

Press Release from the National Council for Curriculum and Assessment

Thursday 29th November

Project Maths Research and Evaluation – three reports to be published on November 30th. For full text advance copies please contact researchers listed below.

Prof. Deborah Loewenberg Ball, Dean of the School of Education at the University of Michigan will launch three research reports about Project Maths in the Marino Institute of Education in Dublin at the end of a conference on teaching, learning and mathematics to be held at the Institute tomorrow.

This is the first set of research reports published about Project Maths, the ambitious reform of curriculum, assessment and teaching and learning in post-primary mathematics currently underway. A summary of each report and the relevant contact details is below.

Teaching and Learning in Project Maths: Insights From Teachers Who Participated in PISA 2012

Jude Cosgrove, Rachel Perkins, Gerry Shiel, Rosemary Fish, and Lasairiona McGuinness

A nationally representative sample of mathematics teachers took part in a survey implemented in Ireland by the **Educational Research Centre (ERC)** as part of PISA 2012 in March of this year. The survey sought information about teachers' views on Project Maths, particularly at junior cycle, as well as on teaching and learning more generally.

Main findings include the following:

1. Project Maths was at a transitional phase at the time of the ERC's survey (March 2012), and consistent with this, close to half of teachers (48%) indicated that they didn't know if Project Maths was having a positive impact on students' learning of mathematics. However, teachers indicated that there have been positive changes in a number of aspects of students' learning, including their understanding of statistics and probability, geometry and trigonometry, their ability to solve real-life problems, and to work collaboratively. Teachers cited time available, the phased nature of implementation at both junior and senior cycles, and the literacy demands of the new courses, as significant challenges in implementing the initiative.
2. Comparisons between the 23 schools that participated in the initial development phase of Project Maths and other schools indicated that (i) teachers in these 'initial' schools were using ICTs in their junior cycle classrooms to a significantly greater degree than teachers in other schools, (ii) small-group or collaborative learning strategies were employed more frequently in junior cycle classes in initial schools than in other schools, and (iii) teachers in initial schools perceived significantly greater improvements in some aspects of students' learning, including their grasp of fundamental concepts and principles, ability to work collaboratively, and explain how they solved problems.
3. The ERC's survey recorded large declines in the percentages of students studying mathematics at higher level between junior and senior cycle, from 49% in Third Year, to 32% in Fifth Year, and just 20% in Sixth Year. This shows that about one-third of students who study higher level mathematics initially in senior cycle end up studying it at a less challenging level. However, the report notes that the introduction of a bonus points scheme in 2012 has

resulted in an increase from 16% to 22% of students taking Leaving Certificate mathematics at higher level, while emphasising the need to maintain a focus on mathematics standards across all levels of achievement.

Full report and summary brochure available at www.erc.ie/pisa

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A Review of School Textbooks for Project Maths

Lisa O' Keeffe and John O' Donoghue

This study, conducted by the **National Centre for Excellence in Mathematics and Science Teaching and Learning**, at the University of Limerick, used an internationally recognised evaluation framework for mathematics textbooks to examine some of the early text books developed to support Project Maths in the year 2010/2011.

Main findings include the following:

1. These textbooks display a genuine attempt to match the intentions of Project Maths
2. No single text book met all the needs of Project Maths
3. All text-books included in the study fall short of what's needed to support Project Maths (intended curriculum) effectively
4. Overall, there seemed to be a mismatch between the textbook expectations and Project Maths expectations.

These findings were conveyed to the relevant education publishers in 2011 to inform the future development of text-books for Project Maths.

Report available at www.nce-mstl.ie

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Research into the impact of Project Maths on student achievement, learning and motivation; Interim Report

Jennifer Jeffes, Emily Jones, Rachel Cunningham, Anneka Dawson, Louise Cooper, Suzanne Straw,

Linda Sturman, Megan O'Kane

The **National Foundation for Educational Research (NFER)** in England, investigated the impact of Project Maths on student achievement, learning and motivation in:

- the initial post-primary schools (phase one schools), which introduced the revised mathematics syllabuses in September 2008
- post-primary schools (non-phase one schools), which introduced the revised mathematics syllabuses in September 2010

The following are the key findings arising from the first two elements of the research, drawing on the findings of an assessment of student achievement and survey of student attitudes, motivation and confidence, administered to Junior Certificate and Leaving Certificate students in Spring 2012.

1. Students at both Junior Certificate and Leaving Certificate appear to be performing well in many aspects of the revised syllabus, in particular statistics and probability.
2. Both phase one and comparison group students were highly positive about the mathematics teaching they had experienced.
3. Both groups of students were broadly confident in their abilities in topics spanning all strands of the revised syllabus. This was particularly notable in relation to Strand 1 (Statistics and Probability).
4. Both groups of students report that they are using many approaches promoted through the revised syllabus. However, a high proportion of students in the phase one schools also report that they regularly participate in activities associated with more traditional approaches to mathematics teaching and learning.
5. At both Junior Certificate and Leaving Certificate
 - a. there is no statistically significant difference between the performance of students in the phase one and non-phase one schools.
 - b. students find tasks requiring higher order skills (such as reasoning and an ability to transfer knowledge to new contexts) more difficult than tasks which are more mechanical in demand
6. While Irish students perform ahead of international comparisons in statistics and probability, the students struggle in relation to their international peers in items relating to algebra and calculus. At Leaving Certificate, even at higher level, the students struggled with items relating to strand 5 (functions).

Overall, the researchers conclude that, at this early stage, there is evidence that Project Maths is moving in the right direction but challenges remain. The research is ongoing and includes:

- attitude surveys and assessment of performance with a further cohort of Junior Certificate and Leaving Certificate students conducted in October 2012
- ongoing, in-depth case studies in eight phase one, and eight non-phase one schools: this includes further exploration of many of the specific issues arising from this phase of the research
- qualitative analysis of students' work in Autumn 2012, exploring the processes being promoted in the revised syllabus.

Full report available at www.ncca.ie/NFERreport

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Ends.