

Institution: University of Dundee
Unit of Assessment: 25 Education
Title of case study: Fife Peer Learning Project
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>This study focuses on a large-scale trial of peer tutoring in reading and mathematics in primary schools. The underpinning theoretical model, the classroom techniques employed and the resources used were all designed or modified by Topping, supported by his research team. The trial took place over a two-year period, with 129 primary schools in Fife. There is evidence of impact in terms of enhanced pupil achievement in reading and mathematics, changes to educational policy as the tutoring techniques were built into the local authority guidelines and changes to practice as schools within Fife continue to employ peer tutoring techniques.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>Internationally regarded research by Topping over many years (e.g. Topping, 2001, 2005) has increased understanding of peer tutoring, including psychological processes and classroom techniques. However, many studies in the field have tended to be small-scale and typically focused on cross-age tutoring, with little known about the relative effectiveness of tutoring one or two subjects. This case study specifically addressed these limitations.</p> <p>Research and development work was undertaken in 2006-8, funded by an ESRC Knowledge Exchange Grant of £370,700 awarded to the Universities of Dundee (2/3) and Durham (1/3) in collaboration with Fife Council and led by Keith Topping (Professor of Social Research at Dundee) and Professor Peter Tymms (Durham). The Dundee team included Thurston and Miller (both senior lecturers at that time) who led on reading and maths respectively and two research assistants, responsible for tutoring implementation.</p> <p>A two-year randomised controlled trial (RCT) was conducted for pupils aged nine and twelve years in reading and mathematics, in 129 primary schools in Fife. The specific tutoring techniques used with pupils were Paired Reading and Duolog Math. All participating teachers were given initial training and additional support upon request. A theoretical model of peer tutoring, developed by Topping, was used to guide on-going support given to teachers during the project. The effectiveness of the implementation process was an additional aspect of the research. Evaluation of outcomes included a variety of reading and mathematics tests and direct observation of the implementation process.</p> <p>The research demonstrated that on long-term evaluation, cross-age tutoring was significantly better than regular teaching, but same-age tutoring was not. However on short-term evaluation, pupils did significantly better than control pupils in both years, and cross-age and same-age were similarly effective. Pupils from low socio-economic background, with lower reading ability and girls did significantly better. Those who gave and received both reading and maths tutoring showed additional gains, suggesting an additive effect. Light tutoring (one session per week) did as well as intensive tutoring (three sessions per week) suggesting considerable implications for cost-effectiveness. Implementation was good in parts, but some important aspects of technique were rare. Significant gains in self-esteem were seen in same-age and cross-age groups and for tutors and tutees, but not for controls. In reading, gains were significantly greater for those with mistakes about every two minutes (not more or less) and those who stopped reading to talk about every five–seven minutes.</p> <p>In policy terms it is evident that cross-age peer tutoring in reading and mathematics is effective in the long term for both tutors and tutees. Schools can be recommended to implement this as part of their curriculum, particularly for pupils of low socio-economic status and low ability. Same-age tutoring showed short-term benefits but might be more risky, although easier to implement.</p>

In practice terms, in addition to the above, light tutoring can be recommended. Teachers will wish to manage self-esteem carefully in such projects. The additive effects of reading plus maths tutoring need to be balanced against the curriculum displacement cost of implementing both.

3. References to the research (indicative maximum of six references)

Research outputs

Outputs that preceded the RCT and that illustrate the quality of previous work which informed the design and processes of the RCT.

- i. Topping, K. J. (2001). *Thinking reading writing: A practical guide to paired learning with peers, parents & volunteers*. New York & London: Continuum International.
- ii. Topping, K. J. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631-645. (25th anniversary edition). Also in: K. Wheldall (Ed.) (2006) *Developments in educational psychology: How far have we come in 25 years?* London & New York: RoutledgeFalmer.

Papers which further illustrate the quality of the research, and also provide quantitative evidence of impact on children's learning from the trial, include the following.

- iii. Miller, D. J., Topping, K. J. & Thurston, A. (2010). Peer tutoring in reading: The effects of role and organization on two dimensions of self-esteem. *British Journal of Educational Psychology*, 80(3), 417-433.
- iv. Topping, K. J., Miller, D. J., Murray, P., Henderson, S., Fortuna, C. & Conlin, N. (2011). Outcomes in a randomized controlled trial of mathematics tutoring. *Educational Research*, 53(1), 55-67
- v. Tymms, P., Merrell, C., Thurston, A., Andor, J., Topping, K. J. & Miller, D. J. (2011). Improving attainment across a whole district: Peer tutoring in a randomised controlled trial. *School Effectiveness and School Improvement*, 22(3), 265-289.
- vi. Topping, K. J., Thurston, A., McGavock, K. & Conlin, N. (2012). Outcomes and process in reading tutoring. *Educational Research*, 54(3), 239-258.

Research Grants

- The "Fife Peer Learning Project" was funded by the Economic and Social Research Council and Fife Council under a Knowledge Exchange grant managed by the Department of Trade and Industry in the total amount of £370,700 (awarded 2/3 to Dundee and 1/3 to Durham) over two years. The purpose of these KE grants is to transfer existing knowledge into wider implementation in community settings.
- Since the completion of the Fife Peer Learning Project, Topping has been involved in three other grant awards for projects which build upon this work. The first two use adaptations of the same materials.
 - One is a further RCT of peer tutoring in maths involving 487 pupils in 20 schools over 16 weeks led by Thurston and Topping but based at the University of Durham Education Department (funding £65,000 from ESRC).
 - A further, larger RCT has been funded by the Educational Endowment Foundation at the University of Durham to extend the work in peer tutoring in maths, with 90 schools over a period of 3-4 years (funding £750,000). There will be an emphasis on sustainability and roll-out to further schools in the longer term (<http://www.sharedmaths.org>). Topping is a consultant for this project (the EEF does not fund projects in Scotland).
 - A third project, on peer coaching to enhance "Physical Activity and Wellbeing in Schools", is to operate in 60 secondary schools from the University of Durham. Funding is £462,746 from ESRC. Topping is chair of the Advisory Group. The project website is under development.

Much of this work led to Topping receiving the "Outstanding Contribution to Cooperative Learning Award" from the American Educational Research Association in 2011.

4. Details of the impact (indicative maximum 750 words)

Learning outcomes from the project were evaluated in a variety of ways, including standardised reading attainment tests, criterion-referenced tests of mathematical problem solving, and nationally-recognised PIPS assessments (Performance Indicators in Primary Schools, University of Durham Centre for Evaluation and Monitoring). In addition, self-esteem was measured using standardised instruments and implementation quality was investigated through direct observation. This comprehensive evaluation process provided clear evidence of the impact of the intervention at different levels.

Impact at the classroom level: cognitive and non-cognitive gains for primary school pupils and improved knowledge and expertise for teachers [see Section 5 below, sources 1,4,7]

During the project, 129 schools, 324 class teachers and 8847 pupils participated. Children benefited from significant learning gains in reading (see paper [vi] in section 3 above), in mathematics (paper [iv] above) and in self-esteem (paper [iii] above). Teachers were up-skilled in terms of increased knowledge and confidence in the techniques. In relation to continuity, since the project ended, the local authority policy guidelines require that schools continue to employ peer tutoring techniques, in light of the research results. Results were disseminated to schools, principally in the form of a newsletter giving the basic details, although the full papers are available on request. Additional workshops and meetings have been held since the end of the project, with teachers and head-teachers of primary and secondary schools, to reinforce the main findings and encourage wider development of the study ideas. These have been informed by lessons learned about implementation (see paper [vi]). An example of wider impact on practitioners is the fact that Topping was invited by Times Educational Supplement online 'Resources Pro' to be involved in a section on peer tutoring. His own section has received over 6000 visits, with – significantly – almost 1500 downloads of practical resources to date. (TES issues weekly hit statistics which could be made available.)

Impact in terms of changes to educational policy and practice [Section 5 below, sources 2,3,6,7]

The fact that this was an authority-wide trial allowed judgements to be made about the viability of rolling out such a programme across a whole district. Previous evidence had pointed to problems with large-scale top-down reforms designed to improve pupil attainment, with expensive policy initiatives often having little impact (e.g., Tymms & Merrell, 2007). However, in this case, there was evidence of impact at the whole-district level (see paper [v] in section 3). As a consequence of the findings, the peer tutoring techniques were built into the Fife Development Plan and all schools within Fife have continued to implement tutoring. This is monitored by the local authority, with all schools required to explain how they are continuing to address these issues. Since the project, it is estimated that at least 130 schools, 250 teachers and 6750 pupils participate in each successive year, paying attention to the results and recommendations of the project. Following this work, Topping was engaged as a private consultant by the Scottish Government on a related research project in literacy (details on request) which will lead to changes in policy as well as practice in all local authorities in Scotland.

Wider impact upon professional debate and public opinion [Section 5 below, sources 5, 9,10]

The work has attracted significant professional and public attention. For example, the National College for School Leadership in England published a paper summarising the research and arranged a 'hotseat' webinar between key members of the research team and 99 head teachers interested in developing similar projects. This was followed up by an online discussion with further interested parties. There were 823 page views for the hotseat discussion and the recording on the

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website has been downloaded 245 times. Greater professional and public understanding of peer tutoring techniques and their effectiveness has been demonstrated through feedback at dissemination and follow-up activities. The Fife project has been reported to the whole of Scotland at a practitioner-oriented Learning and Teaching Scotland conference (Glasgow, 15-17 April, 2009). The media have reported the project extensively, focusing on results and recommendations and emphasising cost-effectiveness of the method. In addition to coverage on at least two occasions by the Times Educational Supplement, in 2008 and 2011, there has also been coverage across the UK and internationally by the Daily Telegraph, the Guardian, the Sunday Express, the Daily Herald, the Scotsman, the Sud-Deutsche Zeitung, Radio 5 live and Scottish Independent Television. Many of these reports are available if requested.

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. An overview of the Fife Peer Learning project can be accessed here: <http://www.cemcentre.org/fife/project>
2. The Education Officer responsible for the project within Fife is available to report on the trial and its impact on policy and practice.
3. Fife Council (2010). *Educational development plan*. Dunfermline: Fife Council. (available on request)
4. One participating teacher described her experiences and cites evidence from her own research project in a blog (<http://www.guardian.co.uk/teacher-network/2011/sep/22/reading-peer-tutoring-teaching-resources>)
5. The National College for School Leadership website (<https://www.nationalcollege.org.uk>)(login required: pdf available on request).
6. Corroboration of influence on national policy making may be obtained from the Literacy Policy Lead, Scottish Government.
7. Primary Class Teacher, Kettle Primary School can provide corroboration from a school involved in the Fife trial.
8. Example of school from neighbouring authority which has developed peer tutoring since the trial: (contact Secondary/Literacy Support Teacher, Craigie High School)
9. Coverage in Times Educational Supplement, in 2008 (<http://www.tes.co.uk/article.aspx?storycode=2622984>)
10. Later coverage in Times Educational Supplement 2011 (<http://www.tes.co.uk/article.aspx?storycode=6078004>)