

PATT36 Conference Programme

Monday 18th June

8:00 - 8:10 **Travel via bus to AIT**

8:10 - 9:00 **Registration**

9:00 - 9:15 **Conference Opening:**
Registrar and President AIT

9:15 - 9:30 **Keynote:**
Minister for Higher Education- Minister Mary Mitchell O'Connor

9:30 - 10:00 Welcome and Schedule:
Dr. Niall Seery and Prof. Marc J. de Vries

10:00 - 10:30 **Break and Refreshments**

Parallel Sessions
10:30 - 12:10

Session 1:
X103 Engineering Building
Chair: Donal Canty

Session 2:
Y103 Engineering Building
Chair: Rónán Dunbar

10:30 – 10:55 Rethinking Pupil's Attitudes Towards Technology (PATT) Studies
Piet Ankiewicz
(pg. 1 - 8)

Technology teachers' different ways of thinking about sustainable development in technology education
Maria Svensson and Anne-Marie van Otter
(pg. 33 - 39)

10:55 – 11:20 Woman's under-representation in STEM: The part role-models have played in the past and do we still need them today?
Stephanie Atkinson
(pg. 9 - 15)

What technology content and values emerge in the teaching of climate change?
Susanne Engström
(pg. 40 - 46)

11:20 – 11:45 Changing Competencies, Changing Attitudes? How Teachers Become Technology Teachers
Brigit Fahrman, Per Norström and Lena Gumaelius
(pg. 16 - 22)

Technological thinking by children with special needs
Michal Levi and David Mioduser
(pg. 47 - 58)

11:45 – 12:10 A Global Analysis of how High School Activities are Preparing Students for the 21st Century
P. Scott Bevins Virginia Jones and Daniel L. Trent
(pg. 23 - 32)

Mitcham's Fourth: a case for foregrounding volition when framing Design and Technology Education
Steve Keirl
(pg. 59 - 64)

Parallel Sessions
12:10 - 13:25

Session 3:
X103 Engineering Building
Chair: David Barlex

Session 4:
Y103 Engineering Building
Chair: Sheryl Sorby

12:10 – 12:35 Using linkography to explore novice designers' design choices during a STEM task
Nicolaas Blom, Grietje Haupt and Alfred Bogaers
(pg. 65 - 70)

Kindergarten programming goes mobile
Asi Kuperman, Ruthi Aladjem and David Mioduser
(pg. 81 - 87)

12:35 – 13:00 Conceptualisation Processes and Making
Antti Pirhonen
(pg. 71 - 75)

Learning science and technology from play in early childhood education
Hanno van Keulen and Mariska Venema
(pg. 88 - 95)

13:00 – 13:25 The Delft research programme on design for concept learning
Marc J. de Vries
(pg. 76 - 80)

STEM in Northern Ireland Primary Schools: Where is it at, and where should it go?
Kieran McGeown and Michael Ievers
(pg. 96 - 102)

13:25 - 14:15

Lunch

PATT36 Conference Programme

Parallel Sessions 14:25 - 15:40	Session 5: X103 Engineering Building Chair: John Williams	Session 6: Y103 Engineering Building Chair: Eva Hartell
14:25 - 14:50	STEM Associational Fluency: The Cross-Training of Elementary and Middle Grade Math, Science, and Engineering Pre-Service Teachers Elizabeth Deurmeyer and Michael de Miranda (pg. 103 - 115)	From High to Low Voltage: A genre approach for teaching to write about designing Gerald van Dijk, Sacha Toppel and Maaïke Hajer (pg. 132 - 139)
14:50 - 15:15	Innovating a professional technology teaching programme based on student teachers' expectations and experience of work-integrated learning Werner Englebrecht (pg. 116 - 122)	Making it work: A case study of Canadian intermediate technology educators' pedagogical classroom practice David Gill (pg. 140 - 147)
15:15 - 15:40	Considerations for developing integrated-stem courses at the senior secondary school level in New Zealand Bruce Granshaw and Cedric Hall (pg. 123 - 131)	Supporting Discourse using Technology-Mediated Communication: The Community of Inquiry in Design and Technology Education Adrian O'Connor, Niall Seery and Donal Canty (pg. 148 - 155)
15:40 - 15:45	Break and Refreshments	
Parallel Sessions 15:45 - 17:00	Session 7: X103 Engineering Building Chair: Brian Bowe	Session 8: Y103 Engineering Building Chair: Lena Gumaelius
15:45 - 16:10	Innovating an Initial Professional Education of Technology Teachers (IPETT) programme Rina Grobler (pg. 156 - 166)	Constructs of Quality and the Power of Holism Richard Kimbell (pg. 181 - 186)
16:10 - 16:35	Developing Technology Student Teachers' Volition Through Curriculum-Related Excursions Francois Van As (pg. 167 - 174)	Exploring the Potential for Identifying Student Competencies in Design Education through Adaptive Comparative Judgment Scott Bartholomew, Emily Yoshikawa and Pat Connolly (pg. 187 - 194)
16:35 - 17:00	Making industrial internships effective for the professional development of aspiring science teachers Mandy Stoop and Rutger van de Sande (pg. 175 - 180)	Implications of the Learning Sciences for the Unique Intent and Remit of Technology Education 195 Joseph Phelan, Niall Seery and Donal Canty (pg. 195 - 200)
17:00 - 17:15	Travel via bus to conference hotel	
18:15 - 19:30	Social Activity: Walking Tour of Athlone	
19:30	Social Activity: BBQ at Sean's Bar with Traditional Irish music session	

PATT36 Conference Programme

Tuesday 19th June

8:30 - 8:40

Travel via bus to AIT

9:00 - 10:0
X103
Engineering
Building

Plenary Session 1: Chair - Niall Seery

Theme 1 – Cultivating Imagination and Creativity

A keynote address will be delivered by **Sean Ó Broin**, former Assistant Head of the State Examinations Commission. This will be followed by a plenary discussion.

Discussion Panel – Sean Ó Broin, Kay Stables, Joe Phelan

10:10 - 10:30

Break and Refreshments

Parallel Sessions
10:30 - 11:45

**Session 9:
X103 Engineering Building
Chair: Jeff Buckley**

**Session 10:
Y103 Engineering Building
Chair: Kay Stables**

10:30 – 10:55

Speculative Writing: Enabling Design Thinking
Belinda von Mengersen
(pg. 201 - 206)

Cultural and historical roots for design and technology education: why technology makes us human
Matt McInain, Dawne Bell, David Wooff and David Morrison-Love
(pg. 223 - 230)

10:55 – 11:20

Developing Creativity and Imagination in Native Hawaiian Adolescents
Toni Marie Kaii, Kamalani Doria, Kainalu Gomera, Samuel M. Kamakau IV, and Quinn Waiki
(pg. 207 - 215)

Girls' engagement in technology education: A systematic review of the literature
Ulrika N. Sultan, Cecilia Axell and Jonas Hallström
(pg. 231 - 238)

11:20 – 11:45

Connecting Authentic Innovation Activities to the Design Process
Joachim Svärd, Konrad Schönborn and Jonas Hallström
(pg. 216 - 222)

Teacher students' critical thinking skills using the concept of disruptive technologies
Cecilia Axell and Lars Björklund
(pg. 239 - 245)

Parallel Sessions
11:45 - 13:00

**Session 11:
X103 Engineering Building
Chair: Joe Phelan**

**Session 12:
Y103 Engineering Building
Chair: Steve Keirl**

11:45 – 12:10

Investigating T/E Design Based Learning: Student Ability to Select and Utilize STEM Content and Practices
Susheela Shanta and John G. Wells
(pg. 246 - 255)

Supporting Learning Design Language in Primary Education
Miroslava Silva Ordaz, Remke Klapwijk and Gerald Van Dijk
(pg. 270 - 277)

12:10 – 12:35

On Intelligence in Technology Education: Towards Redefining Technological Capability
Jeffrey Buckley, Niall Seery, Donal Cauty and Lena Gumaelius
(pg. 256 - 262)

Attention and Action during the Design and Technology lesson: by fine-tuning of task characteristics
Annemarie Looijenga, Remke Klapwijk and Marc de Vries
(pg. 278 - 287)

12:35 – 13:00

Investigating the Relationships between Spatial Ability, Interest, and Task Experience on Knowledge Retention in Engineering Education
Tomás Hyland, Jeffrey Buckley, Niall Seery, Jason R. Power and Seamus Gordon
(pg. 263 - 269)

Interdisciplinary teaching in Swedish primary schools: Teachers' perspectives of subject-matter integration in technology and history
Catherine Couturier, Lars Geschwind and Eva Hartell
(pg. 288 - 294)

PATT36 Conference Programme

13:00 - 14:00

Lunch

Parallel Sessions
14:00 - 15:15

Session 13:
X103 Engineering Building
Chair: Adrian O'Connor

Session 14:
Y103 Engineering Building
Chair: Niall Seery

14:00 – 14:25

A preliminary model of problem categorisation to explore the cognitive abilities required for problem solving in engineering education
Clodagh Reid, Rónán Dunbar and Jeffrey Buckley
(pg. 295 - 301)

Teachers' Views on Training Spatial Skills and Creative Thinking by Using Model Construction. - A Case Study from South Korea and Sweden
Lena Gumaelius Mariana Black and Tom Callen
(pg. 319 - 326)

14:25 – 14:50

Pupils' Goal Orientations in a Pedagogical Innovation Process: A Competition to Design and Manufacture Quick Hydrocopters
Eila Lindfors, Vilma Heinola and Suvi Kolha
(pg. 302 - 308)

Spatial Ability and Approaches to Solving Word Problems in Mathematics
Gavin Duffy, Brian Bowe and Sheryl Sorby
(pg. 327 - 332)

14:50 – 15:15

Developing a learning environment for innovation learning in craft, design and technology education
Juha Jaatinen and Eila Lindfors
(pg. 309 - 318)

A National Spatial Skills Research & Development Project
Brian Bowe, Rachel Harding, Theresa Hedderman and Sheryl Sorby
(pg. 333 - 340)

15:15 - 15:20

Break and Refreshments

15:20 - 16:50

Workshop Sessions

Workshop 1:
Z103
Sheryl Sorby
Spatial Ability

Workshop 2:
X206
Niall Murray
AR/VR

Workshop 3:
V109
Sean Lyons
Additive Manufacturing

Workshop 4:
X207
Enda Fallon
ICT

16:50 - 17:05

Travel via bus to conference hotel

18:00 - 19:30

Social Activity: Viking Boat to Glasson Hotel and Golf Club

19:30

Social Activity: Meal at Glasson Hotel

PATT36 Conference Programme

Wednesday 20th June

8:30 - 8:40

Travel via bus to AIT

9:00 - 10:10
X103
Engineering
Building

Plenary Session 2: Chair – Donal Canty

Theme 1 – Learning through Design and Make

A keynote address will be delivered by Paddy Keays, former director of the Professional Development Service for Teachers (PDST). This will be followed by a plenary discussion.

Discussion Panel – Paddy Keays, Richard Kimbell, Nicolaas Blom

10:10 - 10:30

Break and Refreshments

Parallel Sessions
10:30 - 11:45

**Session 15:
X103 Engineering Building
Chair: Tomás Hyland**

**Session 16:
Y103 Engineering Building
Chair: Scott Bartholomew**

10:30 – 10:55

Maker education in the English context
David Barlex and Torben Steeg
(pg. 341 - 346)

Scientific and Technological Processes in K-12 classrooms in Quebec Schools: Common Features and Differences
Brahim El Fadil, Abdelkrim Hasni, Joël Lebeaume
(pg. 535 - 541)

10:55 – 11:20

Better making or making better: Exploring the attitudes of a school community to introducing a forge and blacksmithing into their school
Tony Lawler, Kim Ollif-Cooper, Kay Stables, Dominic Callaghan and Ralph Harris
(pg. 347 - 355)

Investigating the Potential for RGT and ACJ towards deeper insights of Teacher Assessment Practices
Eva Hartell and Helena Isaksson Persson, Scott Bartholomew, Greg Strimel
(pg. 371 - 377)

11:20 – 11:45

Learning to weld in technical vocational education: the first cycle of an action-oriented study
Nina Kilbrink and Stig-Börje Asplund
(pg. 356 - 362)

Addressing the issue of bias in the measurement of reliability in the method of Adaptive Comparative Judgment
Camila Rangel-Smith and Declan Lynch
(pg. 378 - 387)

Parallel Sessions
11:45 - 13:00

**Session 17:
X103 Engineering Building
Chair: Andrew Doyle**

**Session 18:
Y103 Engineering Building
Chair: Richard Kimbell**

11:45 - 12:10

Pre-service teachers' subject knowledge in secondary design and technology: Findings from an empirical study
Mike Martin
(pg. 388 - 393)

Applying Project Based Learning to Teaching Robotics in Junior-high Schools
Yair Zadok
(pg. 411 - 416)

12:10 - 12:35

Establishing Progressions of Learning in Engineering for High School Students
Greg Strimel, Michael Grubbs, Tanner Huffman and Scott Bartholomew
(pg. 394 - 399)

Toward an Understanding of Dysgraphia as a Barrier to STEM Related Careers
Daniel Kelly and Deidre Kelly
(pg. 417 - 422)

12:35 - 13:00

Professional Development Program for Teaching Engineering-Focused Curricula in Technology Education
Kuang-Chao Yu, Szu-Chun Fan and Kuen-Yi Lin
(pg. 423 - 410)

Using a problem solving toolkit – in an international distance learning course
Osnat Dagan
(pg. 423 - 431)

PATT36 Conference Programme

13:00 - 14:00

Lunch

14:00 - 15:00

X103

**Engineering
Building**

Voices from Our Schools

This session will give delegates an opportunity to get a flavour of the activities and outcomes from the Technology Education subjects in secondary schools in Ireland. A range of project work will be on display from the 8 technology based subjects (4 Junior level and 4 Senior level) on the Irish curriculum. An additional representation of extra-curricular technology related activities will also be presented. You will get opportunity to meet second level students and teachers from the following schools:

- **Scoil Mhuire, Kanturk, Co. Cork**
- **Portmarnock Community School, Co. Dublin**
- **Mercy Secondary School, Ballymahon, Co Longford**
- **Coláiste Naomh Cormac, Kilcormac, Co. Offaly**

15:00 - 15:20

Conference Tour: Travel to Kilbeggan

15:20 - 16:20

Tour of Kilbeggan Distillery

16:20 - 16:45

Travel from Kilbeggan to conference hotel

19:30

Conference Dinner

PATT36 Conference Programme

Thursday 21st June

Sessions will take place in the conference hotel

9:00 - 10:10
Burke Suite

Plenary Session 3: Chair – Rónán Dunbar

Theme 1 – Driving Social Change

A keynote address will be delivered by Gerald Crotty, teacher of Technology in Scoil Mhuire, Kanturk Co. Cork. This will be followed by a plenary discussion.

Discussion Panel – Gerald Crotty, Stephanie Atkinson, Ulrika Sultan

10:10 - 10:30

Break and Refreshments

Parallel Sessions
10:30 - 12:10

Session 19:
Grace Suite 1
Chair: Tony Lawler

Session 20:
Grace Suite 2
Chair: Rónán Dunbar

10:30 – 10:55

Design Values, Preferences, Similarities, and Differences across Three Global Regions
Scott Bartholomew, Emily Yoshikawa, Eva Hartell and Greg Strimel
(pg. 432 - 440)

Project-based learning in technology education: implications of the digital era
Moshe Barak
(pg. 468 - 474)

10:55 – 11:20

Implementing Digital Technology in the New Zealand Curriculum
Wendy Fox-Turnbull
(pg. 441 - 452)

Multiple Design Representations to Foster Idea Development
Keelin Leahy
(pg. 475 - 489)

11:20 – 11:45

A model for food literacy education
Wendy Slatter and Bev France
(pg. 453 - 460)

Teaching young people to respond to a contextual challenge through designing and making – a discussion of possible approaches
David Barlex and Torben Steeg
(pg. 490 - 497)

11:45 – 12:10

Food Education in the School Curriculum: A Discussion of the Issues, Influences and Pressures on the Teaching of Food
Marion Rutland
(pg. 461 - 467)

Drawings to depict or drawings to explain: A whole-school analysis of children's drawings of bridges
Louise Milne
(pg. 498 - 505)

12:10 - 13:00

Lunch

PATT36 Conference Programme

Parallel Sessions 13:00 - 14:15	Session 21: Grace Suite 1 Chair: Donal Canty	Session 22: Grace Suite 2 Chair: Clodagh Reid
13:00 – 13:25	Effects of Convergent and Divergent Feedback on Creative Thinking During Children’s Design Processes Alice Schut, Remke Klapwijk and Mathieu Gielen (pg. 506 - 512)	Teaching Sustainability in Technology Education: Perception versus Practice Beineán Conway, Keelin Leahy and Muireann McMahon (pg. 521 - 534)
13:25 – 13:50	Perceptions and reality: Analyzing student experiences in ranking self and peer work through Adaptive Comparative Judgment Scott Bartholomew, Emily Yoshikawa and Greg Strimel (pg. 513 - 520)	Reconceptualising PCK research in D&T education: Proposing a methodological framework Andrew Doyle, Niall Seery, Lena Gumaelius, Donal Canty and Eva Hartell (pg. 363 - 370)
13:50 – 14:15		Using Engineering Design Challenges to Promote Imagination and Innovation in Integrative STEM Education Edward Reeve (pg. 542 - 550)
14:15 - 14:30 Burke Suite	Closing of Conference- Dr Niall Seery	