

# DEVELOPING MATHEMATICS TEACHING AND TEACHERS

*A Research Monograph*

*Olwen McNamara, Barbara Jaworski, Tim Rowland,  
Jeremy Hodgen and Stephanie Prestage*

**REFERENCES**



## REFERENCES

- Adhami, M. (2002) 'Cognitive acceleration in mathematics education in Years 5 and 6: Problems and challenges.' In M. Shayer and P. S. Adey (Eds.), *Learning Intelligence: Cognitive Acceleration across the Curriculum from 5 to 15 years* (pp. 98-117). Buckingham: Open University Press.
- Adler, J. (1996) 'Lave and Wenger's social practice theory and teaching and learning school mathematics.' In L. Puig and A. Gutierrez (Eds.), *Proceedings of the Twentieth Conference of the International Group for the Psychology of Mathematics Education, Volume 2*, (pp. 3-10). University of Valencia: Spain.
- Adler, J. (1999) 'The dilemma of transparency: seeing and seeing through talk in the mathematics classroom.' *Journal for Research in Mathematics Education*, 30(1), pp. 47-64.
- Adler, J. (2000). 'Social Practice Theory and Mathematics Teacher Education: A Conversation between Theory and Practice.' *Nordic Studies in Mathematics Education (NOMAD)* 8(3) pp. 31-53.
- Adler, J. and Lerman, S. (2001) 'Ethical practice in mathematics education research: getting the description right and making it count.' In M. van den Heuvel-Panhuizen, (Ed.) *Proceedings of the 25th Conference of the International Group for the Psychology of Mathematics Education, Vol. 2* (pp. 17-24). Utrecht, The Netherlands: Freudenthal Institute, Utrecht University.
- Adler, S. (1991) 'The Reflective Practitioner and the Curriculum of Teacher Education.' *Journal of Education for Teaching* 17(2), pp. 139-150.
- Ahmed, A. (1987) *Better Mathematics: A Curriculum Development Study*. London: HMSO.
- Ahmed, A. and Williams, H. (1991) *Raising Achievement in Mathematics Project (1986-89): A Curriculum Development Study Bognor Regis*. West Sussex Institute of Higher Education.
- Alexander, R., Rose, A. J. and Woodhead, C. (1992) *Curriculum Organisation and Classroom Practice in Primary Schools. A discussion paper*. London: DES.
- Anderson, J., Goulding, M., Hatch, G., Love, E., Morgan, C., Rodd, M. and Shiu, C. (2000) 'I went to university to learn mathematics ... Reflections by PGCE students on learning mathematics at university.' *Mathematics Teaching* 173, pp. 50-55.
- Andrews, P. and Hatch, G. (1999) 'A new look at secondary teachers' understanding of mathematics and its teaching.' *British Educational Research Journal*, 25(2), pp. 203-223.
- Askew, D. and Haines, S. (1991) 'Beginnings.' *Mathematics Teaching* 134 pp. 41-42.
- Askew, M. (1999) *Teachers, orientations and contexts: repertoires of discourse in primary mathematics*. Unpublished doctoral thesis, London: King's College London.

- Askew, M., Brown, M., Rhodes, V., Johnson, D. and Wiliam, D. (1997a) *Effective Teachers of Numeracy*. London: King's College.
- Askew, M., Brown, M., Rhodes, V., Wiliam, D. and Johnson D. (1997b) 'The contribution of professional development to effectiveness in the teaching of numeracy.' *Teacher Development*, 1(3), pp. 335-355.
- Association of Teacher of Mathematics (1987) *Teacher is/as Researcher*. Derby: ATM.
- Atkinson, S. (1994) 'Rethinking the Principles and Practice of Action Research: the tensions for the teacher-researcher.' *Educational Action Research*, 2(3), pp. 383-402.
- Aubrey, C. (1993) 'An investigation of the mathematical knowledge and competencies which young children bring into school.' *British Educational Research Journal*, 19, pp. 19-37.
- Aubrey, C. (1994a) 'An investigation of children's knowledge of mathematics at school entry and the knowledge their teachers hold about teaching and learning mathematics, about young learners and mathematical subject knowledge.' *British Educational Research Journal*, 20, pp. 105-120.
- Aubrey, C. (1994b) *The Role of Subject Knowledge in the Early Years*. London: Falmer.
- Aubrey, C. (1995) 'Teacher and pupil interaction and the process of mathematics in four reception classrooms.' *British Educational Research Journal*, 21, pp. 31-48.
- Aubrey, C. (1996) 'An investigation of teacher's mathematical subject knowledge and the processes of instruction in reception classes.' *British Educational Research Journal*, 22, pp. 181-197.
- Aubrey, C. (1997) *Mathematics Teaching in the Early Years: an investigation of teachers' subject knowledge*. London: Falmer.
- Ball, D. L. (1988) 'Unlearning to Teach Mathematics.' *For the Learning of Mathematics*, 8(1), pp. 40-48.
- Ball, D. L. (1990a) 'Prospective elementary and secondary teachers' understanding of division.' *Journal for Research in Mathematics Education*, 21(2), pp. 132-144.
- Ball, D. L. (1990b) 'The Mathematical understandings that prospective teachers bring to teacher education.' *Elementary School Journal*, 90(4), pp. 449-466.
- Banwell, C. S., Saunders, K. D. and Tahta, D. S. (1972) *Starting Points*. Oxford: Oxford University Press.
- Barrett, E. Whitty, G. Furlong, J. Galvin, C. and Barton, L. (1992) *Initial Teacher Education in England and Wales: A Topography*. London, Goldsmith's College.
- Bartolini-Bussi, M. G. (1994) 'Theoretical and Empirical Approaches to Classroom Interaction.' In R. Biehler, R. W. Scholtz, R. Strässer and B. Winkelmann (Eds.), *The Didactics of Mathematics as a Scientific Discipline* (pp. 121-132). Dordrecht: Kluwer.

*Developing Mathematics Teaching and Teachers*

- Bassey, M. (2001) 'Reviews of educational research.' *Research Intelligence* 71, pp. 22-29.
- Bauersfeld, H. (1994) 'Theoretical Perspectives on Interaction in the Mathematics Classroom.' In R. Biehler, R. W. Scholtz, R. Strässer and B. Winkelmann (Eds.), *The Didactics of Mathematics as a Scientific Discipline* (pp. 133-146). Dordrecht: Kluwer.
- Baumfield, V. and Mcgrane, J. (2000) *Teachers using evidence and engaging in and with research: one school's story*. Paper presented at the Annual Conference of the British Educational Research Association, Cardiff.
- Begle, E. G. (1968) 'Curriculum research in mathematics.' In H. J. Klausmeier and G. T. O'Hearn (Eds.), *Research and development toward the improvement of education*. Madison, WI: Dembar Educational Research Services.
- Begle, E. G. (1979) *Critical variables in mathematics education: Findings from a survey of empirical research*. Washington, DC: Mathematics Association of America and the National Council of Teachers of Mathematics.
- Bennett, N. and Carré, C. (Eds.) (1993) *Learning to Teach*. London: Routledge.
- Bennett, N. and Turner-Bisset, R. (1993) 'Case studies in learning to teach.' In N. Bennett and C. Carré (Eds.), *Learning to Teach* (pp. 165-190). London: Routledge.
- Benton, P (Ed.) (1990) *The Oxford Internship Scheme: Integration and Partnership in initial Teacher Education*. London: Calouste Gulbenkian Foundation.
- Berliner, D. (1988) 'Implications of Studies of expertise in pedagogy for teacher education and evaluation.' In The Educational Testing Service (Ed.), *New Directions for Teacher Assessment*, Proceedings of the 1988 ETS Invitational Conference, Princetown: New Jersey.
- Bibby, T. (1999) 'Shame: an Emotional Response to Doing Mathematics as an Adult and a Teacher.' Paper given at the Annual Conference of the British Educational Research Association, University of Brighton.
- Biggs, E. (1983) *Effective Mathematics Teaching*. London: Routledge.
- Bines, H. (1994) 'Squaring the circle?: government reform of initial teacher training for primary education.' *Journal of Educational Policy* 9(4), pp. 369-380.
- Bird, T., Anderson, L., Sullivan, B. and Swidler, S. (1993) 'Pedagogical Balancing Acts: attempts to influence prospective teachers' beliefs.' *Teaching and Teacher Education*, 9(3), pp. 253- 268.
- Bird, T., Anderson, L., Sullivan, B. and Swidler, S. (1993) 'Pedagogical Balancing Acts: attempts to influence prospective teachers' beliefs.' *Teaching and Teacher Education* 9(3), pp. 253-268.
- Black, P. and Wiliam, D. (1998) 'Assessment and classroom learning'. *Assessment in Education*, 5(1) pp. 7-74.

- Boaler, J. (2000) 'Introduction: Intricacies of Knowledge, Practice and Theory.' In J. Boaler (Ed.) *Multiple Perspectives on Mathematics Teaching and Learning* (pp. 1-17) London: Ablex.
- Bolin, F. (1990) 'Helping student teachers think about teaching.' *Journal of Teacher Education*, 41(1), pp. 10-19.
- Bottery, M. and Wright, N. (1996) 'Cooperating in their own deprofessionalisation? On the need to recognise the "public" and "ecological roles of the teaching profession.' *British Journal of Education Studies*, 44(1), pp. 82-98.
- Bramald, R., Hardman, F. and Leat, D. (1995) 'Initial teacher trainees and their Views of Teaching and Learning.' *Teaching and Teacher Education* 11(1), pp. 23-32.
- Britt, M. S., Irwin, K. C., Ellis, J. and Ritchie, G. (1993) *Teachers raising achievement in mathematics: Final report to the Ministry of Education*. Auckland, NZ: Centre for Mathematics Education, Auckland College of Education.
- Brown, A. L. and Campione, J. C. (1994) 'Guided Discovery in a Community of Learners.' In K. McGilly (Ed.), *Integrating Cognitive Theory and Classroom Practice: Classroom Lessons*. Cambridge, MA: MIT Press/Bradford Books.
- Brown, C. A., and Borko, H., (1992). 'Becoming a mathematics teacher.' In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 209-39). New York: Macmillan.
- Brown, J., Collins, A. and Duguid, P. (1989) 'Situated Cognition and the Culture of Learning.' *Educational Researcher*, 18(1), pp. 32-42.
- Brown, L. and Coles, A. (2000) 'Complex Decision Making in the Classroom: the teacher as Intuitive Practitioner.' In T. Atkinson and G. Claxton (Eds.), *The intuitive practitioner* (pp. 165-181). Buckingham: Open University Press.
- Brown, M. (1979), 'Cognitive development and the learning of mathematics.' In A. Floyd (Ed.) *Cognitive development in the school years* (pp. 351-373). London: Croom Helm.
- Brown, M., Millett, A., Bibby, T. and Johnson, C. (2000) 'Turning our attention from the what to the how: The national numeracy strategy.' *British Educational Research Journal* 26(4), pp. 457-471.
- Brown, S. and McIntyre, D. (1993) *Making sense of teaching*. Buckingham: Open University Press.
- Brown, S., McNally, J. and Stronach, I. (1993) *Getting it together: Questions and answers about partnership and mentoring*. Department of Education: University of Stirling.
- Brown, T. (1997) *Mathematics Education and Language: Interpreting Hermeneutics and Post-Structuralism*. Dordrecht: Kluwer Academic Publishers.

*Developing Mathematics Teaching and Teachers*

- Brown, T., Mcnamara, O., Jones, L. and Hanley, U. (1999) 'Primary student teachers' understanding of mathematics and its teaching.' *British Education Research Journal*, 25(3), pp. 299-322.
- Bruner, J. (1996) 'Celebrating divergence: Piaget and Vygotsky.' Keynote address delivered in Geneva on 15th September, 1996 at a joint meeting of the Growing Mind Conference in honour of the centennial of Jean Piaget's birth, and the Vygotsky-Piaget Conference of the 2nd Congress of Socio-Cultural Research.
- Burton, L. (1984) *Thinking Things Through: Problem Solving in Mathematics*. Oxford: Basil Blackwell.
- Byrne, C. J. (1983) 'Teacher knowledge and teacher effectiveness.' Paper presented at the 14th Annual Convention of the North-eastern Educational Research Association: Ellenville, NY.
- Calderhead, J. and Robson, M. (1991) 'Images of Teaching: student teachers' early conceptions of classroom practice.' *Teaching and Teacher Education*, 7(1), pp. 1-8.
- Campbell, J. and Husbands, C. (2000) 'On the reliability of OFSTED Inspection of Initial Teacher Training: a case study.' *British Journal of Educational Research*, 26(1), pp. 39-48.
- Carpenter, T., Fennema, E., Peterson, P. and Carey, D. (1988) 'Teachers' pedagogical content knowledge of students' problem-solving in elementary arithmetic.' *Journal for Research in Mathematics Education*, 19, pp. 385-401.
- Carr, W. and Kemmis, S. (1986) *Becoming Critical: knowing through action research*. London: Falmer.
- Carré, C. (1993) 'The First Year of Teaching.' In N. Bennett and C. Carré (Eds.), *Learning to Teach*. London: Routledge.
- Carré, C. and Ernest, P. (1993) 'Performance in subject-matter knowledge in mathematics.' In N. Bennett and C. Carré (Eds.), *Learning to Teach* (pp. 36-50). London: Routledge.
- Carter, D., Carré, C. and Bennett, S. (1993) 'Student teachers' changing perceptions of their subject matter competence during an initial teacher training programme.' *Educational Researcher*, 35(1), pp. 89-95.
- Carter, K. (1990) 'Teachers' knowledge and learning to teach.' In W. R. Houston (Ed.) *Handbook of Research on teacher education* (pp. 291-310). London: Macmillan.
- Chaiklin S. and Lave J. (1993) *Understanding practice; perspectives on – and in – context*. Cambridge: Cambridge University Press.
- Chaiklin, S. (1993) 'Understanding the Social Scientific Practice of Understanding Practice.' In S. Chaiklin and J. Lave (Eds.), *Understanding Practice: Perspectives on Activity and Context*. Cambridge: Cambridge University Press.

- Cheng, H. (1990) *Student teachers' attitudes towards the humanistic approach to teaching and learning in schools*. Unpublished MA Thesis: University of York.
- Clarke, D. M. (1994) 'Ten key principles from research for the professional development of mathematics teachers.' In D. B. Aichele and A. F. Coxford (Eds.), *Professional development for teachers of mathematics: The 1994 Yearbook of the National Council of Teachers of Mathematics* (pp. 37 - 48). Reston, VA: National Council of Teachers of Mathematics.
- Clarke, D. M. (1997) 'The changing role of the mathematics teacher.' *Journal for Research in Mathematics Education*, 28(3), pp. 278-308.
- Cobb, P. (1988) 'The tension between Theories of Learning and Instruction.' *Educational Psychologist*, 23(2), pp. 87-103. Lawrence Erlbaum Associates Inc.
- Cobb, P. and Bowers, J. (1999) 'Cognitive and situated learning perspectives in theory and practice.' *Educational Researcher*, 28(2), pp. 4-15.
- Cobb, P. and Steffe, L. P. (1983) 'The constructivist researcher as teacher and model-builder.' *Journal for Research in Mathematics Education*, 14, pp. 83-94.
- Cobb, P., Wood, T. and Yackel, E. (1990) 'Classrooms as learning environments for teachers and researchers.' In R. Davis, C. Maher and N. Noddings (Eds.), *Constructivist views on the teaching and learning of mathematics: Journal for Research in Mathematics Education, Monograph No. 4* (pp. 125-146). Reston, VA: National Council of Teachers of Mathematics.
- Cochran Smith, M. and Lytle, S. L. (1999) 'Relationships of Knowledge and Practice: Teacher Learning in Communities'. In A Iran-Nejad and C. D. Pearson, *Review of Research in Education*. The American Educational Research Association.
- Cohen, D. K. (1990) 'A revolution in one classroom: The case of Mrs. Oublier.' *Educational Evaluation and Policy Analysis*, 12(3), pp. 311-329.
- Collins, A. (1988) 'Different goals of inquiry teaching.' *Questioning Exchange*, 2(1), pp. 39-45.
- Confrey, J. (1995) 'How compatible are radical constructivism, sociocultural approaches and social constructivism?' In L. P. Steffe and J. Gale (Eds.), *Constructivism in education* (pp. 185-225). Hillsdale, NJ: Erlbaum.
- Confrey, J. (2000) 'Leveraging Constructivism to Apply to Systemic Reform.' *Nordic Studies in Mathematics Education (NOMAD)* 8(3) pp. 7-30
- Cooney, T. (1988) 'The issue of reform.' *Mathematics Teacher*, 80, pp. 352-363.
- Cooney, T. J. (2001) 'Considering the Paradoxes, Perils and Purposes of Conceptualizing Teacher Development.' In F-L. Lin and T.J. Cooney (Eds.), *Making Sense of Mathematics Teacher Education*. Dordrecht, The Netherlands: Kluwer.
- Cooper, P. and McIntyre, D. (1996) *Effective Teaching and Learning*. Buckingham: Open University Press.



*Developing Mathematics Teaching and Teachers*

- Corbin, B. (2000) *A case study: developing pedagogical content knowledge as situated practice on concurrent Initial Teacher education course*. Unpublished PhD thesis: Manchester Metropolitan University.
- Cornu, B. (2000) 'Training Today the Teacher of Tomorrow.' In J. Boaler (Ed.) *Multiple Perspectives on Mathematics Teaching and Learning* (pp. 195-202) London: Ablex.
- Crozier, G., Menter, I. and Pollard, A. (1990) 'Changing Partnership.' In M. Booth, J. Furlong and M. Wilkin (Eds.), *Partnership in Initial Teacher Education* (pp. 44-56). London: Cassells.
- Cruickshank, D. (1987) *Reflective Teaching: the preparation of students teaching*. Reston, VA: Association of Teacher Education.
- Darling-Hammond, L. (1998) 'Teachers and teaching: Testing policy hypotheses from a National Commission report.' *Educational Researcher*, 27(1), pp. 5-15.
- Dart, L. and Drake, P. (1993) 'School-based Teacher Training: a Conservative Practice?' *Journal of Education for Teaching*, 19(2), pp. 175-190.
- Davies, P. (1999) 'What is Evidence-based Education?' *British Journal of Educational Studies*, 47(2), pp. 108-121.
- Davis, P. J. and Hersh, R. (1980) *The Mathematical Experience*. London: Penguin Books
- Davis, R. B., Maher, C. A. and Noddings, N. (1990) (Eds.) *Constructivist Views on the Learning and Teaching of Mathematics*. Journal for Research in Mathematics Education, Monograph Number 4. Reston, Virginia: National Council of Teachers of Mathematics.
- Dawson, A. J. (1999). 'The enactive perspective on teacher development: A path laid while walking.' In B. Jaworski, T. Wood, and A. J. Dawson (Eds.), *Mathematics teacher education: Critical international perspectives*. London: Falmer.
- Day, C. (1999) *Developing teachers: The Challenges of Lifelong Learning*. London: Falmer Press
- DES (1978) *Primary Education in England: a survey by HM Inspectors of schools*. London: HMSO.
- DES (1979) *Mathematics 5-11: a handbook of suggestions*. London: HMSO.
- DES (1982) *Mathematics Counts*. Report of the Committee of Inquiry into the Teaching of Mathematics in Schools under the chairmanship of W. H. Cockcroft. London: HMSO.
- DES (1983) *Teaching Quality*. London: HMSO.
- DES (1984) *Initial Teacher Training: Approval of Courses* (Circular 3/84). London: HMSO.
- DES (1985) *Mathematics from 5 to 16*. London: HMSO.

## References

- DES (1988) *The New Teacher In School: a survey by HM Inspectors in England and Wales*. London: HMSO.
- DES (1989a) *Initial Teacher Training: Approval of courses*. Circular 24/89. London: HMSO.
- DES (1989b) *Licensed Teacher Regulation*. Circular 18/89. London: HMSO.
- DES (1991a) *Designated Courses in Mathematics for Primary Teachers*. London: HMSO.
- DES (1991b) *The Professional Training of Primary School Teachers*. London: HMSO.
- Desforges, C. and Cockburn, A. (1987) *Understanding the Mathematics Teacher*. London: Falmer Press.
- Dewey, J. (1902/1956/1990) *The School and Society and The Child and the Curriculum*. London: The University of Chicago Press.
- Dewey, J. (1904). 'The relation of theory to practice in education.' In National Society for the Study of Education (Ed.), *The Relation of Theory to Practice in the Education of Teachers. Third Yearbook. Part I*. Bloomington, IL: Public School Publishing Co.
- Dewey, J. (1938) *Education and Experience*. New York: Collier Macmillan.
- DFE (1992) *Initial Teacher Training (secondary phase)* Circular 9/92. London: DFE.
- DFE (1993a) *The Initial Training of Primary School Teachers* Circular 14/93. London: DFE.
- DFE (1993b) *The Government Proposals for the Reform of Initial Teacher Training*. London: DFE.
- DFE (1993c) *School-centred Initial Teacher Training (SCITT), Letter of invitation*. London: DFE.
- DfEE (1997) *Teaching: High Status, High Standards* Circular 10/97. London: DfEE.
- DfEE (1998a) *Teaching: High Status, High Standards* Circular 4/98. London: Her Majesty's Stationery Office.
- DfEE (1998b) *Teachers: meeting the challenge of change*. Green Paper London: HMSO.
- DfEE (1999a) *Mathematics: The National Curriculum for Key Stages 1-4*. London: HMSO.
- DfEE (1999b) *The National Numeracy Strategy: framework for teaching mathematics from Reception to Year 6*. Sudbury: DfEE Publications.
- DfEE (1999c) *The Quinquennial Review of the Teacher Training Agency*. London: DfEE.
- DfEE (2000) *Curriculum Guidance for the Foundation Stage*. London: HMSO.
- DfEE (2001) *The National Numeracy Strategy: framework for teaching mathematics from Year 6 to Year 9*. Sudbury: DfEE Publications.

*Developing Mathematics Teaching and Teachers*

- DfES (2002) *Qualifying to teach: professional standards for Qualified Teacher Status and requirements for Initial Teacher Training. (Circular 2/02)*. London: Teacher Training Agency.
- Duffin, J. (1993) *Calculators in the Classroom: The Reports of the CAN component of the PrIME Project, 1987-89 and of the CAN Continuation Project, 1990-92*. Hull University Numeracy Centre.
- Earl, L., Fullan, M., Leithwood, K. and Watson, N. (2000) *Watching and Learning: OISE/UT evaluation of implementation of the National Literacy and Numeracy Strategies*. Toronto: Ontario Institute for Studies in Education of The University of Toronto.
- Edwards D. and Mercer N. (1987) *Common Knowledge*. London: Methuen.
- Edwards, A. (1995) 'Teacher Education: Partnership in Pedagogy?' *Teaching and Teacher Education*, 11(6), pp. 595-610.
- Eisenhart, M., Behm, L. and Romagnano, L. (1991) 'Learning to teach: developing expertise or rite of passage?' *Journal of Education for Teaching* 17(1), pp. 51-69.
- Ellerton, N. (1999) *Mathematics Teacher Development: International Perspectives*. Perth, Australia: Meridien Press.
- Elliott, J (2001) 'Making evidence-based practice educational.' *British Educational Research Journal*, 27(5), pp. 555-574.
- Elliott, J. (1991) *Action Research for Educational Change*. Milton Keynes: Open University Press.
- Elliott, J. (2000) *How do teachers define what counts as credible evidence?* Paper presented at the Annual Conference of the British Educational Research Association, Cardiff.
- Elliott, J. and Adelman C. (1975) 'The language and logic of informal teaching' in *The Ford teaching project, Unit 1, Patterns of teaching*. Norwich: University of East Anglia, Centre for Applied Research in Education.
- EPPI-centre (2001) *Evidence Informed Policy and Practice in Education Initiative*. <http://eppi.ioe.ac.uk/ED.Handbook/HBTitle.htm> (accessed 12.06.02).
- Eraut, M. (1995) 'Schön shock: A case for reframing reflection-in-action?' *Teachers and Teaching: Theory and Practice*, 1 (1), 9-22.
- Ernest, P. (1989) 'The knowledge, beliefs and attitudes of the mathematics teacher: a model.' *Journal of Education for Teaching* 15(1), pp. 13-33.
- Ernest, P. (1991) *The Philosophy of Mathematics Education*. London: Falmer Press.
- Evans, J. (2000) 'Systematic Reviews of Educational Research.' *Research Intelligence* 73

## References

- Evans, J. and Benefield, P. (2001) 'Systematic Reviews of Educational Research: Does the medical Model Fit?' *British Educational Research Journal*, 27(5), pp. 527–541.
- Even, R. and Tirosh, D. (1995) 'Subject-matter knowledge and knowledge about students as sources of teacher presentations of the subject matter'. *Educational Studies in Mathematics* 29, pp. 1-20.
- Evidence-Based Medicine Working Group (1992) 'Evidence-based Medicine: A new Approach to Teaching the Practice of Medicine.' *Journal of the American Medical Association*, 268(17), pp. 2420-5.
- Feiman-Nemser, S. and Buchmann, M. (1985) 'Pitfalls of experience in teacher preparation.' *Teachers College Record*, 87, pp. 53-65.
- Fitzgibbon, C. (1984) 'Meta-analysis: an explication.' *British Educational Research Journal*, 10(2), pp. 135-144.
- Fitzgibbon, C. (1985) 'The implications of Meta-analysis for Educational Research' *British Educational Research Journal*, 11(1), pp. 45-49.
- Foss, D. and Kleinsasser, R. (1996) 'Pre-service elementary teachers' views of pedagogical and mathematical content knowledge.' *Teaching and Teacher Education*, 12, pp. 429-442.
- Foster, P. (1999) 'Never mind the quality, feel the impact: a methodological assessment of teacher research sponsored by the Teacher Training Agency.' *British Journal of Educational Studies*, 47(4), pp. 380-398.
- French, D. (1994) 'Interpreting the mathematics curriculum.' In B. Jaworski and A. Watson (Eds.), *Mentoring in Mathematics Teaching* (pp. 83-95). London: Falmer Press.
- Frykholm, J. (1999). 'The impact of reform: Challenges for mathematics teacher preparation.' *Journal of Mathematics Teacher Education*, 2, pp. 79-105.
- Furlong, J., Barton, L., Whiting, C. and Whitty, G. (2000) *Teacher Education in Transition: re-forming professionalism?* Buckingham: Open University Press.
- Furlong, J., Whitty, G., Whiting, C., Miles, S., Barton, L. and Barrett, E. (1996) 'Redefining Partnership: revolution or reform in initial teacher education.' *Journal of Education for Teaching* 8(3), pp. 275-304.
- Furlong, V., Hirst, P., Pocklington, K. and Miles, S. (1988) *Initial Teacher Training and the Role of the School*. Milton Keynes: Open University Press.
- Gilroy, P. and Wilcox, B. (1997) 'OFSTED, criteria and the nature of social understanding: a Wittgenstenian critique of the practice of educational judgement.' *British Journal of Educational Studies*, 45, p. 22-38.
- Glaserfeld, E. von (1982) 'An interpretation of Piaget's constructivism.' *Revue internationale de philosophie* 36, pp. 612-635.

*Developing Mathematics Teaching and Teachers*

- Glaserfeld, E. von (1987) 'Learning as a constructive activity.' In C. Janvier (Ed.), *Problems of representation in the teaching and learning of mathematics*. Hillsdale, NJ: Erlbaum.
- Glaserfeld, E. von (1990) 'An Exposition of Constructivism: Why Some like it Radical.' In R. B. Davis, C. A. Maher and N. Noddings (Eds.), *Constructivist Views on the Learning and Teaching of Mathematics*. Journal for Research in Mathematics Education, Monograph Number 4. Reston, Virginia: National Council of Teachers of Mathematics
- Goldhaber, D. and Brewer, D. (2000) 'Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement.' *Educational Evaluation and Policy Analysis* 22 (2), pp. 129-145.
- Goldin, G. A. (1998) 'Representational systems, learning and problem solving in mathematics.' *Journal of Mathematical Behavior* 17(2), pp. 137-165.
- Goulding, M. and Suggate, J. (2001) 'Opening a can of worms: investigating primary teachers' subject knowledge in mathematics.' *Mathematics Education Review*, 13, pp. 41-54.
- Graham, J. and Nabb, J. (1999) *Stakeholder satisfaction: survey of OFSTED inspection of ITT 1994-1999*, UCET Research Paper no. 1. London: Universities Council for the Education of Teachers.
- Grant, T., Hiebert, J. and Wearne, D. (1998) 'Observing and teaching reform-minded lessons: What do teachers see?' *Journal of Mathematics Teacher Education* 1, pp. 217-236.
- Green, S. and Ollerton, M. (1999) 'Mathematical Anxiety amongst Primary QTS Students.' *Proceedings of the British Society for Research into Learning Mathematics*, (June). Lancaster.
- Greeno, J. G. (1998a). 'The situativity of knowing, learning and research.' *American Psychologist* (January), pp. 5-26.
- Greeno, J. G. (1998b) 'Trajectories of participation and practice: Some dynamic aspects of the thinking practices of teaching, educational design, and research.' In J. G. Greeno and S. V. Goldman (Eds.), *Thinking practices in mathematics and science learning* (pp. 79-88). Mahwah, NJ: Lawrence Erlbaum Associates.
- Griffiths, M. and Tann, S. (1992) 'Using reflective practice to link personal and public theories.' *Journal of Education for Teaching* 18(1), pp. 69-84.
- Grossman, P., Wilson, S. and Shulman, L. (1989) 'Teachers of substance: subject matter knowledge for teaching.' In M. Reynolds (Ed.), *Knowledge Base for the Beginning Teacher* (pp. 23-36). Oxford: Pergamon.
- Habermas, J. (1973) *Theory and Practice*. Trans J. Viertel. Boston, Mass: Beacon Press.

- Haggarty, L. (1995) *New ideas for teacher education: a mathematics framework*. London: Cassell.
- Halai, A. (1998) 'Mentor, Mentee and Mathematics: A story of professional development.' *Journal of Mathematics Teacher Education*, 1(3), pp. 295-315.
- Halpin, D., Croll, P. and Redman, K. (1990) 'Teachers' perceptions of the effects of in-service education.' *British Educational Research Journal*, 16(2), pp. 163-177.
- Hammersley, M. (1997) 'Educational research and teaching: a response to David Hargreaves' TTA lecture.' *British Educational Research Journal*, 23(2), pp. 141-61.
- Hammersley, M. (2001) 'On systematic reviews of literatures: a 'narrative' response to Evans.' *British Educational Research Journal*, 27(5), pp. 543 – 554.
- Hanley, U. and Brown, T. (1996) 'Building a professional discourse of mathematics teaching within initial training courses.' *Research in Education*, 55, pp. 39-48.
- Hanley, U. and Brown, T. (1999) 'The initiation into the discourses of mathematics education.' *Mathematics Education Review*, Feb, pp. 1-15.
- Hannan, A. (1995) 'The case for school-led Primary Teacher Training.' *Journal of Education for Teaching*, 21(1), pp. 25-35.
- Harel, G. (1994) 'On teacher education programmes in mathematics.' *International Journal of Mathematical Education in Science and Technology*, 25, pp. 113-119.
- Hargreaves, D. (1996a) *Teaching as a research-based profession: possibilities and prospects*. London: Teacher Training Agency Annual Lecture 1996. (London, TTA).
- Hargreaves, D. (1996b) 'Educational Research and Evidence-based Educational Practice: a response to critics.' *Research Intelligence*, 58, pp. 12-16.
- Hargreaves, D. (1997) 'In defence of research for evidence-based teaching: a rejoinder to Martyn Hammersley.' *British Educational Research Journal*, 23(4), pp. 405-19.
- Harland, J. and Kinder, K. (1992) *Mathematics and Science Courses for Primary Teachers*. Slough: NFER.
- Harland, J., Kinder, K. and Keys, W. (1993) *Restructuring INSET: privatization and its alternatives*. Slough: NFER.
- Harris, S., Keys, W. and Fernandes, C. (1997) *Third International Mathematics and Science Study: Second National Report Part 1*. Slough: NFER.
- Hatch G. and Shiu C. (1997) 'Teachers' Research through their own Mathematical Learning.' In V. Zack, J. Mouseley and C. Breen (Eds.) *Developing Practice: Teachers' inquiry and educational change* (pp. 159-168). Geelong: Deakin University,

*Developing Mathematics Teaching and Teachers*

- Hatch G. and Shiu C. (1998) 'Practitioner Research and the Construction of Knowledge in Mathematics Education.' In A. Sierpiska and J. Kilpatrick *Mathematics Education as a Research domain: A Search for Identity* (pp. 297-315). Dordrecht, The Netherlands: Kluwer.
- Hatton, N. and Smith, D. (1995) 'Reflection in Teacher Education: Towards Definition and Implementation.' *Teaching and Teacher Education* 11(1), pp. 33-49.
- Heaton, R. M. and Mickelson, W. T. (2002) 'The Learning and Teaching of Statistical Investigation in Teaching and Teacher Education'. *Journal of Mathematics Teacher Education* 5(1), pp. 7-34.
- Hewitt, D. (1992) 'Train Spotter's Paradise.' *Mathematics Teaching*, 140, pp. 6-8.
- Hextall, I., Mahony, P. and Menter, I. (2001) 'Just testing?: An analysis of the implementation of 'skills tests' for entry into the teaching profession in England.' *Journal of Education for Teaching* 27(3), pp. 221-239.
- HMI (1982) *The New Teacher in School*. London: HMSO.
- HMI (1983) *Teaching in Schools: The Content of Initial Teacher Training*. London: DES.
- HMI (1987) *Quality in Schools: The Initial Training of Teachers*. London: DES.
- HMI (1988a) *The New Teacher in School: A survey by HM Inspectors in England and Wales 1987*. London: HMSO.
- HMI (1988b) *Initial Teacher Training in Universities in England, Northern Ireland and Wales*. London: HMSO.
- HMI (1991a) *The Professional Training of Primary School Teachers*. London: HMSO.
- HMI (1991b) *School-based Initial Teacher training in England and Wales: A Report by HM Inspectorate*. London: HMSO.
- HMI (1993) *The secondary PGCE in universities 1991-1992*. London: HMSO.
- HMI (2002) *Chief Inspector's Annual Report 2000/2001*. London: Stationary Office.
- Hollingsworth, S. (1988) 'Making field-based programs work: a three level approach to reading education.' *Journal of Teacher Education* 39(4), pp. 224-50.
- Holyoake, J. (1993) 'Initial Teacher Training - the French View.' *Journal of Education for Teaching*, 19(2), pp. 215-26.
- Howson, J (2002) 'Newcomers are doing even better.' *Times Educational Supplement*, March 15<sup>th</sup>.
- Hoyles, C., Morgan, C. and Woodhouse (1999) *Rethinking the Mathematics Curriculum*. London: Falmer
- <http://www.leeds.ac.uk/educol/documents/00001646.htm> (accessed 10.06.02)

## References

- Jacobi, M. (1991) 'Mentoring and Undergraduate Academic Success: A literature review.' *Review of Educational Research*, 61(4), pp. 505-32.
- Jacobson, L., Edwards, A., Grainier, S. and Butler, C. (1997) 'Evidence-based medicine and general practice.' *British Journal of General Practice*, 47, pp. 449-52.
- Japan Society of Mathematical Education (2000). *School mathematics in Japan*. Paper presented at the 9th International Congress on Mathematics Education (ICME 9), Tokyo, Japan.
- Jaworski, B. (1987) *Use of video for teacher in-service education*. Proceedings of Eleventh PME Conference: Montreal.
- Jaworski, B. (1990) 'Video as a tool for teachers' professional development.' *British Journal of In-service Education* 16(1), pp. 60-65.
- Jaworski, B. (1991) 'Develop your Teaching.' *Mathematics in School* 20(1), pp. 18-21.
- Jaworski, B. (1994) *Investigating mathematics teaching: A constructivist enquiry*. London: Falmer Press.
- Jaworski, B. (1998) 'Mathematics teacher research: Process practice and the development of teaching.' *Journal of Mathematics Teacher Education*, 1(1), pp. 3-31.
- Jaworski, B. (1999a) 'The plurality of knowledge growth in mathematics teaching.' In B. Jaworski, T. Wood and A. J. Dawson (Eds.), *Mathematics teacher education: Critical international perspectives*. London: Falmer Press.
- Jaworski, B. (1999b) 'What does it mean to promote development in teaching?' In O. Zaslavsky (Ed.), *Proceedings of the 23<sup>rd</sup> Conference of the International Group for the Psychology of Mathematics Education*, Vol. 1 (pp. 185-193). Haifa, Israel: Israel Institute of Technology.
- Jaworski, B. (2000a) 'Developing Mathematics Teaching: Teachers, Teacher-Educators, and Researchers as Co-Learners.' In F-L. Lin and T. J. Cooney (Eds.), *Making Sense of Mathematics Teacher Education*. Dordrecht, The Netherlands: Kluwer.
- Jaworski, B. (2000b) 'Social Constructivism, Social Practice Theory and Sociocultural Theory: Relevance and Rationalisations in Mathematics Education. Detail, Reflection and Synthesis.' *Nordic Studies in Mathematics Education (NOMAD)* 8(3), pp. 73-110.
- Jaworski, B. and Kleve, B. (2000) (Guest Eds.) *Nordic Studies in Mathematics Education (NOMAD)*, 8(3).
- Jaworski, B. and Watson A. (2001) *Mathematics Curriculum Handbook*. Oxford: Oxford University Department of Educational Studies.
- Jaworski, B. and Watson, A. (Eds.) (1994) *Mentoring in Mathematics Teaching*. London: Falmer Press.
- Jaworski, B., Wood, T. and Dawson, S. (1999) *Mathematics teacher education: Critical international perspectives*. London: Falmer Press.



*Developing Mathematics Teaching and Teachers*

- Johnson, D. C. and Millett, A. (Eds.) (1996) *Implementing the mathematics National Curriculum: Policy, politics and practice*. London: Paul Chapman Publishing Ltd.
- Jones (1997) 'Some lessons in mathematics: a comparison of mathematics teaching in Japan and America.' *Mathematics teaching*, 159, pp. 38-41.
- Jones, K. and Sinkinson, A. (2000) 'A critical analysis of OFSTED judgements of the quality of secondary mathematics initial teacher education courses.' *Evaluation and Research in Education*, 14(2), pp. 79-93.
- Jones, L., Reid, D. and Bevins, S. (1997) 'Teachers' Perceptions of Mentoring in a Collaborative model of Initial Teacher Training.' *Journal of Teacher Education*, 23(3), pp. 253-261.
- Jones, M. (2001) 'Mentors' perceptions of their roles in school-based teacher training in England and Germany.' *Journal of Teacher Education*, 27(1), pp. 86-94.
- Khun, T. (1962) *The structure of Scientific Revolutions (3rd Edition)*. London: University of Chicago Press.
- Kieran, C., Forman, E. and Sfard, A. (2001) 'Bridging the Individual and the Social: Discursive Approaches to Research in Mathematics Education. A PME Special Issue.' *Educational Studies in Mathematics*, 46, pp. 1-3.
- Krainer, K. (1993) 'Understanding students' understanding: On the importance of co-operation between teachers and researchers.' In P. Boero (Ed.), *Proceedings of the 3rd Bratislava International Symposium on Mathematical Teacher Education*. Comenius University: Bratislava.
- Krainer, K. (1999) 'Promoting reflection and networking as an intervention strategy in professional development programmes for mathematics teachers and mathematics teacher educators.' In O. Zaslavsky (Ed.), *Proceedings of the 23<sup>rd</sup> Conference of the International Group for the Psychology of Mathematics Education Vol. 1* (pp. 159-168). Haifa, Israel: Israel Institute of Technology.
- Krainer, K., Goffree, F. and Berger, P. (Eds.) (1999) 'European Research in Mathematics Education, I.III: On Research in Mathematics Teacher Education.' *Proceedings of the First Conference of the European Society in Mathematics Education*, Vol III. Osnabrück.
- Lacey, C. (1977) *The Socialisation of Teachers*. London: Methuen.
- Lakatos, I. (1976) *Proofs and Refutations*. Cambridge: Cambridge University Press
- Lampert, M. (1988) 'What can research on teacher education tell us about improving quality in mathematics education?' *Teaching and Teacher Education* 4(2), pp. 157-170.
- Lampert, M. (1998) 'Studying teaching as a thinking practice.' In J. G. Greeno and S. V. Goldman (Eds.), *Thinking practices in mathematics and science learning* (pp. 53-78). Mahwah, NJ: Lawrence Erlbaum Associates.

## References

- Lave J. (1993) 'The practice of learning.' In S. Chaiklin and J. Lave (Eds.) *Understanding practice; perspectives on – and in – context*. Cambridge: Cambridge University Press.
- Lave, J. (1988) *Cognition in Practice: Mind, Mathematics and Culture in Everyday Life*. Cambridge, MA: Cambridge University Press.
- Lave, J. (1993) 'The Practice of Learning.' In S. Chaiklin and J. Lave (Eds.), *Understanding Practice: Perspectives on Activity and Context*. Cambridge: Cambridge University Press.
- Lave, J. (1996) 'Teaching as Learning, in Practice.' *Mind Culture and Activity*, 3(3), pp. 149-164.
- Lave, J. and Wenger, E. (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge, MA: Cambridge University Press.
- Leat, D. (1995) 'The costs of reflection in Initial Teacher Education.' *Cambridge Journal of Education*, 25(2), pp. 161-174.
- Leinhardt, G. and Smith, D. (1985) 'Expertise in Mathematics instruction: subject matter knowledge.' *Journal of Educational Psychology*, 77(3), pp. 247-271.
- Lerman, S. (1986) *Alternative views of the nature of mathematics and their possible influence on the teaching of mathematics*. Unpublished PhD dissertation: King's College, London.
- Lerman, S. (1989) 'Investigations: Where to Now?', in Ernest P. (Ed.) *Mathematics Teaching: The State of the Art*. London: Falmer Press.
- Lerman, S. (1990) 'Alternative perspectives of the nature of mathematics and their influence on the teaching of mathematics.' *British Educational Research Journal*, 16(1), pp. 53-61.
- Lerman, S. (1996) 'Intersubjectivity in Mathematics Learning: A Challenge to the Radical Constructivist Paradigm?' *Journal for Research in Mathematics Education*, 27(2), pp. 133-150.
- Lerman, S. (2000) 'Some Problems of Socio-Cultural Research in Mathematics Teaching and Learning.' *Nordisk Matematic Didactic (NOMAD)*, 8(3), pp. 55-72.
- Lerman, S. (2001) 'Cultural and Discursive Psychology: A Sociocultural Approach to Studying the Teaching and Learning of Mathematics.' *Educational Studies in Mathematics* 46, pp. 1-3.
- Lin, F-L. and Cooney, T. (2001) *Making Sense of Mathematics Teacher Education*. The Netherlands: Kluwer
- Linehan, C. and McCarthy, J. (2001) 'Reviewing the "Community of Practice" Metaphor: An Analysis of Control Relations in a Primary Classroom'. *Mind, Culture and Activity*, 8 (2) pp. 129-147

*Developing Mathematics Teaching and Teachers*

- Lipman, M., Sharp, A. M. and Oscanyan, F. S. (1980) *Philosophy in the classroom*. Philadelphia: Temple University Press.
- Liston, D. and Zeichner, K. (1990) 'Reflective Teaching and action research in pre-service teacher education.' *Journal of Education for Teaching*, 16, pp. 235-254.
- Lortie, D. (1975) *School Teacher*. University of Chicago Press: Chicago.
- Love, E. (1988) 'Evaluating mathematical activity.' In D. Pimm (Ed.), *Mathematics, Teachers and Children*. London: Hodder and Stoughton.
- Love, E. and Shiu, C. M. (1991a) Criteria and Meaning in Teacher Assessment of Mathematics. In *Proceedings of the ICMI Study Conference on Assessment in Mathematics Education and its Effects*. Calonge.
- Love, E. and Shiu, C. M. (1991b) 'Pupils' Perceptions of Assessment Criteria in an Innovative Mathematics Project.' In F. Furinghetti (Ed.) *Proceedings of the 15<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education*, Vol. 2. Italy, Assisi, pp 350-357
- Ma, L. (1999) *Knowing and teaching mathematics: teachers understanding of fundamental mathematics in China and the United States*. Mahwah, NJ: Lawrence Erlbaum.
- Mahony, P. and Hextall, I. (2000) *Reconstructing Teaching*. London: RoutledgeFalmer.
- Mason, J. (2001) *Researching Your Own Classroom Practice: From Noticing to Reflection*. London: Routledge
- Mason, J., Burton, L. and Stacey, K. (1982) *Thinking mathematically*. London: Addison-Wesley.
- Mason, J., Davis, J. and Graham, A. (1990) *Supporting Primary Mathematics*. Milton Keynes: Open University.
- Mathematical Association (1991) *Develop your Teaching*. Cheltenham, UK: Stanley Thornes.
- Maynard, T. (2000) 'Learning to teach or learning to manage mentors? Experiences of school-based teacher training.' *Mentoring and Tutoring*, 8(1), pp. 17-30.
- McEwan, H. and Bull, B. (1991) 'The pedagogic nature of subject matter knowledge'. *American Educational Research Journal* 28, pp. 316-334.
- McIntyre, D. (1990a) 'Ideas and principles guiding the internship scheme.' In P. Benton (Ed.), *The Oxford Internship Scheme: Integration and partnership in Initial Teacher Education*. London: Calouste Gulbenkian Foundation.
- McIntyre, D. (1990b) 'The Oxford Internship Scheme and the Cambridge Analytical Framework: Models of partnership in Initial Teacher Education.' In M. Booth, J. Furlong and M. Wilkin (Eds.), *Partnership in Initial Teacher Training* (pp. 110-127). London: Cassell.

## References

- McIntyre, D. (1993) 'Theory, Theorizing and Reflection in Initial Teacher Education.' In J. Calderhead and P. Gates (Eds.), *Conceptualising Reflection in Teacher Development* (pp. 39-52). London, Falmer.
- McIntyre, D. I. (1995) 'Initial teacher education as practical theorising: a response to Paul Hirst.' *British Journal of Educational Studies* 43(4), pp. 365-383.
- McIntyre, D., Hagger, H. and Wilkin, M. (Eds.) (1993) *Mentoring: Perspectives on School-based Teacher Education*. London: Kogan Page.
- McLaughlin, T. (1994). Mentoring and the demands of reflection. In M. Wilkin and D. Sankey (Eds.), *Collaboration and transition in initial teacher training* (pp. 151-160). London: Kogan Page.
- McNally, J., Cope, P., Inglis, B. and Stronach, I. (1994) 'Current realities in the student teaching experience: a preliminary enquiry.' *Teaching and Teacher Education*, 10(2), pp. 219-30.
- McNamara, D. (1990) 'Research on teachers' thinking: its contribution to educating student-teachers to think critically.' *Journal of Education for teaching*, 16(2), pp. 147-60.
- McNamara, D. (1991) 'Subject knowledge and its application: problems and possibilities for teacher educators.' *Journal of Education for Teaching*, 17(2), pp. 113-128.
- McNamara, O. (2002) 'Evidence-based practice through practice-based evidence.' In O. McNamara (Ed.), *Becoming an Evidence-based Practitioner*. London: RoutledgeFalmer.
- McNamara, O. (Ed) (2002) *Becoming an Evidence-Based Practitioner*. London: RoutledgeFalmer.
- McNamara, O. and Corbin, B. (2001) 'Warranting Practices: Teachers Embedding the National Numeracy Strategy.' *British Journal of Educational Studies*, 49(3), pp. 260-284.
- McNamara, O., Roberts, L., Basit, T. N. and Brown, T. (2002, forthcoming) 'Rites of Passage in Initial Teacher Training: Ritual, Performance, Ordeal and Numeracy Skills Tests.' *British Journal of Educational Research* 28(6)
- McNiff, J. (1988) *Action research: Principles and practice*. London: Macmillan.
- Melrose, J. (1982) 'The Mathematical Association diploma research project. Part 1.' *Mathematics in School*, 11(5), pp. 42-43.
- Melrose, J. (1983) 'The Mathematical Association diploma research project. Part 2.' *Mathematics in School*, 12(1), pp. 5-8.
- Meredith, A. (1993) 'Knowledge for teaching mathematics: some student teachers' views.' *Journal of Education for Teaching*, 19 (3), pp. 325-338.
- Meredith, A. (1995) 'Terry's learning: some limitations of Shulman's pedagogical content knowledge.' *Cambridge Journal of Education*, 25(2), pp. 175-187.

*Developing Mathematics Teaching and Teachers*

- Miller, K. and Baker, D. (2001) 'Mathematics and science as social practices: investigating primary student teacher responses to a critical epistemology.' *Ways of Knowing Journal*, 1(1), pp. 39-46.
- Millett, A. (1996) *Using and Applying Mathematics: innovation and change in a primary school*. Unpublished PhD thesis, School of Education, King's College London.
- Millett, A. and Johnson, D. C (1996) 'Solving teachers' problems? The role of the commercial mathematics scheme.' In D. C. Johnson and A. Millet (Eds.), *Implementing the Mathematics National Curriculum: Policy, politics and practice (New BERA dialogues series, 1)* (pp. 54-70.). London: Paul Chapman Publishing Ltd.
- Millett, A. and Johnson, D. C. (2000) 'The role of the maths co-ordinator and the National Numeracy Strategy in England.' *Teacher Development*, 4(3), pp. 393-410.
- Morgan, C. (1998) *Writing Mathematically: The Discourse of Investigation*. London: Falmer Press
- Morgan, C. and Jones, K. (2001) 'Research in Mathematics Education: Some Emerging Influences.' In C. Morgan and K. Jones (Eds.), *Research in Mathematics Education Volume 3. Papers of the British Society for Research in Learning Mathematics*. London: BSRLM.
- Nardi, E. (1996) 'The Novice Mathematician's Encounter with Mathematical Abstraction: Tensions in Concept-Image Construction and Formulation.' Unpublished D. Phil. Thesis. Oxford: University of Oxford.
- Nias, J., Southworth, G. and Yeomans, R. (1989) *Staff relationships in the primary school: A study of Organisational cultures*. London: Cassell.
- Nichol, J. (1993) 'The Exeter School-based PGCE: an alternative initial teacher training model.' *Journal of Education for Teaching*, 19(3), pp. 303-323.
- Nolder, R. and Tytherleigh, B. (1990) 'R2MC: A Springboard to Curriculum Change.' *British Journal of In-service Education*, 16(1), pp. 14-22.
- Norris, N. (1996) 'Professor Hargreaves, the TTA and Evidence-based Practice.' *Research Intelligence*, 57, pp. 2-4.
- Nuffield Foundation (1967) *I do and I Understand*. London: Chambers and Murray.
- Nuffield Foundation (1973) *Guide to the Guides*. London: Chambers and Murray.
- Oakley, A. (2001) 'Making evidence-based practice educational: a rejoinder to John Elliott.' *British Educational Research Journal*, 27(5), pp. 575-576.
- OERI (Office of Educational Research and Improvement, US Department of Education) (1997) *Attaining Excellence: A TIMSS Resource Kit*. Washington DC: US Department of Education, Office of Educational Research and Improvement.
- OFSTED (1993) *The New Teacher in School: A survey by HM inspectors in England and Wales 1992*. London: HMSO.

- OFSTED (1993a) *The Articled Teacher Scheme*. London: HMSO.
- OFSTED (1993b) *The Licensed Teacher Scheme*. London: HMSO.
- OFSTED (1994) *Science and Mathematics in Schools: a review*. London: OFSTED.
- OFSTED (1995a) *School-Centred Initial Teacher Training*. London: OFSTED.
- OFSTED (1995b) *Partnership: Schools and Higher Education in Partnership in Secondary Initial Teacher Training*. London: OFSTED.
- OFSTED (1998) *The National Numeracy Project: an HMI evaluation*. London: OFSTED.
- OFSTED (2000) *The National Numeracy Strategy: An interim evaluation by HMI*. London: OFSTED.
- Ollerton, M. (1990) 'Seeding, or Ways of Building Assessable tasks into Normal Course Activities.' *Mathematics Teaching* 132, pp. 32-34.
- Ollerton, M. and Hewitt, D. (1989) 'Teaching with the ATM GCSE: conversation'. *Mathematics Teaching* 127, pp. 24-26.
- Open University, (1990) (Videotape) *Working with Videotape of a Mathematics Classroom*. Milton Keynes: Centre for Mathematics Education.
- Othman, M. Y (1995) 'A pilot study into the teacher craft of three mathematics teachers and its relationship to learning in the classroom: methodological issues and indication for future research.' Unpublished MSc Dissertation. Oxford: University of Oxford.
- Othman, M. Y (2002) 'An investigation into the teacher craft of secondary school mathematics teachers.' Unpublished DPhil Thesis. Oxford: University of Oxford.
- Perks, P. and Prestage, S. (1994) 'Planning for learning.' In Jaworski, B. and Watson, A. (Eds.) *Mentoring in Mathematics Teaching* (pp. 65-82). London: Falmer Press
- Piaget, J. (1950) *The psychology of intelligence*. London: Routledge and Kegan Paul.
- Pinner, M. and Shuard, H. (1985) *In-service education in primary mathematics*. Buckingham: Open University Press.
- Pirie, S. (1987) 'Changing teaching styles: the development of a model for effective in-service courses.' In J. C. Bergeron, N. Herscovics, and C. Kieran (Eds.), *Proceedings of the Eleventh Annual Conference of the International Group for the Psychology of Mathematics Education* (pp. 128-134). Montreal.
- Pirrie, A. (2001) 'Evidence-based practice in education: the best medicine?' *British Journal of Educational Studies*, 29(2), pp. 124 –135.
- Polya, G. (1945) *How to solve it*. New Jersey: Princeton University Press.
- Postlethwaite, K and Haggarty, L (1998) 'Towards effective and transferable learning in secondary school: the development of an approach based on mastery learning.' *British Educational Research Journal*, 24(3), pp. 333-353.

*Developing Mathematics Teaching and Teachers*

- Prestage, S and Perks, P. (1999a) 'Towards a pedagogy of mathematics initial teacher education.' In L. Bills (Ed.), *Proceedings of the BSRLM Day Conference* held at Warwick University. Coventry: University of Warwick, pp. 91-96.
- Prestage, S. (1999) 'An exploration of teachers' mathematical subject knowledge.' Unpublished doctoral thesis. London: King's College, University of London.
- Prestage, S. and Perks, P. (1999b) 'Towards a Pedagogy of Teacher Education: a model and a methodology' MER11 Editorial. *Mathematics Education Review*, 11(Nov) pp. 1-5.
- Prestage, S. and Perks, P. (2000) 'Subject Knowledge: Developing the Fourth Sense.' Paper presented at the British Educational Research Association Conference, Cardiff University, September 2000
- Prestage, S. and Perks, P. (2001) 'Models and Super Models: Ways of Thinking about Professional Knowledge.' In C. Morgan and K. Jones (Eds.) *Research in Mathematics Education; Volume 3: Papers of the British Society for Research in to Learning Mathematics* (pp. 101-114). London: British Society for Research into Learning Mathematics.
- Price, M. (1994) *Mathematics for the Multitude? A History of the Mathematical Association*. Leicester: Mathematical Association.
- Pring, R. (2000) *Philosophy of Educational Research*. London: Continuum.
- Proctor, E. (2001) 'Relationships between mathematics knowledge, mathematics confidence and teaching ability.' Unpublished dissertation for the MSc in Applied Statistics. Sheffield: Sheffield Hallam University.
- Remillard, J. T. and Geist, P. K. (2002) 'Supporting Teachers' Professional Learning by Navigating Openings in the Curriculum.' *Journal of Mathematics Teacher Education* 5(1), pp. 7-34
- Reynolds, D. and Farrell, S. (1996) *Worlds Apart: A review of international surveys of educational achievement involving England*. London: OFSTED.
- Richardson, V. (1997) 'Constructivist teaching and teacher education: Theory and practice.' In V. Richardson (Ed.), *Constructivist teacher education: Building a new world of understandings* (pp. 3-14). London: Falmer Press.
- Ricoeur, P. (1981) *Hermeneutics and the Human Sciences*. Cambridge: Cambridge University Press.
- Rogoff, B. (1994) 'Developing Understanding of the Idea of Communities of Learners.' *Mind, Culture and Activity*, 1(4), pp. 209-229.
- Rogoff, B. (1995) 'Observing Sociocultural Activity on Three Planes: Participatory Appropriation, Guided Participation and Apprenticeship.' In J. V. Wertsch, P. del Rio, and A. Alvarez (Eds.) *Sociocultural Studies of Mind* (pp. 139-164). Cambridge: Cambridge University Press.

- Ross, D. (1989) 'First steps in developing a reflective approach.' *Journal of Teacher Education*, 40(1), pp. 22-30.
- Rowland, S. (1984) *The Enquiring Classroom*. London: Falmer Press.
- Rowland, T. (1988/revised 1994) *CAN in Suffolk - The Beginnings of a Calculator-Aware Number Curriculum in Three Suffolk Schools* Homerton Research Report series, Publication Unit, Homerton College, Cambridge.
- Rowland, T. (1999) 'Mathematics: all in the mind?' In J. Riley and R. Prentice (Eds.), *The Curriculum for 7-11 year olds* (pp. 165-182). London: Paul Chapman Publishing.
- Rowland, T., Martyn, S., Barber, P. and Heal, C. (2000) 'Primary teacher trainees' mathematics subject knowledge and classroom performance.' In T. Rowland and C. Morgan (Eds.), *Research in Mathematics Education Volume 2: Papers of the British Society for Research into Learning Mathematics* (pp. 3-18). London: British Society for Research into Learning Mathematics.
- Rowland, T., Martyn, S., Barber, P. and Heal, C. (2001) 'Investigating the mathematics subject matter knowledge of pre-service elementary school teachers.' In M. van den Heuvel-Panhuizen (Ed.), *Proceedings of the 23rd Conference of the International Group for the Psychology of Mathematics Education Vol 4* (pp. 121-128). Utrecht, The Netherlands: Freudenthal Institute, Utrecht University.
- Ruthven, K. (1999) 'Reconstructing professional judgement in mathematics education: From good practice to warranted practice.' In C. Hoyles, C. Morgan and G. Woodhouse (Eds.), *Rethinking the mathematics curriculum* (pp. 203-216). London: Falmer Press.
- Ruthven, K. (2001) 'Mathematics Teacher Education and Educational Research: Developing "Practical Theorising" in Initial Teacher Education.' In F. L. Lin and T. Cooney (Eds.), *Making Sense of Mathematics Teacher Education* (pp. 165-183). The Netherlands: Kluwer.
- Ruthven, K. (2001) 'Mathematics Teacher Education and Educational Research: Developing "Practical Theorising" in Initial Teacher Education.' In F-L. Lin and T. Cooney (Eds.) *Making Sense of Mathematics Teacher Education* (pp. 165-183). The Netherlands:Kluwer.
- Sanders, S. (1994) 'Mathematics and Mentoring.' In B. Jaworski and A. Watson (Eds.), *Mentoring in Mathematics Teaching* (pp. 29-40). London: Falmer Press
- SCDC (1986) *Primary Mathematics Project*. York: SCDC Information Centre.
- Schifter, D (2001) 'Learning to See the Invisible: What Skills and Knowledge are Needed to Engage with Students' Mathematical Ideas?' In T. Wood, B. Scott-Nelson and J. Warfield (Eds.), *Beyond Classical Pedagogy: Teaching Elementary School Mathematics*. Lawrence Erlbaum Associates.
- Schifter, D. (1998) 'Learning mathematics for teaching: From a teachers' seminar to the classroom.' *Journal of Mathematics Teacher Education*, 1, pp. 55-87.



*Developing Mathematics Teaching and Teachers*

- Schifter, D. and Fosnot, C. T. (1993) *Reconstructing mathematical education: Stories of teachers meeting the challenge of reform*. New York: Teachers College Press.
- Schoenfeld, A. (1996) 'In Fostering Communities of Inquiry, Must It Matter That The Teacher Knows the Answer?' *For the Learning of Mathematics*, 16(3), pp. 11-16.
- Schoenfeld, A. H. (1985) *Mathematical problem solving*. New York: Academic Press
- Schön D. A. (1987) *Educating the reflective practitioner*. Oxford: Jossey-Bass.
- Schön, D. (1983) *The Reflective Practitioner*. Temple Smith: London.
- Schön, D. (1987) *Educating the Reflective Practitioner*. Jossey Bass: London.
- Schwab, J. J. (1978) 'Education and the structure of the disciplines.' In I. Westbury and N. J. Wilkof (Eds.), *Science, Curriculum and Liberal Education* (pp. 229-272). Chicago: University of Chicago Press.
- Sebba, J. (1999) *Developing evidence-informed policy and practice in education*. Paper presented at the Annual Conference of the British Educational Research Association, Brighton.
- Selinger, M (1987) *Raising achievement in mathematics project (RAMP): A case study of an innovative in-service programme*. Unpublished MPhil thesis. Cambridge: University of Cambridge.
- Shuard, H., Walsh, A., Goodwin, J. and Worcester, V. (1991) *Calculators, Children and Mathematics*. London: Simon and Schuster.
- Shulman, L. S. (1986) 'Those who understand, Knowledge growth in teaching.' *Educational Researcher*, 15(2), pp. 4-14.
- Shulman, L. S. (1987) 'Knowledge and teaching: Foundations of the new reform.' *Harvard Educational Review*, 57(1), pp. 1-22.
- Simon, M. A. (1997) 'Developing new models of mathematics teaching: an imperative for research on mathematics teacher development.' In E. Fennema and B. S. Nelson (Eds.), *Mathematics teachers in transition* (pp. 55-86). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Simon, S. and Brown, M. (1996) 'Teacher beliefs and practices in primary mathematics.' In L. Puig and A. Guitierrez (Eds.), *Proceedings of 20th Conference of the International Group for the Psychology of Mathematics Education Vol. 1*, p. 200). Valencia: University of Valencia.
- Simon, S. and Brown, M. (1997) 'Teacher beliefs and practices in primary mathematics.' Paper presented at the Annual Conference of the British Educational Research Association, Lancaster.
- Sinkinson, A. and Jones, K. (2001) 'The validity and reliability of OFSTED judgements of the quality of secondary mathematics Initial Teacher Education courses.' *Cambridge Journal of Education*, 31(2), pp. 221-237.

## References

- Skemp, R. (1971) *The Psychology of Learning Mathematics*. London: Penguin Books
- Skemp, R. (1976) 'Relational understanding and instrumental understanding.' *Mathematics Teaching*, 77, pp. 20-26.
- Slavin, R. E. (1986) 'Best Evidence Synthesis: an alternative to meta-analytic and traditional reviews.' *Educational Researcher*, 15, pp. 5-11.
- Smith, D. (1991) 'Educating the Reflective Practitioner in Curriculum.' *Curriculum*, 12, pp. 115-124.
- Smith, J. (2001) 'The Influence of Mathematics Teachers on Student Teachers of Secondary Mathematics.' *Mathematics Education Review*, 13, pp. 22-40.
- Smith, R. (2000) *Connecting teacher beliefs and features of effective professional development: Reactions to professional development conducted over an extended period of time*. Paper presented at the The 9th International Congress on Mathematics Education (ICME 9), Tokyo, Japan.
- Sparks-Langer, G. and Colton, A. (1991) 'Synthesis of Research on Teachers' reflective thinking.' *Educational Leadership*, March, pp. 37-44.
- Spillane, J. P. (1999) 'External reform initiatives and teachers' efforts to reconstruct their practice: the mediating role of teachers' zones of enactment.' *Journal of Curriculum Studies*, 31(2), pp. 143-175.
- Splitter, L. J. and Sharp, A.M. (1995) *Teaching for better thinking*. Melbourne Australia: ACER.
- Steffe, L. (2000) 'Interaction or Intersubjectivity? A Reply to Lerman.' *Journal for Research in Mathematics Education*, 31(2), pp. 191-209.
- Steffe, L. P. (1977) *Constructivist models for children's learning in arithmetic*. Durham N. H.: Research workshop on learning models.
- Steffe, L. P. and Thompson, P. W. (2000) 'Interaction or Intersubjectivity? A Reply to Lerman.' *Journal for Research in Mathematics Education* 31(2), pp. 191-209.
- Steinberg, R., Haymore, J. and Marks, R. (1985) *Teachers' knowledge and structuring content in mathematics*. Paper presented at the annual meeting of the American Educational Research Association, Chicago.
- Stenhouse, L. (1984) 'Evaluating curriculum evaluation.' In C. Adelman (Ed.), *The politics and ethics of evaluation*. London: Croom Helm.
- Stigler, J. and Hiebert, J. (1997) 'Understanding and improving classroom mathematics instruction: an overview of the TIMSS video survey.' *Phi Delta Kappan*, (September), pp. 14-21.
- Stigler, J. and Hiebert, J. (1999) 'Understanding and Improving Classroom Mathematics Instruction: an overview of the TIMSS video Study.' In B. Jaworski and D. Phillips *Comparing Standards Internationally*. Oxford: Symposium Books.

*Developing Mathematics Teaching and Teachers*

- Stones, E. (1992) *Quality Teaching: a sample of cases*. London: Routledge.
- Su, C. (1992) 'Sources of Influence in Pre-service Teacher Socialization.' *Journal of Education for Teaching*, 18(3), pp. 239-257.
- Sutcliffe, D. (1991) 'Doing ATM/SEG GCSE.' *Mathematics Teaching* 134, pp. 39-41.
- Tabachnick, B. and Zeichner, K. (1986) 'Teacher Beliefs and classroom behaviours: some teacher responses to inconsistency.' In M. Ben-Peretz, J. Su (1992) 'Sources of influence in pre-service teacher socialization.' *Journal of Education for Teaching*, 18(3), pp. 239-258.
- Tamir, P. (1988) 'Subject matter and related pedagogical knowledge in teacher education.' *Teaching and Teacher Education*, 4(2), pp. 99-110.
- Tann, S. (1993) 'Eliciting Student Teachers' Personal Theories.' In J. Calderhead and P. Gates (Eds.), *Conceptualising Reflection in Teacher Development*. London: Falmer.
- Taylor, W. (2000) 'The Role of the providers.' In I. Reid (Ed.) *Improving Schools: the contribution of Teacher Education and Training: an account of the Joint UCET/HMI Symposium*, Edinburgh, December. (UCET, Occasional Paper)
- Thompson, A. (1984) 'The relationship of teachers' conceptions of mathematics teaching to instructional practice.' *Educational Studies in Mathematics*, 15, pp. 105-127.
- Thompson, A. (1992) 'Teachers' beliefs and conceptions: a synthesis of the research.' In A. D. Grouws (Ed.), *Handbook of Research on Mathematics Teaching and Learning* (pp. 127-146). New York: Macmillan.
- Threlfall, J. (2000) *Teacher perspectives on the credibility of different kinds of evidence*. Paper presented at the Annual Conference of the British Educational Research Association, Cardiff.
- Tickle, L. (1994) *The Induction of New Teachers: Reflective Professional Practice*. London: Cassell.
- TTA (1996) *Teaching as a Research-Based Profession*. London: Teacher Training Agency.
- TTA (1997a) *Career Entry Profile*. London: TTA.
- TTA (1997b) *Standards for the Award of Qualified Teacher Status*. London: TTA.
- TTA (1998) *National Standards for SENCOs, subject leaders and headteachers*. London: TTA.
- TTA (1999) *Improving Standards: Research and Evidence Based Practice*. London: TTA.
- TTA (2000) *QTS Skills Test in Numeracy, June and July 2000: National Results Summary for Initial Training Providers*. London: TTA.

- Turner-Bisset, R. (1999) 'The knowledge bases of the expert teacher'. *British Education Research Journal* 25(1) pp. 39-55.
- Tzur, R. (2001) 'Becoming a mathematics teacher educator: Conceptualising the terrain through self-reflective analysis.' *Journal of Mathematics Teacher Education* 4(4), pp. 259-283
- Van Manen, M. (1977) 'Linking Ways of Knowing with Ways of Being Practical.' *Curriculum Inquiry*, 6, pp. 205-228.
- Vygotsky, L. S. (1962) *Thought and Language*. Cambridge, Mass: M.I.T. Press.
- Vygotsky, L. S. (1978) *Mind in Society. The development of the higher psychological processes*. London: Harvard University Press.
- Watson, A. (1990) 'How can you tell when some mathematics is finished?' *Mathematics Teaching* 130, pp. 45-47.
- Watson, F. R. (1976) *Developments in Mathematics Teaching*. London: Open Books.
- Wells, G. (1999) *Dialogic Inquiry: Towards a Sociocultural Practice and Theory of Education*. Cambridge: Cambridge University Press.
- Wenger, E. (1998) *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.
- Wertsch, J. V. (1991) *Voices of the mind: A Sociocultural Approach to Mediated Action*. Cambridge, MA: Harvard University Press
- Whitburn, J. (1995) 'The Teaching of Mathematics in Japan: an English Perspective.' *Oxford Review of Education*, 21(3), pp. 347-360.
- Whitburn, J. (1996) 'Contrasting Approaches to the Acquisition of Mathematical Skills: Japan and England.' *Oxford Review of Education*, 22(4), pp. 415-434.
- White, J. (1989) 'Student Teaching as Rite of Passage.' *Anthropology and Educational Quarterly* 20 pp. 177-195.
- Whitehead, J. (1989) 'Creating a living educational theory from questions of the kind, 'How do I improve my practice?'' *Cambridge Journal of Education*, 19, pp. 41-52.
- William, D. (1999a) 'Formative assessment in mathematics Part 1: rich questioning'. *Equals: Mathematics and Special Educational Needs* 5(2), pp. 15-18.
- William, D. (1999b) 'formative assessment in mathematics Part 2: feedback'. *Equals: Mathematics and Special Educational Needs* 5(3), pp. 8-13.
- William, D. (2000) 'Formative assessment in mathematics Part 3: the learner's role'. *Equals: Mathematics and Special Educational Needs* 6(1), pp. 19-22.
- William, D. and Black, P. (1998) *Inside the Black Box: Raising Standards through Classroom Assessment*. London: School of Education, King's College London.

*Developing Mathematics Teaching and Teachers*

- William, D. and Lee, C. (2001) 'Teachers developing assessment for learning: impact on student achievement'. Paper presented at the 27<sup>th</sup> Annual Conference of the British Educational Research Association, University of Leeds.
- Wilson, J. (1975) *Education Theory and the Preparation of Teachers*. Windsor: NFER.
- Wilson, M. and Goldenberg, M. (1998) 'Some conceptions are difficult to change: One middle school mathematics teacher's struggle.' *Journal of Mathematics Teacher Education*, 1, pp. 269-293.
- Wilson, S., Floden, R. and Ferrini-Mundy, J. (2001) *Teacher Preparation Research: current knowledge, gaps, and recommendations*. Washington, WA: University of Washington, Center for the Study of Teaching and Policy.
- Wilson, S., Shulman, L. and Richert, A. (1987) '150 ways of knowing: representations of knowledge in teaching.' In J. Calderhead (Ed.), *Exploring Teachers' Thinking* (pp. 104-124). London: Cassell.
- Wood, T. (1999) 'Approaching teacher development: Practice into theory.' In B. Jaworski, T. Wood and S. Dawson (Eds.), *Mathematics teacher education: Critical international perspectives* (pp. 163 - 179). London: Falmer Press.
- Wood, T., Scott Nelson, B. and Warfield, J. (2001) *Beyond Classical Pedagogy: Teaching Elementary School Mathematics*. Mahwah, NJ: Lawrence Erlbaum.
- Woolf, S., Diguseppi, C., Atkins, D. and Kameror, D. (1996) 'Developing evidence-based clinical practice guidelines lessons learned by the preventive services task force.' *American Review of Public Health*, 17, pp. 511-538.
- Wragg, E., Bennett, S. and Carré, C. (1989) 'Primary Teachers and the National Curriculum.' *Research Papers in Education*, 4(3), pp. 17-45.
- Zack, V., Mousely, J. and Breen, C. (Eds.) (1997) *Developing practice: Teachers' inquiry and educational change in classrooms*. Geelong, Australia: Centre for Studies in Mathematics, Science and Environmental Education, Deakin University.
- Zaslavsky, O. and Leikin, R. (1999) 'Interweaving the training of mathematics teacher-educators and the professional development of mathematics teachers.' In O. Zaslavsky (Ed.), *Proceedings of the 23<sup>rd</sup> Conference of the International Group for the Psychology of Mathematics Education* (1, pp. 143-158). Haifa, Israel: Israel Institute of Technology.
- Zeichner, K. and Liston, D. (1987) 'Teaching Student Teachers to reflect.' *Harvard Educational Review*. 57(1), pp. 23-48.
- Zeichner, K., Tabachnick, B. and Densmore, K. (1987) 'Individual, institutional and cultural influences on the development of teachers' craft knowledge.' In J. Calderhead (Ed.), *Exploring Teachers' Thinking* (pp. 21-59). London: Cassell.