

ICTMA-17 NOTTINGHAM 2015

PROGRAMME AND DAILY SCHEDULE



SUNDAY 19 JULY 2015

Time	Event	Venue
17:30 - 19:30	Opening reception (includes meal and drinks)	Highfields House, University of Nottingham (University Park Campus)

MONDAY 20 JULY 2015

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
WELCOME and OPENING	9:00 – 9:30	Welcome and conference opening	Gloria Stillman (ICTMA President) Geoff Wake (Chair local organising committee)		Sir Clive Granger Building
PLENARY	9:30 – 11:00	Japan's Ongoing Reform in Maths: Will 'Modeling' Help?	Keiichi Nishimura (Associate Professor, Gakugei University, Tokyo) <i>Response: Morten Blomhøj</i>	Geoff Wake	, Room A48
		COFFEE & TEA BREAK (11:00 - 11:30)		
		Mathematical Modelling in a Long Distance Teacher Education Course in Brazil: Democratising Mathematics	Daniel Clark Orey; Milton Rosa	Mengda Wu	A39
		Mathematical Modelling and Proof by Recurrence: an Analysis from a Wittgensteinian Perspective	<u>Bárbara N.Palharini Alvim Sousa Robim;</u> <u>Emerson Tortola; Lourdes Maria;</u> <u>Werle de Almeida</u>	Ana C. Carius	A40
Α	11:30 – 12:15	Analysis Of Concept Of Differentiability Presented in Textbooks Of Differential Calculus Through The Theory Of Didactic Transposition	Fábio Souza; Jacqueline Da Silva	Micah Stohlmann	A41
		Implementing Modelling into Classrooms: Results of an Empirical Research Study	Jana Kreckler	Erna Lampen	A42
		Pre-Service Mathematics Teachers' Knowledge in Mathematical Modelling and Views on Mathematical Modelling	Joo Young Park	Cyril Julie	A44



MONDAY 20 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		Interpreting a Mathematical Model; Complementarity of Context and Mathematics	Pauline Vos; Gerrit Roorder	Marc North	A39
		What Makes Differences Between the Model of '90° System Advertisement' of the Flag of England and the Ones by Students?	Naoto Mishima, Akio Matsuzaki; Yuki Takagi	Pauline Vos	A40
В	12:20 - 13:05	Mathematics in a Chemistry Undergraduate Course: A Necessary "Evil"?	<u>Ana Carius;</u> Ricardo L. de Souza Júnior; Jaqueline da Silva;	Bárbara N.Palharini Alvim Sousa Robim	A41
		Effectiveness of Mathematical Modelling in Secondary School and Future Research Opportunities	Micah Stohlmann; Lina DeVaul; Charlie Allen; Amy Adkins; Taro Ito; Dawn Lockett; Nick Wong	Marli Schmitt Zanella	A42
		Triggering the Development of Mathematical Modelling Competencies Through Mathematical Modelling as Content	Cyril Julie	Joo Young Park	A44
	-	LUNCH (13:05 – 14	4:15)	-	
		Mathematical Modelling: Stablising Learners' Skills	Azita Manouchehri	Dirk de Bock	A39
		Student Solutions of an Authentic Inter-Year Modelling Task	Matthias Ludwig	Leonardo Barichello	A40
C	14:15 – 15:00	Using the Six Instructional Design Principles For Assessing Modelling Capabilities Of Students In Mathematics Classrooms	Dirk Wessels; Piera Biccard	Helena Wessels	A41
		Mathematical Modelling of a Social Problem in Japan: The Temperature Rise and the Declining Birth Rate	Noboru Yoshimura; Akira Yanagimoto	Miriam Ortega	A42
		Developing Modeling Based Mathematics Teaching by Means of Theories on Conceptual Learning	Morten Blomhøj; Tinne Hoff Kjeldsen	Marc North	A44



MONDAY 20 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		How Students Connect Mathematical Models to Descriptions of Real-World Situations	<u>Dirk de Bock</u> ; Nele Veracx; Wim van Dooren	Azita Manouchehri	A39
		In Pursuit of a Life-Preparedness Orientation for Modelling: the Role of Contextual Reasoning and Reflective Knowing	Marc North	Matthias Ludwig	A40
D	15:05 – 15:50	An Investigation of Mathematical Modelling And Creativity of Future Teachers in A German University	Helena Wessels	Dirk Wessels	A41
		Motives to Voluntarily Participate in a Mathematical Modelling Project	<u>Jussara Araújo</u> ; Ilaine Campos; Edmilson Torisu	Jacob Perrenet	A42
		Using Modelling and Tablets in Classroom to Learn the Quadratic Function	<u>Miriam Ortega</u> ; Luis Puig	Noboru Yoshimura	A44
	-	COFFEE & TEA BREAK (1	5:50 - 16:20)		
		Mathematical Modelling and the Differential and Integral Calculus Teaching Challenges	<u>Jacqueline Da Silva</u> ; Fabio Souza; Ana Carius; Deborah Jardim	Lilian Akemi Kato	A39
	16.00	Mathematical Modelling for Engineering Students: Perspectives on Visualisation	<u>Hanti Kotze</u> ; Gerrie Jacobs; Erica Spangenberg	Milton Rosa	A40
Ε	16:20 – 17:05	<u>PRESENTATION VIA SKYPE</u> : Modelling Practices of Engineers Through Differential Equations and Simulation	Ruth Rodriguez	Marc North	A41
		Teachers' Tools for Anticipating Student Work when Teaching Modelling	Jonas Ärlebäck; Helen Doerr	Maria Evagorou	A42
		Teaching Modelling Using Calculus – Inside and Across "Nature"	Peter Collignon	Rita Guimaraes	A44
PLENARY	17:10 -	ICTMA: writing for the Springer volume	Gloria Stillman; Werner Blum;		A48
ILLIVANI	18:25	ICME: information and contributions	Gabriele Kaiser		



TUESDAY 21 JULY 2015

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
PLENARY	9:00 – 10:30	Mathematical Modelling: Its role to enhance mathematical pedagogy?	David Burghes (Professor of Maths Education, Plymouth University and Director of the Centre for Innovation in Mathematics Teaching).	Rita Borromeo- Ferri	A48
			Response: Gloria Stillman		
		COFFEE & TEA BREAK (10:	30 - 11:00)		
		Analysis of Pre-Service Teachers' Levels of Reflectivity after Mathematic Modelling Activities with Students	<u>Rita Borromeo Ferri</u>	Tijn Borghuis	A31
		Practical Study on Graduate Students' Demonstration of Paintings Using Mathematics: Reading Background of Arts With Mathematics	<u>Akihiko Saeki; Masafumi Kaneko;</u> Daisuke Saito; Kyoko Tomizawa	Gerrie J Jacobs	A39
	11:00 - 11:45	Sustainable Assessment in Mathematical Modelling	Paul Hernandez-Martinez; Helen Harth	Lourdes Maria	A40
F		A Parallel Mathematical Modelling in Engineering Calculus Assisted by Technology	Lorenza Illanes; Elvira G. Rincón	Angeles Domínguez	A41
		Combining Models Related to Data Distribution Through Conjecturing and Validation: Paper Helicopter Experimentation with Year 5 Students	Takashi Kawakami	Nils Buchholtz	A42
		Modelling Challenge Program at Secondary Level in Japan	Akira Yanagimoto; Noboru Yoshimura	Edell Reilly	A44
		Assessing Mathematizing Competences: Using Students' Response Processes to Investigate Item Validity	<u>Brikena Djepaxhija</u> ; Pauline Vos; Anne Berit Fuglestad	Xiao-Jun Duan	A45
		Interactive Diagrams Used for Collaborative Learning Concerning Math Models of Motion	<u>Elena Naftaliev</u>	Janeen Lamb	A39
		Does Students' Over-Reliance on Linearity Also Occur in Economics?	Daam van Reeth; <u>Dirk de Bock</u>	Paul Hz-Martinez	A40
G	11:50 –	Models and Representations in an Integrated Physics and Mathematics Course	<u>Angeles Domínguez;</u> Jorge de la Garza; Cynthia Castro	Lorenza Illanes	A41
G	12:35	Using Mathtrails as a Diagnostic Tool	Nils Buchholtz	Takashi Kawakami	A42
		Helping All Students Build Their Dream Homes: Using Modelling with Mathematics in a Learning Support Class	Edell Reilly	Akira Yanagimoto	A44
		Mission-Driven Progressive Practice Teaching Pattern on Mathematical Modeling Course	<u>Xiao-Jun Duan; Wang Dan</u>	Brikena Djepaxhija	A45



TUESDAY 21 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		LUNCH (12:35 – 1	13:45)		
		Mathematical Modelling with Progressive Learning Aids - A Video Study	Deike Jütting	Kerri Spooner	A39
		Investigating Students' Difficulties with Differential Equations in Physics	<u>Diarmaid Hyland;</u> Paul van Kampen; Brien Nolan	Burkhard Alpers	A40
н	13:45 -	Boundary Crossing Between Workplace and Mathematics in Prospective Teachers' Didactical Designs	<u>Giorgos Psycharis; Despina Potarii</u>	Catherine Paolucci	A41
11	14:30	Hidden Benefits of Modelling for Learners with Special Educational Needs (SEN)	<u>Dirk Wessels</u> ; Rina Scott-Wilson; <u>Helena Wessels</u> ; Estelle Swart	Gemma Sala	A42
		European Soccer Championship – Cross-Linking of Knowledge Within Mathematical Modelling	Martin Bracke; Hans Stefan-Siller	Issic Leung	A44
		A Modeling Perspective In Designing Professional Learning Communities	Nicholas Mousoulides; Maria Evagorou	Jana Kreckler	A45
		Authentic Mathematical Modelling Experiences Of Upper Secondary School Students: A Case Study	Kerri Spooner	Deike Jütting	A39
		The Mathematical Modeling Competency Required for Solving Engineering Statics Assignments	Burkhard Alpers	Diarmaid Hyland	A40
_	14:35 -	The Primacy of 'Noticing': A Key to Successful Modelling	Peter Galbraith; <u>Gloria Stillman; Jill Brown</u>	Giorgos Psycharis	A41
Ι	14:35 – 15:20	Inquirying and Modelling in a Real Archaelogical Context: the Importance of the Sequence Tasks Design	<u>Gemma Sala</u> ; Vincent Font; Joachim Gimenez; Berta Barquero	Werle de Almeida	A42
		Pre-Service Teachers' Knowledge in Applying Story Metaphor in Teaching Modeling: An Example of Weighting an Elephant	Issic Leung; Regina Wong	Martin Bracke	A44
		Developing Boundary Objects to Support Teachers' Teaching and Learning of Modelling	Geoff Wake; Malcolm Swan; Colin Foster	Sheila Evans	A45
		COFFEE & TEA BREAK (1	5:20 - 15:50)		



TUESDAY 21 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		Mathematical Modelling Workshop for Graduate School Students in Turkey Using LEGO®MINDSTORMS®EV3 and Graphing Calculator	<u>Akio Matsuzaki</u> ; Kosuke Tsukahara; Ugur Cetinkaya; Tomoko Inoue Cetinkaya	Xenia-Rosemarie Reit	A39
		Mathematical Modelling in Dutch Textbooks: is it Genuine Mathematical Modelling?	<u>Bert Zwaneveld</u> ; Jacob Perrenet; Kees van Overveld; Tijn Borghuis	Helen Harth	A40
J	15:50 – 16:35	"A Foundation for Understanding the World" Unless Built on Shifting Sands: Mathematical Modelling, Validation and Evaluation	Jeremy Burke; Eva Jablonka; Chris Olley	Marc North	A41
		Mathematical Modelling with Data In a Collaborative Group: Students' Mathematics Dispositions and Identities	Joo Young Park	Vince Geiger	A42
		Modelling as Interactive Translations Among Plural Worlds: Experimental Teaching Using the Night Time Problem	<u>Toshikazu Ikeda</u> ; Max Stephens	Hans Stefan-Siller	A44
		Modelling with Statistical Data: Characterisation of Models Produced by Students	Àngels Aymerich; Núria Gorgorió; <u>Lluís Albarracín</u>	Wang Dan	A39
17	16:40 -	Quality Criteria for Mathematical Models in Relation to the Modeling Purpose; Their Usefulness in Higher Engineering Education	<u>Jacob Perrenet;</u> Bert Zwaneveld; Kees van Overveld; Tijn Borghuis	Elizabeth Burns	A40
K	17:25	Teachers as Designers of Effective Numeracy Tasks	Vince Geiger	Patrick Johnson	A41
		Course on Modelling for French Trainee Teachers: Relation Between Mathematical and Professional Compentences	<u>Richard Cabassut</u>	Despina Potarii	A42
		Modelling Using Computer Tools in Math Classes	Gilbert Greefrath; Hans Stefan-Siller	Toshikazu Ikeda	A44



TUESDAY 21 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Venue
		POSTER PRESENT DRINKS RECEPTION HOSTED BY T NOTTIAdditive Reasoning in a Modelling Task: An Experience in a Brazilian Elementary SchoolExploring Two-Variable Functions Representation Through	TATIONS/VIEWING Image: Constraint of the shell centre, university of the shell centre, uniter, uniter, university of the shell cent, university	
POSTERS	17:30 - 18:30	Modelling of Sound Intensity With iPads®Making Modelling Tasks Usable in the ClassroomModelling Project in Training Teachers of Mathematics	Junji Nojima Jaime Huincahue; Carolina Guerrero	Foyer (Sir Clive Granger
		Improving Problem Solving Competencies: A Design Research Study	<u>Sheila Evans</u>	Building)
		A Teacher Learning Initiative to Discuss Disadvantaged Students	<u>Rita Guimaraes</u>	
		Mathematical Tasks Drawn on Visual Representations for Low Achieving Students	Leonardo Barichello	
		Various posters showcasing the work of the Centre for Research in Mathematics Education at the University of Nottingham	Rowan Atkinson	



WEDNESDAY 22 JULY 2015

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
PLENARY	9:00 – 10:30	Mathematical Modelling as a Professional Activity – Lessons for the Classroom	Dr. Peter Frejd (Senior Lecturer at Linköping University, Sweden)	Jill Brown	A48
	10.30		Response: Gabriele Kaiser		
		COFFEE & TEA BREAK (1	0:30 - 11:00)		
		Context and Understanding: the Case of Linear Models	Jill Brown	Luis Albarracin	A39
		A Study on Undergraduates' Competency to Apply Mathematics and Mathematical Modelling	Keiichi Nishimura; Fumitaka Yanagisawa	Sergiy Klymchuk	A40
Т	11:00 - 11:45	The Process of Mathematisation in Modelling of Number Patterns in Secondary School Mathematics	Dirk Wessels; Axanthe Knott	Jaime Mena-Lorca	A41
L		Triggers for and Barriers to Successful Student Switching Between Modelling Cycles: The Case of Dual Modelling Teaching in Japan	<u>Takashi Kawakami</u> ; Akihiko Saeki; Akio Matsuzaki	Gabriele Granada Veleda	A42
		Professional Development and Modelling: Interactions Between Beliefs, Practices and Classroom Contexts	Katja Maaß; Malcolm Swan	Theodosia Prodromou	A44
		Ethnomodelling as the Mathematisation of Cultural Practices	Daniel Clark Orey; Milton Rosa	Katrin Vorholter	A45
		Design and Implementation of a Tool for Analyzing Student Productions When They Solve Fermi Problems	Cesar Gallart; Irene Ferrando; Lluís García-Raffi; <u>Luis Albarracin;</u> Núria Gorgoriód	Jill Brown	A39
	11:50 -	Analysing University Students' Abilities in Making Assumptions in a Ballistics Model: A Case Study	<u>Sergiy Klymchuk;</u> Zlatko Jovanoski	Keiichi Nishimura	A40
Μ	12:35	International Mathematical Modeling Challenge	Henk van der Kooij	Regina Moeller	A41
		Some Relations Between the Mathematical Modelling and Paulo Freire's Concepts	<u>Gabriele Granada Veleda;</u> Dionísio Burak	Richard Cabassut	A42
		Conceptualising and Measuring Metacognitive Modelling Competencies	Katrin Vorhölter	Helen Doerr	A44



WEDNESDAY 22 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		Difficulty of Solution Approaches of Modelling Tasks	Xenia-Rosemarie Reit	Akio Matsuzaki	A39
		The Velocity concept – History of a Modelling	Regina Moeller; Hans-Stefan Siller	Henk van der Kooij	A40
Ν	12:40 – 13:30	Development of Modelling Competencies in Statistical Inference	Theodosia Prodromou	Carolina G-Ortiz	A41
		Modelling Task Design	Carolina Guerrero-Ortiz; Jaime Mena-Lorca	Katja Maaß	A42
		Modelling That Matters - How Computational Media Influences the Role of Modeling in Mathematics Education	<u>Helen Doerr;</u> Jonas Ärlebäck; Morten Misfeldt	Daniel Clark Orey	A44
	14:00 - 19:00	PACKED LUNCHES			
ROAD TRIP			FO CHATSWORTH HOUSE <u>Conference Centre</u> on the university campus	s at 13:50)	- SCHOOL BUS



THURSDAY 23 JULY 2015

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
PLENARY	9:00 – 10:30	Systemic change and teaching modelling	Prof. Malcolm Swan & Prof. Hugh Burkhardt (University of Nottingham, UK) <i>Response: Katja Maaß</i>	Jonas Ärlebäck	A48
		COFFEE & TEA BREAK (10:30 - 11:00)	-	-
		Didactical Implication on an Elementary Method to Diagnose the Existence of Chaotic Behavior of a Single Neuron Model	Issic Leung; H. Y. Zhang	Gloria Stillman	A39
		Students' Difficulties in Mathematical Modelling: Observations from Two Examples	Jinxhing Xie	Jussara Araújo	A40
0	11:00 - 11:45	Exploring the Notion of Mathematical Literacy in Curricula Documents	Peter Frejd; Vincent Geiger	France Caron	A41
		Mathematical Modelling Strategies of Third Year Mathematics Student Teachers	<u>Rina Durandt;</u> Gerrie Jacobs	Maria Salett Biembengut	A42
		PRESENTATION BY UK RESEARCHER AND TEACHER: Developing Students' Capacity to Critically Assess Mathematical Ideas	<u>Sheila Evans; Nick Wilson</u>	Sheila Evans	A44
		Enabling Anticipation In Mathematizing Real World Problems in a Flipped Classroom	<u>Gloria Stillman</u>	H. Y. Zhang	A39
		Confrontation of Arguments in Mathematical Model Construction	<u>Jussara Araújo</u> ; Ilaine Campos	Jinxhing Xie	A40
Р	11:50 – 12:35	l'Hospital's Weight Problem: Crossing the boundaries between Math and Physics, Between Application and Modelling	France Caron; Kathleen Pineau	Bert Zwaneveld	A41
		Teachers' Perceptions About Modeling Activities Proposed in Continued Education	Morgana Scheller; Danusa de Lara Bonotto; <u>Maria Salett Biembengut</u>	Rina Durandt	A42
		PRESENTATION BY UK ORGANISATION: Cambridge Mathematics Education Project	Lynne McClure; Nathan Barker	Marc North	A44
		LUNCH (12:35 –	13:45)		



THURSDAY 23 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue
		What are the Learning Opportunities of Modelling Problems?	Dag Wedelin	Gilbert Greefrath	A39
		The Dual Modelling Cycle Framework: Benefits for Australian Students	<u>Janeen Lamb;</u> Akio Matsuzaki; Akihiko Saeki; Takashi Kawakami	Elena Naftaliev	A40
Q	13:45 – 14:30	Difficulties to Teach Modelling: A French-Spanish Exploration	Richard Cabassut; Irene Fernando	Catherine Paolucci	A41
		PRESENTATION BY UK ORGANISATION: Core Maths Support Programme – 'Problem Solving in Core Mathematics'	Mick Blaylock	Marc North	A42
		"Why do I have to learn this?": An Exploration of Relevance in Mathematical Modelling Education	Paul Hernandez-Martinez; Pauline Vos	Kathleen Pineau	A44
		Initial Result from an Intervention: Affordances and Constraints of an App for Smartphones and Tablets	<u>Peter Frejd;</u> Jonas B. Ärlebäck	Fumitaka Yanagisawa	A39
		Realistic Mathematics Education Design Theory as a Tool for Structuring Potential Mathematical Modelling Learning Activities	Rita Ndagire Kizito; <u>Dirk Wessels</u>	Morten Blomhøj	A40
R	14:35 – 15:20	Increasing Mathematical Modelling Pedagogical Capacity (MMPC) Among Teachers	<u>Azita Manouchehri; Stephen Lewis;</u> <u>Monelle Gomez</u> ; Ali Fleming	Akihiko Saeki	A41
		An Examination of Pre-Service Teachers' Capacity to Create Mathematical Modeling Problems for Children	Catherine Paolucci; Helena Wessels	Irene Ferrando	A42
		PRESENTATION BY UK TEACHER: Lessons for Mathematical Modelling From Lesson Study	Jan Parry; Geoff Wake	Geoff Wake	A44
		COFFEE & TEA BREAK	(15:20 – 15:50)		



THURSDAY 23 JULY 2015 (CONTINUED)

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue	
S	15:50 - 16:35	Designing a Problem by Mathematical Modelling and Gamification for the Solids of Revolution with Differentials	Elvira G. Rincón Flores; <u>Lorenza Illanes</u>	Stephen Lewis	A39	
		Alternative Causes and Disabling Conditions as Tools to Structue a Real Model from a Messy Problem	Erna Lampen	Pascal Diago Nebot	A40	
		An Analysis of Consequences of Didactic Theory for Practice – the Case of Modelling Cycle	Britta Eyrich Jessen; Tinne Hoff Kjeldsen	Monelle Gomez	A41	
		Exploring the Critical-Reflexive Dimension of Mathematical Modelling	Daniel Clark Orey; Milton Rosa	Irene Grafenhofer	A44	
Т	16:40 - 17:25	Scaffolding in Complex Modelling Situations	<u>Gabriele Kaiser</u> ; Peter Stender	Geoff Wake	A39	
		Modelling in Sciences and Maths: Level of Motivation, Interest and Need to Learn	Maria Salett Biembengut	Leonardo Barichello	A40	
		Changing Student Perspectives of Work-Related Applications of Mathematics	Diane Dalby	Jonas Ärlebäck	A41	
		<i>Difficulties in Designing an MEA: Experience in a Teaching Strategies Course</i>	Angeles Domínguez; <u>Lorenza Illanes</u> ; Genaro Zavala	Britta Eyrich Jessen	A42	
		How to Build-Up an Hydrogen Refuelling Station Infrastructure in Germany? – A Project Approach for Mathematics Classrooms	Irene Grafenhofer; Hans Stefan-Siller	Max Stephens	A44	
BOOGIE TIME	19:00 -	CONFERENCE DINNER @ COLWICK HALL				
	very late (00:00)	(Dancing shoes essential) (Coaches depart from the East Midlands Conference Centre on the university campus at 19:00)				



FRIDAY 24 JULY 2015

Session	Time	Presentation Title	Presenter(s)	Session Chair	Venue			
PLENARY PANEL	9:30 – 11:00	Modelling in curricula across the world	Prof. Helen Doerr (USA) Dr. Angeles Dominguez (Mexico) A/Prof. Vince Geiger (Australia) Prof. Pauline Vos (Norway) Dr. Helena Wessels (South Africa)	Prof. Werner Blum (Germany)	A48			
COFFEE & TEA BREAK (11:00 – 11:30)								
Business Meeting and Close	11:30 – 12:45	Business meeting and close of the conference	ICTMA Committee		A48			
PICNIC LUNCH AVAILABLE								