

An evaluation of a JUMP Math pilot programme in Ireland

**Eemer Eivers, Emer Delaney
and Seán Close**

Educational Research Centre

Contents

List of Acronyms and Abbreviations	iv
Acknowledgements	v
1. Introduction.....	1
Genesis of the project	1
Key features of JUMP Math	2
Research design	6
Nature of support provided to schools.....	8
2. Assessment methods.....	11
JUMP materials and the Irish curriculum.....	11
Classroom observations.....	12
Questionnaires.....	14
Interviews.....	14
Teacher mathematical knowledge.....	15
Pupil achievement.....	15
Response rates.....	16
Summary.....	16
3. Analysis of materials.....	17
Overview of JUMP materials	17
JUMP materials and the PSMC.....	20
JUMP materials and Irish textbooks.....	24
Summary.....	30
4. Classroom observations.....	31
Types of observation data.....	31
Curriculum areas covered	33
Adherence to programme methods and principles.....	34
Quality of instruction.....	41
General comments on lessons.....	46
Summary.....	48
5 Pupils.....	49
Attitudes to school.....	50
Attitudes to mathematics	50
Experience of mathematics instruction.....	54
Use of learning strategies	55
Summary.....	57
6. Teachers.....	59
Teacher characteristics	59
Typical mathematics lessons	63
Teacher views on programme/evaluation	68
Summary.....	75
7. Mathematics achievement	77
Overall score on the DPMT	77
Performance on strands and content areas	79
Achievement by gender	80
Results of initially low- and high-achieving pupils.....	81
Observation type and pupil achievement	82
Teacher variables and pupil achievement.....	83
Pupil attitudes and pupil achievement.....	85
Summary.....	89
8. Conclusions	91
The research questions.....	92
What contributed to improved achievement?	96
Future possibilities	98
References	103

List of Acronyms and Abbreviations

BLM	Blackline Masters
CBU	Confidence Building Unit
CPD	Continuing Professional Development
DPMT	Drumcondra Primary Mathematics Test
ERC	Educational Research Centre
IMPACT	Interactive Methods and Practical Approaches to Communication and Thinking
JUMP	Junior Undiscovered Math Prodigies
MKT	Mathematical Knowledge for Teaching
MKTQ	Mathematical Knowledge for Teaching Questionnaire
MKTQ-S	Mathematical Knowledge for Teaching Questionnaire – Shortened
MQI	Mathematical Quality of Instruction
NCCA	National Council for Curriculum and Assessment
OCUP	Ontario Curriculum Unit Planner
PDST	Professional Development Service for Teachers
PSMC	Primary School Mathematics Curriculum
SD	Standard Deviation
SIGMA-T	Standardised Irish Graded Mathematics Attainment Test
SME	Subject Matter Expert
TIMSS	Trends in International Mathematics and Science Study
WNCP	Western and Northern Canadian Protocol

Acknowledgements

We gratefully acknowledge the financial support of the Department of Education and Skills (DES), Science Foundation Ireland, and Accenture, and the helpful input of the JUMP Math Steering Committee. The Steering Committee members were Ciarán Cannon (TD, Minister of State for Training and Skills 2011-14), Eamon Clavin (DES), Seán Delaney (Marino Institute of Education), Anne Feerick (DES), Pamela Fitzgerald (Change Nation), Aoife Kelly (National Council for Curriculum and Assessment), Bernard Kirk (Galway Education Centre), and Frank Walsh (Athlone Education Centre). The Educational Research Centre (ERC) was represented by Eemer Eivers, Emer Delaney, and Seán Close.

For the professional development provided to participants, we thank Dr John Mighton from JUMP Math, and Ciara O'Donnell, Mia Treacy, and Michael James Malone from the Professional Development Service for Teachers. Bernard Kirk, Frank Walsh, and staff at Galway and Athlone Education Centres organised Continuing Professional Development (CPD) for participating teachers, and acted as helpful points of contact for the various stakeholders.

Thanks are due to those who conducted our observations, including Dr Dolores Corcoran, Margaret Cooney, John Curran, Pat Moore, and Susan Murray. A number of staff at the ERC provided much appreciated support, including Peter Archer (Acting Director), John Coyle, Paula Chute, Aidan Clerkin, Lauren Kavanagh, Mary Lewis, David Millar, Adrian O'Flaherty, Mary Rohan and Hilary Walshe.

Finally, warmest thanks are due to all participating teachers, pupils, and principals, without whom the evaluation could not have been carried out.

