of professional development*. Retrieved November 27, 2010, from <http://www.aare.edu.au/01pap/ho01108.htm>.

Borasi, R. & Fonzi, J. (2002). *Foundations: Professional development that supports school mathematics reform*. National Science Foundation: Arlington, VA.

Borko, H. & Putnam, R. (1995). Expanding a teacher's knowledge base: A cognitive psychological perspective on professional development. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices* (pp. 35-65). New York: Teachers College Press.

Borko, H. & Putnam, R. (1996). Learning to teach. In D.C. Berliner & R.C. Calfee (Eds.), *Handbook of educational psychology* (pp. 673-708). New York: Macmillan.

Brookfield, S. (1995). *Becoming a critically reflective teacher*. San Francisco: Jossey-Bass.

Brubacher, J.W., Case, C.W. & Reagan, T.G. (1994). *Becoming a reflective educator*. California: Corwin Press, Inc.

Bruce, C.D. & Ladky, M.S. (2009, May). *The nature of lesson study in Ontario schools – a close examination of the lesson study cycle*. Paper presented at the annual meeting of the Canadian Society for the Study of Education.

Burton, D. & Bartlett, S. (2005). *Practitioner research for teachers*. London: SAGE Publications Ltd.

Butke, M.A. (2003). *Reflection on practice: A study of five choral educators' reflective journeys*. Unpublished doctoral thesis, Columbus: Ohio State University.

Cerbin, W. & Kopp, B. (2006). Lesson study as a model for building pedagogical knowledge and improving teaching. *International Journal of Teaching and Learning in Higher Education*, 18(3), 250-257.

Chapman, O. (2008). Mathematics teacher educators' learning from research on their instructional practices. In B. Jaworski & T. Wood (Eds.), *The international handbook of mathematics teacher education: The mathematics teacher educator as a developing professional*, (Vol. 4, pp. 115-134). Rotterdam: Sense Publishers.

Clark, C. (2001). Carr and Kemmis's Reflections. *Journal of Philosophy of Education*, 35(1), 85-100.

Coe, K., Carl, A. & Frick, L. (2010). Lesson study in continuing professional teacher development: A South African case study. *ACTA Academica*, 42(4), 206-230.

Cohen, L., Manion, L. & Morrison, K. (2005). *Research methods in education*. (5th ed.). London: RoutledgeFalmer.

Convery, A. (1998). A teacher's response to 'Reflection-in-action'. *Cambridge Journal of Education*, 28(2), 197-205. DOI: 10.1080/0305764980280205.

Court, D. (1988). "Reflection-in-action": Some definitional problems. In P.P. Grimmett & G.L. Erickson (Eds.), *Reflection in teacher education* (pp. 143-146). New York: Teachers College Press.

Craft, A. & Paige-Smith, A. (2008). What does it mean to reflect on our practice? In A. Paige-Smith & A. Craft (Eds.), *Developing reflective practice in the early years*, (pp. 13-24). New York: McGraw Hill.

Creswell, J.D. (2003). *Research design: Qualitative, quantitative and mixed methods approaches*. (2nd ed.). California: Sage Publications.

Cross, D.I. (2009). Alignment, cohesion and change: Examining mathematics teachers' belief structures. *Journal of Mathematics Teacher Education*, 12, 325-346.

Darling-Hammond, L. (1998). Teacher learning that supports student learning. *Educational Leadership*, 55(5), 6-12.

Darling-Hammond, L., Wei, R.C., Andree, A., Richardson, N. & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Stanford University: National Staff Development Council.

Day, C. (1999). Professional development and reflective practice: Purposes, processes and partnerships. *Pedagogy, Culture and Society*, 7(2), 221-233.

Day, C. & Sachs, J. (2004). Professionalism, performativity, and empowerment: Discourses in the politics, policies, and purposes of continuing professional development. In C. Day & J.

Sachs (Eds.), *International handbook of continuing professional development of teachers* (pp. 3 – 32). Berkshire, England: Open University Press.

Dewey, J. (1933). *How we think. A restatement of reflective thinking to the educative process*. Boston: Heath.

Dey, I. (2005). *Qualitative data analysis: A user-friendly guide for social scientists*. London: Taylor & Francis e-Library.

Dinkelman, T. (2003). Self-study in teacher education: a means and ends tool for promoting reflective teaching. *Journal of Teacher Education*, 54(1), 6-18.

Evans, L. (2002). *Reflective practice in educational research: Developing advanced skills*. New York: Continuum.

Farrell, T.S.C. (2004). *Reflective practice in action*. California: Corwin Press, Inc.

Fenstermacher, G. (1988). The place of science and epistemology in Schön's conception of reflective practice. In P.P. Grimmett & G.L. Erickson (Eds.), *Reflection in Teacher Education* (pp. 39-46). New York: Teachers College Press.

Fernandez, C., Cannon, J. & Chokshi, S. (2003). A US–Japan lesson study collaboration reveals critical lenses for examining practice. *Teaching and Teacher Education*, 19, 171-185.

Fleming, W. & Varberg, D. (1992). *Precalculus mathematics: A problem-solving approach*. New York: Prentice-Hall International.

Fosnot, C. (1989). *Enquiring teachers, enquiring learners: A constructivist approach for teaching*. New York, NY: Teachers College Press.

Friedman, R.E. (2005). *An examination of lesson study as a teaching tool in U.S. public schools*. Retrieved December 08, 2009, from <http://etd.ohiolink.edu/send-pdf.cgi/Friedman%20Ruth%20E.pdf?ashland1116871771>.

García, M., Sánchez, V. & Esquadero, I. (2006). Learning through reflection in mathematics teacher education. *Educational Studies in Mathematics*, 64, 1-17.

García, M., Sánchez, V., Escudero, I. & Llinares, S. (2006). The dialectic relationship between research and practice in mathematics teacher education. *Journal of Mathematics Teacher Education*, 9, 109-128.

- Ghaye, A. & Ghaye, K. (1998). *Teaching and learning through critical reflective practice*. London: David Fulton.
- Gimenez, T. (1999). Reflective teaching and teacher education contributions from teacher training. *Linguagem & Ensino*, 2(2), 129-143.
- Goodchild, S. (2008). A quest for 'good' research. In B. Jaworski & T. Wood (Eds.), *The international handbook of mathematics teacher education: The mathematics teacher educator as a developing professional*, (Vol. 4, pp. 201-220). Rotterdam: Sense Publishers.
- Griffin, M.L. (2003). Using critical incidents to promote and assess reflective thinking in preservice teachers. *Reflective Practice*, 4(2), 207-220. DOI: 10.1080/1462394032000082259.
- Griffiths, M. & Tann, S. (1992). Using reflective practice to link personal and public theories. *Journal of Education for Teachers*, 18(1), 69-84.
- Hatton, N. & Smith, D. (1995). *Reflection in teacher education: Towards definition and implementation*. Retrieved June 23, 2010, from <http://alex.edfac.usyd.edu.au/LocalResource/Study1/hattonart.html>.
- Hill, A.M. (2003). Themes in current education discourse that impact on teacher education. Retrieved November 25, 2009, from http://dk.cput.ac.za/ed_papers/5/.
- Hill, H.C., Sleep, L., Lewis, J.M. & Ball, D.L. (2007). Assessing teachers' mathematical knowledge. In F.K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning*, (pp. 111-155). Charlotte, NC: Information Age.
- Hillier, Y. (2005). *Reflective teaching in further and adult education*. (2nd ed.). London: Continuum.
- Hix, S.L. (2008). *Learning in lesson study: a professional development model for middle school mathematics teachers*. Retrieved December 03, 2010, from http://jwilson.coe.uga.edu/pers/hix_sherry | 200808_phd.pdf.
- Hughes, G. (2009). Talking to oneself: using autobiographical internal dialogue to critique everyday and professional practice. *Reflective Practice*, 10(4), 451-463. DOI: 10.1080/14623940903138316.

Husu, J., Toom, A. & Patrikainen, S. (2008). Guided reflection as a means to demonstrate and develop student teachers' reflective competencies. *Reflective Practice*, 9(1), 37-51.

Jaworski, B. (1994). *Investigating mathematics teaching: A constructivist enquiry*. London: The Falmer Press.

Jaworski, B. (1998). The plurality of knowledge growth in mathematics teaching. In B. Jaworski, T. Wood & S. Dawson (Eds.), *Mathematics teacher education: Critical international perspectives* (pp. 180-209). London: Falmer Press.

Jaworski, B. (2004). Grappling with complexity: co-learning in inquiry communities in mathematics teaching development (Invited plenary address.) In Proceedings of the 28th Conference of the International Group for the Psychology of Mathematics Education (Vol. 1 pp. 17-36). Bergen, Norway: Bergen University College.

Jay, J.K. & Johnson, K.L. (2002). Capturing complexity: a typology of reflective practice for teacher education. *Teaching and Teacher Education*, 18, 73-85.

Jita, L.C., Maree, J.G. & Ndlalane, T.C. (2006). Lesson study (Jyugyo Kenkyu) from Japan to South Africa: A science and mathematics intervention program for secondary school teachers. In B. Atweh, A. C. Barton, M. Borba, N. Gough, C. Keitel, C. Vistro-Yu & R. Vithal (Eds.), *Internationalisation and globalisation in mathematics and science education*, (pp. 465-486). Dordrecht: Springer.

Kinsella, E.A. (2007). Technical rationality in Schön's reflective practice: dichotomous or non-dualistic epistemological position. *Nursing Philosophy*, 8(2), 102-113.

Korthagen, F. & Vasalos, A. (2005). Levels in reflection: core reflection as a means to enhance professional growth. *Teachers and Teaching: theory and practice*, 11(1), 47-71. DOI: 10.1080/1354060042000337093.

Korthagen, F. (1993). Two modes of reflection. *Teaching and Teacher Education*. 9, 317-326.

Korthagen, F. (2001). *Linking practice and theory: The pedagogy of realistic teacher education*. Mahwah, NJ: Lawrence Erlbaum.

Krainer, K. (2001). Teachers' growth is more than the growth of individual teachers: The case of Gisela. In F-L. Lin, & T.J. Cooney (Eds.). *Making sense of mathematics teacher education*, (pp. 271-293). Dordrecht: Kluwer Academic Publishers.

Kwok, P. (2005). Taken with surprise: Critical incidents in the classroom. *Teaching Theology and Religion*, 8(1), 41-42.

LaBoskey, V.K. (1994). *Development of reflective practice*. New York: Teachers College Press.

LaBoskey, V.K. (2004). The methodology of self-study and its theoretical underpinnings. In J.J. Loughran, M.L. Hamilton, V.K. LaBoskey & T. Russell, (Eds.), *International handbook of self-study of teaching and teacher education practices* (Vol. 2, pp. 817-869). Dordrecht: Kluwer publishing.

Lee, H-J. (2005). Understanding and assessing preservice teachers' reflective thinking. *Teaching and Teacher Education*, 21, 699-715.

Lee, W.H. (2004). *Reflective practice and professional knowledge: Understanding the linkages*. Retrieved January 03, 2010, from <http://www.ipbl.edu.my/BM/penyelidikan/seminarpapers/2003/leeMPSAHkk.pdf>.

Lee, W.H. & Tan, S.K. (2004). *Reflective practice in Malaysian teacher education*. Singapore: Marshall Cavendish Academic.

Lehman, M.A. (2003). *Interrupting the reflective practitioner: Discovering the espoused philosophies and theories and theories-in-use of 13 adult educators*. Unpublished doctoral thesis, Columbus: Ohio State University.

Leikin, R. & Dinur, S. (2003). Patterns of flexibility: Teachers' behaviour in mathematical discussion. Retrieved December 10, 2010, from http://ermeweb.free.fr/CERME3/Groups/TG11/TG11_Leikin_cerme3.pdf.

Lewis, C. C. (2000). *Lesson study: The core of Japanese professional development*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.

Lighthall, F.F. (2002). Making a difference in teacher education through self-study. In *Proceedings of The Fourth International Conference on Self-Study of Teacher Education Practices, 4-8 August 2002* (pp. 62-66). Kingston, Ontario: Queen's University.

Liou, H-C. (2000). Reflective practice in a pre-service teacher education program for high school English teachers in Taiwan. *System, 29*, 197-208.

Lloyd, S.L. (2005). Examining a framework of dialogue e-mails and inquiry into practice to scaffold reflective practice in preservice teachers during their early field experience. Unpublished doctoral thesis, Gainesville: University of South Florida.

Loughran, J.J. (2002). Effective reflective practice: In search of meaning in learning about teaching. *Journal of Teacher Education, 53*, 33-43. DOI: 10.1177/0022487102053001004.

Loughran, J.J. (2007). Researching teacher education practices: Responding to the challenges, demands, and expectations of self-study. *Journal of Teacher Education, 58*, 12-20. DOI: 10.1177/0022487106296217.

Luttenberg, J., & Bergen, T. (2008). Teacher reflection: the development of a typology. *Teachers and Teaching, (14)*5, 543-566. DOI: 10.1080/13540600802583713.

Luwango, L. (2008). *Critical reflective teaching practice in three mathematics teachers*. Retrieved May 28, 2011, from <http://eprints.ru.ac.za/1690/l/Luwango-MEd-TR09-160.pdf>.

Marcos, J.J.M. & Tillema, H. (2006). Studying studies on teacher reflection and action: An appraisal of research contributions. *Educational Research Review, 1*, 112-132.

Maree, K. & Van der Westhuizen, C. (2009). *Headstart in designing research proposals in the social sciences*. Cape Town: Juta & Company Ltd.

McDonald, S. (2009). *A model of teacher professional development based on the principles of lesson study*. Unpublished doctoral thesis, Queensland: Centre for Learning Innovation, Faculty of Education.

McIntosh, P. (2010). *Action research and reflective practice*. London: Routledge.

McKeny, T.S. (2006). *A case-study analysis of the critical features within field experiences that effect the reflective development of preservice secondary mathematics teachers*. Unpublished doctoral thesis, Columbus: Ohio State University.

- McMillan, J. & Schumacher, S. (2005). *Research in education: Evidence-based inquiry*. (6th ed.). Boston, MA: Allyn & Bacon.
- Mewborn, D.S. (1999). Reflective thinking among preservice elementary mathematics teachers. *Journal for Research in Mathematics Education*, 30(3), 316-341.
- Moss, P. (2008). Foreword. In A. Paige-Smith & A. Craft (Eds.). *Developing reflective practice in the early year*, (pp. xii-xvi). New York: McGraw Hill.
- Newman, S. (1999). *Philosophy and teacher education*. Aldershot: Ashgate.
- Nieuwenhuis, J. (2010). Qualitative research designs and data gathering techniques. In K. Maree (Ed.). *First steps in research*, (pp. 69-97). Pretoria: Van Schaik Publishers.
- Nyanjom, J.A. (2009). The principles and practices of mentoring in a technical college in Africa: A self-study enquiry. Unpublished doctoral thesis, Pretoria: University of Pretoria.
- Nyaumwe, L.J. (2005). Developing reflective practice of pre-service mathematics teachers using a collaborative reflection with peers (CRP) framework. In C. Kasanda, E. Ngololo & S. Akpo (Eds.), *Proceedings of the 13th Annual SAARMSTE Conference 2007* (pp. 629-637). Windhoek, Namibia.
- Nyaumwe, L.J. (2007). An exploration of the phases of reflection that Zimbabwean pre-service mathematics teacher post lesson reflections go through. In *Southern African Association for Research in Mathematics, Science and Technology Education*, (pp. 289-295). Maputo: Eduardo Mondlane University Press.
- Ono, Y. & Ferreira, J. (2010). A case study of continuing teacher professional development through lesson study in South Africa. *South African Journal of Education*, 30, 59-74.
- Osterman, K.F. & Kottkamp, R.B. (1993). *Reflective practice for educators*. California: Corwin Press, Inc.
- Ottesen, E. (2007). Reflection in teacher education. *Reflective Practice*, 8(1), 31-46.
- Pedro, J.Y. (2001). *Reflection in teacher education: Exploring preservice teachers' meanings of reflective practice*. Unpublished doctoral thesis, Blacksburg: Virginia Polytechnic Institute and State University.

Philipp, R.A. (2007). Mathematics teachers' beliefs and affect. In F.K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning*, (pp. 157-223). Charlotte, NC: Information Age.

Polaki, M.V. & Morobo, N. (2007). Developing a Profile of Teachers' Practices in the Teaching of School Mathematics in Lesotho. In *Southern African Association for Research in Mathematics, Science and Technology Education*, (pp. 304-311). Maputo: Eduardo Mondlane University Press.

Pollard, A. (2002). *Reflective teaching: Effective and evidence-informed professional practice*. London: Continuum.

Pollard, A. & Tann, S. (1993). *Reflective teaching in the primary school*. (2nd ed.). London: Cassell.

Procee, H. (2006). Reflection in Education: A Kantian Epistemology. *Educational Theory*, 56(3), 237-253.

Reed, Y., Davis, H. & Nyabanyaba, T. (2003). Teachers' take-up of reflective practice in underresourced multilingual contexts. In J. Adler & Y. Reed (Eds.), *Challenges of Teacher Development*, (pp. 118-134). Pretoria: Van Schaik.

Richardson, L., & St Pierre, E.A. (2005). Writing: A method of inquiry. In N.K. Denzin & Y.S. Lincoln (Eds.), *The SAGE handbook of qualitative research*. California: Sage Publications, Inc.

Richert, A. E. (1992). The context of student teachers' reflections within different structures for facilitating the reflective process. In T. Russell & H. Munby (Eds.), *Teachers and teaching: From classroom to reflection* (pp. 171-191). Philadelphia: The Falmer Press.

Rodgers, C. (2002). Defining reflection: Another look at John Dewey and reflective thinking. *Teachers College Record*, 104(4), 842-866.

Ross, J.A. & Bruce, C. (2005). Teacher self-assessment: A mechanism for facilitating professional growth. *Teaching and Teacher Education*, 23(2), 146-159.

Russell, T. (1993). Critical attributes of a reflective teacher; is agreement possible? In J. Calderhead & P. Gates (Eds.), *Conceptualising reflection in teacher development*. London: Falmer Press.

Russell, T. (2007). *How experience changed my values as a teacher educator*. Retrieved February 09, 2009, from http://www.isatt.org/ISATT-papers/ISATT-papers/Russell_HowExperienceChangedmyValuesasaTeacherEducator.pdf.

Russell, T. & Munby, H. (1991). Reframing: The role of experience in developing teachers' professional knowledge. In D.A. Schön (Ed.), *The reflective turn: Case studies in and on educational practice*, (pp. 164-187). New York: Teachers College Press.

Russell, T., Munby, H., Spafford, C. & Johnston, P. (1988). Learning the professional knowledge of teaching: Metaphors, puzzles, and the theory-practice relationship. In P.P. Grimmett & G.L. Erickson (Eds.), *Reflection in teacher education* (pp. 67-90). New York: Teachers College Press.

Rutledge, D. & Benedicto, R. (2007). Building successful lesson study communities. In K. Wiburg & S. Brown (Eds.), *Lesson study communities: Increasing achievement with diverse students*, (pp. 19-107). California: Corwin Press.

Scherer, P. & Steinbring, H. (2006). Noticing children's learning processes – teachers jointly reflect on their own classroom interaction for improving mathematics teaching. *Journal of Mathematics Teacher Education*, 9, 157-185. DOI: 10.1007/s10857-006-0004-7.

Schön, D.A. (1983). *The reflective practitioner*. New York: Basic Books

Schön, D.A. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.

Schön, D.A. (1992). The Theory of Inquiry: Dewey's Legacy to Education. *Curriculum Inquiry*, 22(2), 119-139.

Setati, M., Adler, J., Reed, Y. & Bapoo, A. (2002). Incomplete journeys: Code-switching and other language practices in mathematics, science and English language classrooms in South Africa. *Language and Education*, 16, 128-149.

Sowder, J.T. (2007). The mathematical education and development of teachers. In F.K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning*, (pp. 157-223). Charlotte, NC: Information Age.

Sparks-Langer, G. & Colton, A. (1991). Synthesis of research on teachers' reflective thinking. *Educational Leadership*, 48(6), 37-44.

Sparks-Langer, G. M. (1992). In the eye of the beholder: Cognitive, critical, and narrative approaches to teacher reflection. In L. Valli (Ed.), *Reflective teacher education: Cases and critiques*, (pp. 147-160). New York: State University of New York Press.

Stephens, M. & Isoda, M. (2007). Introduction: to the English translation. In M. Isoda, M. Stephens, Y. Ohara, & T. Miyakawa (Eds.), *Japanese lesson study in mathematics*, (pp. xv-xxiv). Singapore: World Scientific Publishing Co. Pty. Ltd.

Takahashi, A., Watanabe, T. & Yoshida, M. (2006). Developing good mathematics teaching practice through lesson study: a U.S. perspective. *Tsukuba Journal of Educational Study in Mathematics*, 25, 197-204.

Taylor, A.R., Anderson, S., Meyer, K., Wagner, M.K. & West, C. (2005). Lesson study: A professional development model for mathematics reform. *The Rural Educator*, 17-22. Retrieved March 16, 2010, from http://www.ruraleducator.net/archive/26-2/26-2_Taylor.pdf.

University of Pretoria. (2010). *Code of ethics for research*. Pretoria: University of Pretoria.

Valli, L. (1992). *Reflective teacher education: Cases and critiques*, Albany: State University of New York Press.

Valli, L. (1997). Listening to other voices: A description of teacher reflection in the United States. *Peabody Journal of Education*. 72(1), 67-88.

Van Manen, M. (1977). Linking ways of knowing with ways of being practical. *Curriculum Inquiry*, 6, 205-228.

Van Manen, M. (1995). On the epistemology of reflective practice. *Teachers and Teaching: Theory and Practice*. 1(1), 33-50.

Ward, J.R., & McCotter, S.S. (2004). Reflection as a visible outcome for preservice teachers. *Teaching and Teacher Education*, 20(3), 243-257.

Warfield, J., Wood, T. & Lehman, J.D. (2005). Autonomy, beliefs and the learning of elementary mathematics teachers. *Teaching and Teacher Education*, 21, 439-456.

Watts, M. & Lawson, M. (2009). Using a meta-analysis activity to make critical reflection explicit in teacher education. *Teaching and Teacher Education*, 25, 609-616.

Yoon, H-G. & Kim, M. (2009). Collaborative reflection through dilemma cases of science practical work during practicum. *Journal of Science Education*, 32(3), 283-301. DOI: 10.1080/09500690802516538.

York-Barr, J., Sommers, W.A., Ghore, G.S. & Montie, J. (2006). *Reflective practice to improve schools*. California: Corwin Press.

Zeichner, K.M. & Liston, D.P. (1987). Teaching student teachers to reflect. *Harvard Educational Review*, 57, 23-48.

Zeichner, K.M. (1994). Research on teachers' thinking and different views of reflective practice in teaching and teacher education. In I. Carlgren, G. Handal & S. Vaage (Eds.), *Teachers' minds and actions: research on teachers' thinking and practice*, (pp. 8-27). London: The Falmer Press.

Zeichner, K.M. & Liston, D.P. (1996). *Reflective teaching: An introduction*. New Jersey: Lawrence Erlbaum Associates, Inc.

APPENDICES

Appendix A: Lesson plan template

Lesson Study: Lesson Plan

Date:

Educator:

Lesson duration:

Pre-active stage of the lesson:	
Topic: Understanding this topic is important because	
What are your goals for this lesson? What will learners understand as a result of this Lesson? (what do you want learners to know and be able to do?) What evidence will show learners understand? (what performance tasks, products, projects, etc. will demonstrate understanding?)	
What materials will you need?	
Prior knowledge of learners	
Future knowledge (following the lesson)	



Interactive stage of the lesson:		
Introduction (How will you introduce the lesson? Give full details)	(Please provide full details of your expectations)	Reflection (after the lesson)
Learner Activity (provide full details of the activity, as well as your expectations of learners' responses) <ul style="list-style-type: none">• class arrangement• assessment• teacher activity (role)• learner activity (role)		
Post-active stage of the lesson		
Class discussion (how do you plan to wrap up the lesson)		
Your feedback to the learners about the activity and learning that took place		
Final reflections on the lesson (complete this part as soon as you have taught the lesson)		

Appendix B: Letter of consent



Mrs AB Posthuma
Groenkloof campus
barbara.posthuma@up.ac.za
Tel: 082 293 5533

13 May 2010

Dear Ms/Mr

Letter of consent to the mathematics teacher

I am conducting a research study for my doctoral degree in mathematics education at the University of Pretoria. This letter is written to invite you to be a participant in this study. The Free State Department of Education granted permission to allow you to participate in the study.

The study seeks to investigate the nature of mathematics teachers' reflective practice. In order to do this, the following techniques will be employed: 1) I will interview you before the onset of the research study. Please bring one of your lesson plans to the interview for discussion. The purpose of this interview is to help me to understand the nature of your reflections in your classroom practice. 2) You will form part of a lesson study group with other mathematics teachers. In this group you will collaboratively plan a mathematics lesson. One teacher in the group will teach the planned lesson to his/her class. This lesson will be video-recorded and this video recording will be shown to the group afterwards so that they can discuss the teaching of the lesson and reflect on ways to improve the lesson plan. The revised lesson will then be taught by another member of the group and the cycle will continue. 3) You will be asked to keep a reflective journal and share experiences related to your teaching. 4) You will be asked to participate in a final group interview with your fellow teachers of the lesson study group in order to reflect upon your teaching practice and the experience of planning and teaching lessons collaboratively. Audiotapes of the interviews will be made so that each teacher's verbal reflections can be used as data. Participation is entirely voluntary and you may withdraw from the study at any time if you so choose.

Should you declare yourself willing to participate in this study, confidentiality will be guaranteed. You will be asked to read the transcripts of the interviews to ensure the trustworthiness of the data. Your decision to accept/decline involvement in this research will not influence your teaching career in any way, nor will your participation be reflected in your performance appraisal.

If you are willing to participate in this study, please sign this letter as a declaration of your consent.

Yours sincerely

..... Date:

Mrs AB Posthuma
..... Date:

Supervisor: Prof JG Maree
Participant's signature..... Date:.....

E-mail address Contact number

Appendix C: Letter of permission to department

FACULTY OF EDUCATION

Mrs AB Posthuma
Aldoel Building F235
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barbara.posthuma@up.ac.za
Tel: 082 293 5533

13 May 2010

Free State Department of Education

Dear Sir/ Madam

Request from FDE for permission to do classroom observations and to conduct interviews

I am currently enrolled as a doctoral student at the University of Pretoria, where I am also a lecturer in the Department of Science, Mathematics and Technology Education. The title of my proposed thesis is as follows: **The nature of mathematics teachers' reflective practice**. The importance of this research rests on its unique connection of reflective practice relating to teaching, specifically in the field of mathematics. The rationale for this study stems from the premise that mathematics teachers need to find a vehicle for growth and improvement. The development of a reflective process can serve as an important technique in increasing self-knowledge and seeking new ways of educating learners in mathematics. The study can add to research findings concerning reflective practice and contribute to the discussion on the usefulness of reflective practice as a reform effort in teacher education.

In order to collect data for this project, I would like to invite mathematics teachers of at least two neighbouring schools in the Thabo Mofutsanyana district to participate in forming a lesson study group. In lesson study the focus is on the concrete examination of practice and the testing of new ideas in actual classrooms. This examination of practice is a collaborative exercise in which a group of teachers design, reflect on, and deliver mathematics lessons to enhance student achievement.

I will interview the teachers individually and observe them in the lesson study group while they are planning lessons and reflecting on their classroom practice. The teacher who teaches the lesson will also be observed and video-recorded. My observations will be unobtrusive and confidentiality of both participants and the institutions will be ensured.

I hereby formally request your permission to observe and interview mathematics teachers at schools in the Thabo Mofutsanyana district in the second term of this year. I trust that my request will meet with a favourable response.

Yours faithfully

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Mrs AB Posthuma

Appendix D: Interview and group reflection schedules

INTERVIEW SCHEDULE 1
Individual semi-structured interview

Name of school	
Name of researcher	Barbara Posthuma
Name of teacher	
Male/ female	
Date of interview	
Teacher's qualification	
Level of Mathematics education	
No of years teaching Mathematics	
Home language	

Thank you for taking part in my study. As you are aware I am working on my thesis. The topic is the nature of mathematics teachers' reflective practice. I want to get your perspective of reflection and have some questions that I want to ask you. Please feel free to elaborate on your answers, the more you can tell me, the more I will be able to represent your views in the thesis.

1. What do you understand by the term reflection?
2. Do you reflect on your classroom practice in mathematics?
3. Can you give me an example of when you reflected on your classroom practice?
 - i. **How** do you reflect on your practice?
 - ii. **When** do you reflect on your practice?
 - iii. **What** do you reflect on after teaching a lesson?
 - iv. Do any particular **factors influence** your reflections?
 - v. Have you **gained** anything by reflecting on your practice? If the answer is "yes", how? If the answer is "no", why not?

Discussion of the lesson in lesson plan provided during initial interview:

- What did you like best about this lesson?
- What, in your opinion, were essential strengths of the lesson?
- What, in your opinion, were essential challenges experienced during the lesson?
- Suppose you had to teach the lesson again, what aspects, if anything, would you change about the lesson?
- Did your learners achieve the lesson outcomes? Why do you say so?
- What, if any, unanticipated learning outcomes resulted from the lesson?
- Can you think of another way you might have taught this lesson?
- Can you think of alternative approaches to teaching this lesson that might improve the learning process?
- Do you think the content covered was meaningful to the learners? Why?
- Is there anything else that you would like to add to what has already been said in this regard?

INTERVIEW SCHEDULE 2

Post-observation interview

- What, in your opinion, were essential strengths of the lesson?
- What, in your opinion, were essential challenges experienced during the lesson?
- What, if anything, would you change about the lesson?
- Do you think the lesson was successful? Why?
- Should you feel that the lesson was not successful, please elaborate?
- What conditions were important to achieving the outcomes?
- What, if any, unanticipated learning outcomes resulted from the lesson?
- Can you think of other ways in which you might have taught this lesson?
- Can you think of alternative approaches to teaching this lesson that might improve the learning process?
- Do you think the content covered was meaningful to learners? Why?
- What, if any, moral or ethical concerns occurred as a result of the lesson?
- Is there anything else that you would like to add to what has already been said in this regard?

Final group Interview

Name of school	
Name of researcher	
Name of teacher	
Gender	
Date of interview	

- In which ways, if at all, did participation in the lesson study group alter your teaching practice?
- What are your thoughts about the lesson study group?
- What are your feelings about the lesson study group?
- How did you experience working collaboratively with colleagues in the lesson study group?
- Did you gain anything from this experience? If the answer is “yes”, in which ways and what did you gain?
- Were there any negative experiences in the lesson study group? If the answer is “yes”, please elaborate?
- As a result of your lesson study group experience, describe a specific instance(s) in which you have been reflective or specific instance(s) in which your teacher thinking was changed in some way



Appendix E: Ethical clearance certificate



UNIVERSITY OF PRETORIA
FACULTY OF EDUCATION
RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE

DEGREE AND PROJECT

INVESTIGATOR(S)

DEPARTMENT

DATE CONSIDERED

DECISION OF THE COMMITTEE

CLEARANCE NUMBER :

SM 10/06/01

PhD

The nature of mathematics teachers' reflective practice.

Anna Barbara Posthuma

Department of Science, Mathematics and Technology Education

15 June 2011

APPROVED

Please note:

For Masters applications, ethical clearance is valid for 2 years

For PhD applications, ethical clearance is valid for 3 years.

CHAIRPERSON OF ETHICS COMMITTEE Prof L Ebersohn

DATE

15 June 2011

CC

Jeannie Beukes
Ms A.B Posthuma
Prof J.G Maree

This ethical clearance certificate is issued subject to the following conditions:

1. A signed personal declaration of responsibility
2. If the research question changes significantly so as to alter the nature of the study, a new application for ethical clearance must be submitted
3. It remains the students' responsibility to ensure that all the necessary forms for informed consent are kept for future queries.

Please quote the clearance number in all enquiries.