

CENTRE REPORT 2018

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THE CENTRE

The Centre for Research in Digital Education launched in November 2015, bringing together research within the Moray House School of Education that spanned digital pedagogy, computational and data cultures within education and the impact of digital technology on children and childhood. The Centre now brings together this work under three themes: **Digital Cultures; Children & Technology; and Data Society.** Our work looks at how education is shaping, and is shaped by, technological change.

We have an international reputation and are unusual in the cross-disciplinary approach we take to this research. Academics and students within the Centre come from many backgrounds: sociology, literature, computing science, psychology, media and cultural studies, and philosophy.

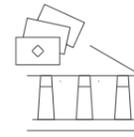
We are also committed to our teaching: we run a highly successful distance postgraduate programme in Digital Education, teach across several other programmes in the School of Education and have collectively authored the well-known Manifesto for Teaching Online.

In the first section - 'In brief' - we offer a series of visualisations and an overview of our academic staff, with the detail of our research strands, example projects, grants and impact in the 'In-depth' section that follows.



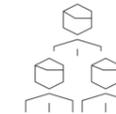
General enquiries: DEResearch@ed.ac.uk
 Director: sian.bayne@ed.ac.uk

[@EDDIGED](https://twitter.com/EDDIGED)
DE.ED.AC.UK



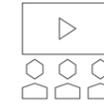
GRANTS

Digital Education has benefited from £960,561 in external grant funding during the period 2016-2018.



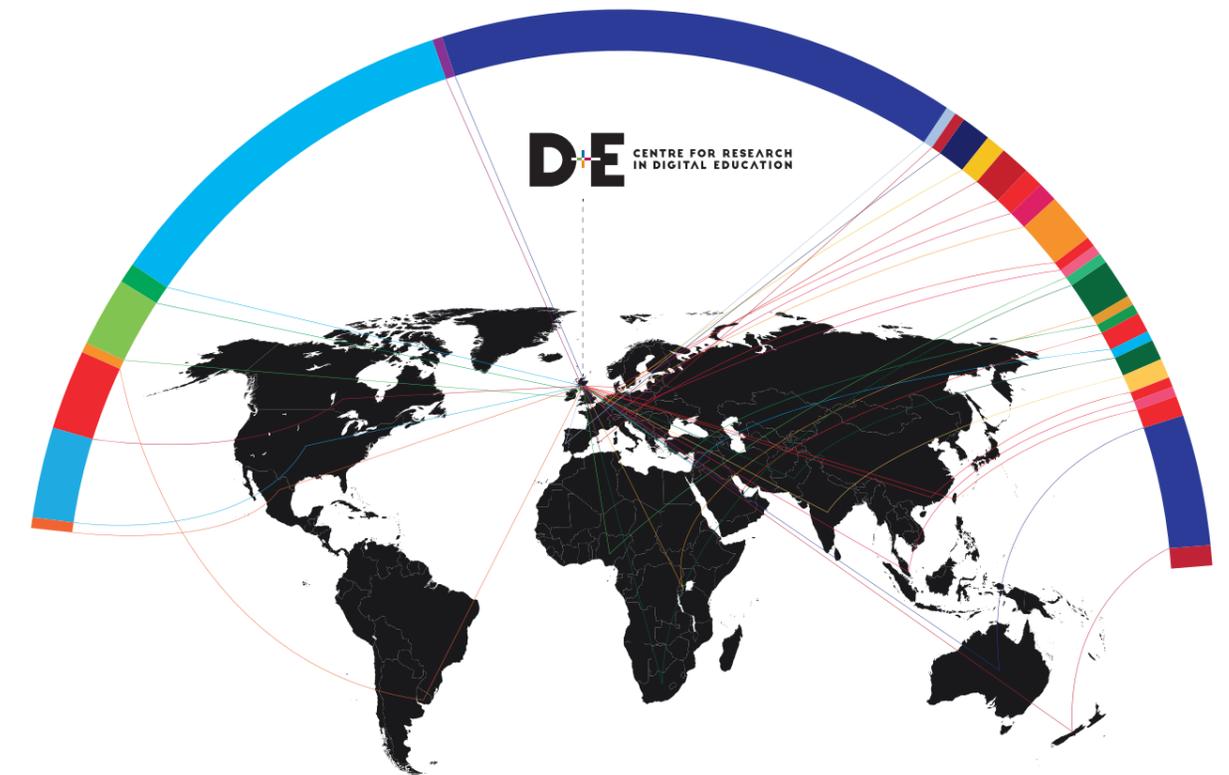
PROJECTS

19 funded projects since 2016.



SEMINARS

Since 2016 we have arranged 39 seminars. To date, we have had over 1100 enrolments on our seminar programme.



STUDENTS

Current taught MSc students by country of residence

172 Students in total
32 Countries

From left to right

MEXICO	1	MALTA	1	RWANDA	1
U.S.A.	9	FRANCE	3	CYPRUS	1
CANADA	8	BELGIUM	2	BAHRAIN	2
URUGUAY	1	NETHERLANDS	3	ISRAEL	1
SOUTHERN IRELAND	7	DENMARK	2	PAKISTAN	2
NORTHERN IRELAND	2	SWITZERLAND	2	INDIA	2
UK SCOTLAND	37	GERMANY	5	HONG KONG	1
WALES	1	AUSTRIA	1	SINGAPORE	1
UK ENGLAND	53	POLAND	1	TAIWAN	2
PORTUGAL	1	NIGERIA	1	AUSTRALIA	13
		SOUTH AFRICA	4	NEW ZEALAND	2

PEOPLE

The Centre for Research in Digital Education is made up of a core team of academic staff along with a group of international associates whom support our work in a variety of ways; as advisors; as visiting scholars; as seminar speakers; to promote research and knowledge exchange.

Since 2016 there have been a number of core staff arrivals and departures:

Dr Philippa Sheail joined us as a Lecturer in Digital Education. **Professor Jeff Haywood** and **Professor Sir Tim O'Shea** joined us as Professors Emeritus.

Dr Zayba Ghazali-Mohammed, **Dr Michael Gallagher**, **Niklas Berliner**, **Dr Yi-Shan Tsai**, **Dr Yuchen Wang** and **Dr Anna Wood** joined us as Research Associates.

Dr Claire Sowton joined us as Project and Communications Manager.

Professor Dragan Gašević, left the Centre to join Monash University in Melbourne, Australia, but maintains strong links as one of our Associates.

Dr Hamish McLeod retired in 2017, but continues to teach with us.

We have also been joined by some excellent visiting scholars: **Professor Nicole Durisch Gauthier** from La Haute école pédagogique in Lausanne, **Dr Yeqin Kang** from Guangdong University of Foreign Studies **Professor Peter Rich** from Brigham Young University in Utah, **Dr Rafael Morales Gamboa** from the University of Guadalajara in Mexico, **Bjarke Lindsø Anderson** (PhD student) from Aarhus University in Denmark, **Professor Petar Jandric** from the University of Zagreb in Croatia, and **Dr Sergi Roura Planas** from Rovira Virgili University in Spain.



Professor Sian Bayne

Professor of Digital Education, Director of the Centre for Research in Digital Education, Assistant Principal Digital Education

sian.bayne@ed.ac.uk | @sbayne



Niklas Berliner

Research Assistant

Niklas Berliner is a Research Assistant working part-time on the Data Bodies in the Library project led by Dr Philippa Sheail.

niklas.berliner@ed.ac.uk



Dr Peter Evans

Senior Teaching Fellow

Peter Evans is course organiser for 'Digital Education: strategy and policy', and teaches on 'Introduction to Digital Environments for Learning' and 'Course design for digital environments'. His research interests are in social media and workplace learning.

peter.evans@ed.ac.uk



Dr Rory Ewins

Lecturer

Rory Ewins leads on the course 'Digital education in global context' and leads/co-tutors on 'An introduction to digital environments for learning'. His interests include online identity and its implications for academics, the effect of university and government IT policies on academic practice, e-learning and intellectual property, and e-learning in developing countries.

speedynail.com
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Dr Michael Gallagher

Research Associate

Michael Gallagher is the Research Associate on the Near Future Teaching project led by Professor Sian Bayne. His research focus is on digital education and mobile learning, mobilities theory, as well as mapping the impact of mobility and mobile technology on open spaces, built environments, and urban spaces.

michaelseangallagher.org
Michael.S.Gallagher@ed.ac.uk



Dr Zayba Ghazali-Mohammed

Research Associate

Zayba is a Research Associate on the Move2Learn project led by Dr Andrew Manches. Her main research interests include cognitive development of young children's scientific understanding, the role of executive functions and other domain-general capabilities on conceptual progression, naïve theories of learning, and how developing language can influence scientific understanding.

z.ghazali@ed.ac.uk



Professor Jeff Haywood

Professor Emeritus

Jeff conducts research in the area of digital education policy and strategy, and previously led the Policy strand of work for the Centre for Research in Digital Education. For more information about Jeff's activities, see his own website:

thinking.is.ed.ac.uk/jeffhaywood/research-activities

Jeff.Haywood@ed.ac.uk



Angela Hunter

Research Centre Administrator

Angie organises all aspects of the day-to-day running of the Centre for Research in Digital Education. Angie joined the Centre full-time in 2018 though previously supported the MSc Digital Education programme as Teaching Secretary within the Graduate School.

angela.hunter@ed.ac.uk



Dr Jeremy Knox

Lecturer

Jeremy is co-director of the Centre for Research in Digital Education (Data Society) and a Lecturer in Digital Education at the University of Edinburgh. His research interests include critical posthumanism and new materialism, and the implications of such thinking for education and educational research, with a specific focus on the digital.

jeremy.knox@ed.ac.uk
jeremyknox.net



Dr Andrew Manches

Senior Lecturer

Dr Andrew Manches is a Senior Lecturer in Learning Sciences and Centre co-director (Children and Technology). He now leads the UK side of Move2Learn, a \$2.4million Science Learning+ project with the US. He researches the role of interaction in how we think and learn, and the implications for early learning technologies. He marries his academic world with industry as CEO of an early learning technology company, Pling Ltd.

a.manches@ed.ac.uk



Clara O'Shea

Associate Lecturer

Clara is an Associate Lecturer teaching on the MSc in Digital Education and working towards a PhD on 'Kinds of learning and kinds of play: an exploration of identity development in formal and informal digital environments'.

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Clara.O'Shea@ed.ac.uk



Professor Sir Tim O'Shea

Professor Emeritus

Professor Sir Timothy O'Shea BSc (Sussex), PhD (Leeds), DUniv (Heriot-Watt), DUniv (Strathclyde), LL.D hc (McGill), D.hc (St. Petersburg HSS), FAcSS, FRSE, was Principal and Vice-Chancellor of the University of Edinburgh from October 2002 – February 2018. Tim's academic output, produced mainly in collaboration with others and on topics relating to computer based learning, artificial intelligence, and mathematics education, includes 10 books, 22 BBC television programmes and over 100 journal articles.



Professor Lydia Plowman

Chair in Education and Technology

Lydia Plowman is Chair in Education and Technology in the Moray House School of Education, University of Edinburgh. She has gathered more than twenty years' experience of conducting research with children and digital media, including several projects funded by the ESRC. She is interested in young children's learning in a range of formal and informal settings, particularly in the ways in which technology is integrated into family life and used for leisure, work and educational purposes in the home.

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Professor Judy Robertson

Chair in Digital Learning

Professor Judy Robertson is Chair in Digital Learning at the Moray House School of Education. She has been developing educational technology in collaboration with children and teachers since 1997. She is interested in computer science education and serious games for children, particularly game authoring. Her work focuses on how technology can help to solve thorny real world problems.

judy.robertson@ed.ac.uk



Dr Jen Ross

Senior Lecturer

Jen is Centre co-director (Digital Cultures), and Deputy Director of Research and Knowledge Exchange in the School of Education and Sport. She researches and publishes on online and open education, digital cultural heritage learning, digital cultures and futures, and online reflective practices. Recent activity includes convening the Digital Cultural Heritage Research Network, leading the AHRC-funded Artcasting project, partnering in an Edinburgh-Sydney collaboration project, and consultancy work with the World Bank and Historic Environment Scotland.

jen.ross@ed.ac.uk | [@jar](https://twitter.com/@jar)



Dr Philippa Sheail

Lecturer

Phil Sheail is Programme co-director for the MSc in Digital Education. Her research interests are interdisciplinary, based in the area of digital and higher education, but drawing on organisational theory, cultural geography, and social theories of time. Phil is currently developing research in the library sector. Her latest research project is Data Bodies in the Library.

p.sheail@ed.ac.uk



Dr Christine Sinclair

Lecturer

Christine Sinclair is Programme Director of the MSc in Digital Education, and a Lecturer in Digital Education. She tutors on 'An introduction to digital environments for learning' and leads 'Course design for digital environments'. She is interested in how students respond to higher education. Her research particularly focuses on the effects of language in changing environments.

christine.sinclair@ed.ac.uk



Dr Claire Sowton

Project and Communications Manager

Claire Sowton is the Project and Communications Manager for the Centre for Research in Digital Education and Project Manager (UoE) for the Move2Learn project. Her recent research has focused on digital and mobile approaches to engagement and evaluation of cultural experience, including the AHRC Artcasting project.

claire.sowton@ed.ac.uk



Dr Yi-Shan Tsai

Research Associate

Yi-Shan Tsai is a co-investigator of a cross-European project – SHEILA (Supporting Higher Education to Integrate Learning Analytics) and a member of the Learning Analytics Policy Task Group at the University of Edinburgh. Her current research focuses on policy and strategy formation for learning analytics in higher education. Her other research interests include reader response, popular cultural reading, visual texts and media, learning and teaching support, and educational research methods.

yi-shan.tsai@ed.ac.uk



Dr Yuchen Wang

Research Associate

Yuchen Wang is a Research Associate on 'Lecture Recording for Inclusive Education' led by Dr Jeremy Knox. Her research has focused on inclusive education development and the implications of student voice. She completed her PhD research 'Imagining Inclusive Schooling' at the University of Edinburgh, which examined disabled children's learning and participation in mainstream schools in Shanghai through an ethnographic approach.

yuchen.wang@ed.ac.uk



Dr Anna Wood

Research Associate

Anna Wood is the Research Associate on the 'Asking the Right Question' Project, led by Dr Christine Sinclair. Her research interests focus on the use of technology in flipped, active learning lectures, and on the dialogues that take place in these lectures, both between students and between teacher and student, and the way in which these dialogues may support learning. She blogs at 'The Science of Scientific Learning'.

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anna.wood@ed.ac.uk

DIGITAL CULTURES

“Work in the Digital Cultures strand sheds new light and offers critical perspectives on some of the most pressing issues in digital education today, including openness, surveillance, anonymity, feedback and dialogue in higher education, new forms of engagement and learning in galleries, libraries and museums, and digital futures for work, informal learning, and education.”

Dr Jen Ross

PROJECT EXAMPLE

ARTCASTING

Working together with the National Galleries of Scotland, Tate, and the ARTIST ROOMS Research Partnership, the project team developed a new digital and mobile form of evaluation of arts-based engagement, in the context of ARTIST ROOMS On Tour. The project involved the design, development, piloting and analysis of an Artcasting methodology and a digital output in the form of a mobile app. The mobile app invited visitors to select an artwork and create an ‘artcast’ by choosing and describing a new location and time for the artwork; visitors could then encounter or re-encounter artcasts in those locations at a later date. The Artcasting approach generated and measured links and relationships between objects, places and people – simultaneously creating connections and evaluating the intensity of engagement with artworks and exhibitions.

In total, the team took part in 23 events and engagement activities throughout the course of the project, including conferences, drop-in sessions, twitter chats, workshops, invited seminar presentations, and demonstrations.

Principal Investigator: **Jen Ross**

Team: **Chris Speed, Jeremy Knox, Claire Sowton, Chris Barker**

Funder: **AHRC**

Award: **£149,542 (total grant value £173,394)**

Project dates: **May 2015 – June 2016**

Website: **www.artcastingproject.net**

The Digital Cultures research theme engages with the cultural contexts of digital education in the broadest sense including digital higher education, open education and digital cultural heritage.

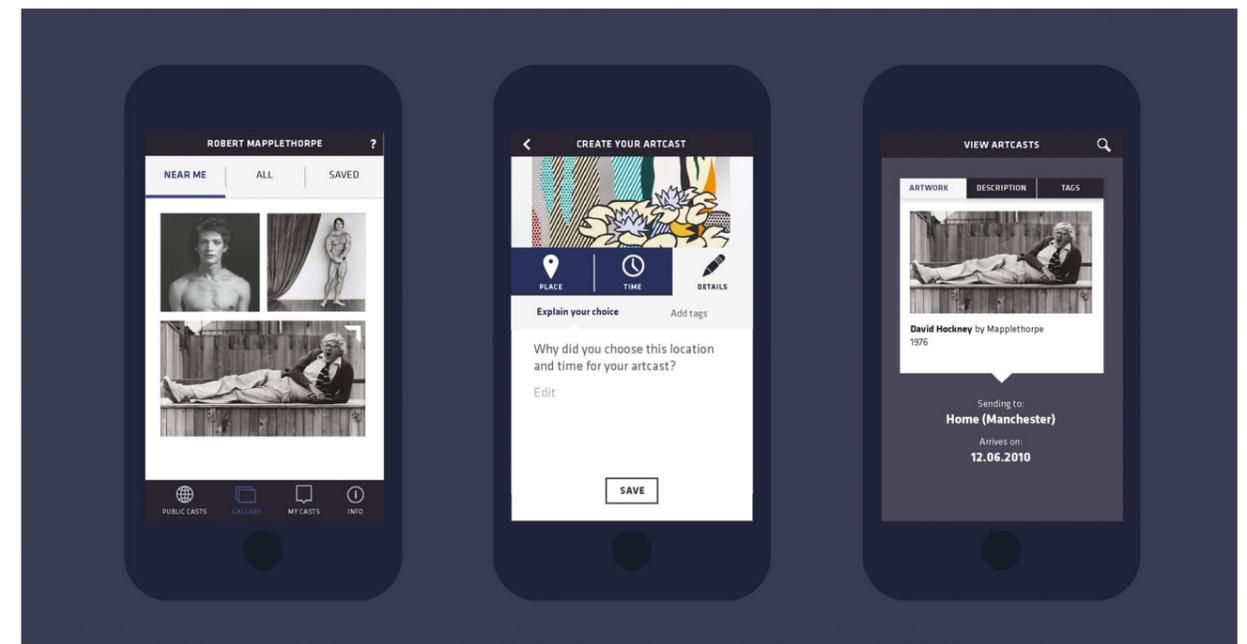
Drawing on critical perspectives on education, society and technology, we are actively researching high impact areas including museum education, massive open online courses (MOOCs), teacher automation, internationalisation and the ‘data turn’.

Dr Jen Ross

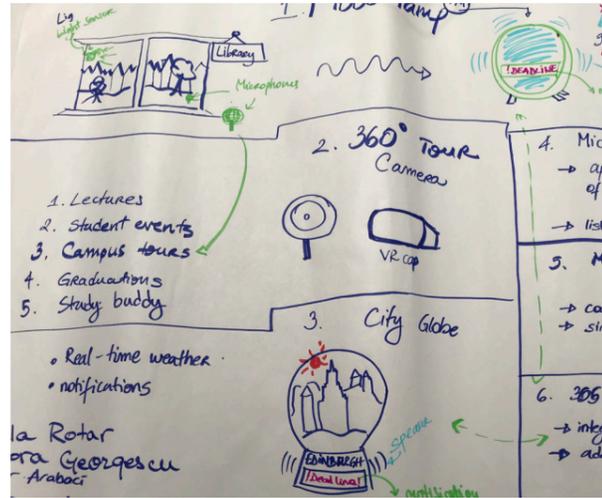
Co-Director for Digital Cultures

jen.ross@ed.ac.uk

- ✦ **Seminar:** Exploring design-led digital education research: developing ‘Artcasting’ to support new approaches to arts evaluation. Digital Education seminar series, University of Edinburgh, 31 October 2014.
- ✦ **Workshop:** Artcasting and ARTIST ROOMS on Tour: Using mobilities-informed methods to support new approaches to arts evaluation. Cultural Heritage Communities: Technologies and Challenges Workshop, Communities and Technologies 2015. 28 June 2015, Ireland.
- ✦ **Conference presentation:** Using mobilities-informed methods to support creative and innovative approaches to arts evaluation. Interweaving Conference, School of Education, University of Edinburgh, 2 September 2015.
- ✦ **Conference presentation:** Artcasting: digital and mobile cultural heritage evaluation. Connected Communities Heritage Network Symposium 2016. University of Lincoln. 14–15 January 2016. A video recording of Claire’s presentation is available: <https://www.youtube.com/watch?v=ZZ8ydVB9IsE>.
- ✦ **Lightning talk:** Artcasting. Digital Cultural Heritage Research Network Workshop 1, University of Edinburgh. 29 January 2016.
- ✦ **Invited talk:** Artcasting – reflections on a new approach to understanding engagement with art, Scottish Network on Digital Cultural Resources Evaluation, Workshop 3. 31 March 2016.
- ✦ **New Materialism Training School,** Tate, 27–29 May 2016.
- ✦ **Conference presentation:** Casting a line: hospitality, trajectory and Artcasting in ARTIST ROOMS co-production. What Does Heritage Change? Association of Critical Heritage Studies, Montreal, 4–7 June 2016.



Top: Artcasting in the National Galleries of Scotland (ARTIST ROOMS: Roy Lichtenstein) | Bottom: Artcasting app example screens



Left: Two-Way Patch Event | Right: Internet of (Campus) Things Event (Festival of Creative Learning)

PROJECT EXAMPLE

NEAR FUTURE TEACHING

This is a strategic project to co-design the future of digital education at Edinburgh with students and staff. How should teaching at The University of Edinburgh unfold over the coming decades, as technology, social trends, patterns of mobility, new methods and new media continue to shift what it means to be at university? The Near Future Teaching project, running over the 2017/18 academic year, is about working together to co-design the future of digital education at Edinburgh.

The project team are gauging views from students and staff through a series of workshops, talks, think-tanks, interviews, one off events, and via social media. To date, virtual reality, digital and material design, film-making and creative writing have been used to challenge, inspire and reimagine teaching for the future.

This reimagining of the future of teaching at the University of Edinburgh is now being extended into design workshops to try to make sure that the ways in which we teach and learn are based on a set of values and visions we can ascribe to as an academic community.

“We should cease trying to reproduce the conventional classroom and pedagogy in digital space, and think more radically about what teaching can be. Starting from scratch, let’s ask how future teaching can be magical, instead of a ‘digital equivalent’ of work on the physical campus.”

Near Future Teaching Community Padlet

Themes emerging from the collected data from the Near Future Teaching project include critical takes on values, lectures, automation and AI, creativity, distance, and the concept of too much technology, all of which have the capacity to inform future teaching strategy for the University of Edinburgh.

Project lead: **Sian Bayne**. Project RA: **Michael Sean Gallagher**

Project manager: **Jennifer Williams (IAD)**

Project dates: **Sept 2017 – Aug 2018**

Website: www.nearfutureteaching.ed.ac.uk

CONSTRUALS AS NEW DIGITAL SKILLS

CONSTRUIT

INTERACTIVE OPEN EDUCATION

DIGITAL CULTURAL HERITAGE RESEARCH NETWORK

ARTCASTING

MUSEUM LEARNING

ART ENGAGEMENT

REAR

EMERGENCY AFTER SHOCK FORECASTING

YIK YAK

A LIVE PULSE

TEACHING, LEARNING & ASSESSMENT



Move2Learn at Glasgow Science Centre

CHILDREN & TECHNOLOGY

“Digital technology increasingly shapes the way young people live and learn. We believe that a better understanding of how children interact with technology not only helps us understand its influence, but also helps inform our role, in both supporting children’s interaction and informing the design of new technologies.”

Dr Andrew Manches

We explore the role of technology in the everyday lives of young children. Whether it’s at home with their families and other caregivers, in educational settings such as preschools and schools, or in and around their neighbourhood we think it’s important to know more about living and learning with technology.

We want the outcomes of our research to:

- + contribute to discussions about the place of technology in young children’s lives
- + create richer learning experiences for children and others by informing the design process
- + provide insights that are valuable for parents and teachers
- + engage decision-makers in understanding more about the ways in which technology can support learning

Dr Andrew Manches

Co-Director for Children & Technology
a.manches@ed.ac.uk

PROJECT EXAMPLE

EMBODIED LEARNING FOR PRE-SCHOOL SCIENTISTS (MOVE2LEARN)

Move2Learn will be carried out over 36 months (May 2017-Apr 2020) and examine how interactive museum exhibits designed to encourage meaningful actions can help young children express, communicate and develop their scientific thinking.

The project is a collaboration between the US, funded by National Science Foundation and led by Dr Judy Brown, Phillip and Patricia Frost Museum of Science. The UK is funded by the Wellcome Trust and led by CRDE member, Andrew Manches. The Co-PIs in the UK are Professor Sara Price, UCL and Dr Sharon Macnab, Glasgow Science Centre.

Principal investigator (UK): **Andrew Manches**

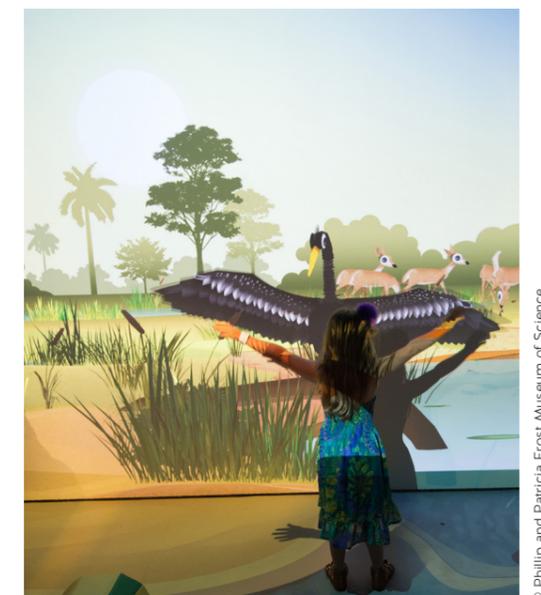
Team: **Zayba-Ghazali-Mohammed, Claire Sowton, Alexia Revueltas Roux**

Funder: **Wellcome Trust**

Award: **£374,411 (total grant value £701,656)**

Project dates: **May 2017 – May 2020**

Website: **www.de.ed.ac.uk/project/move2learn**



River of Grass exhibition
(Phillip and Patricia Frost Museum of Science)

© Phillip and Patricia Frost Museum of Science

PROJECT EXAMPLE

CITY DEAL

In the Digital Education Research Centre, we want all children and young people across the Edinburgh and South East Scotland City Region to learn about data to benefit their personal lives and open up new possibilities for interesting and well-paid careers. We propose an ambitious and inclusive programme of Data Education for All in City Region schools, in which children have the opportunity to excel in data education, regardless of their gender, location or financial circumstances.

To support this, Judy Robertson and Sian Bayne are working on a business case to be presented to the **University Data Driven Innovation Board** and the **DDI Skills Gateway** in late Spring 2018.

The programme is based on the principles that to be effective and inclusive, data education for all requires:

- 1 **a well-designed and coherent curriculum which progresses from nursery to the end of secondary school accompanied by high quality teaching materials linked to the curriculum which inspire and excite children;**
- 2 **teachers who are confident and competent in data education;**
- 3 **productive collaborations between the University staff and students, City Region schools and local employers and charities;**
- 4 **internationally leading research and knowledge-sharing to deepen our understanding of how data impacts society, how we can best teach about data, and to robustly evaluate the programme and make recommendations to policy makers.**

Project Lead (Schools) on City Deal Data Driven Innovation Skills Gateway: **Judy Robertson**
Website: www.ed.ac.uk/local/city-region-deal



YOUNG CHILDREN'S DIGITAL PLAY

COMPUTING IN CHILDREN'S EARLY YEARS

PRE-SCHOOL SCIENTISTS



MOVE2LEARN



EMBODIED LEARNING

INTERACTION, EMBODIMENT AND TECHNOLOGIES IN EARLY LEARNING

DATA SOCIETY

“Data Society responds to the increasingly important issues raised by the collection and processing of digital data in education, and will develop a critical research agenda around analytics, ‘big data’, algorithms, machine learning, and other ‘data intensive’ practices.”

Dr Jeremy Knox

Emerging research approaches from outside of education – such as software studies, critical data studies, critical algorithm studies, and surveillance studies – have surfaced crucial insights and challenges related to the increasing entanglement of data in social life. The ‘Data Society’ research theme will allow the Centre to establish and support education-specific projects related to this vital contemporary area of study.

The ‘Data Society’ research theme was launched in February 2018, marked by the seminar series ‘Data Citizenship and Education’, in partnership with the Edinburgh Futures Institute.

Dr Jeremy Knox
Co-Director for Data Society
jeremy.knox@ed.ac.uk

PROJECT EXAMPLE DATA BODIES IN THE LIBRARY

Many university students and researchers make extensive use of one or more research library spaces and services. These library users are often physically visible, as bodies at desks, but they also leave data traces through interactions with digital services and resources. These data traces include data on searching, borrowing and downloading a range of digital and physical materials. Library users also leave digital traces of entrances and exits through security gates, and interact with library buildings through connections to Wi-Fi hotspots, book check-out machines, automated book returns, and digital questionnaire points, as well as moving through buildings which respond to such movement – or lack of it – through triggered lighting systems and automatic door openers. The building audibly responds to inappropriate movement with alarm sounders, as tagged and unchecked material inadvertently leaves its approved boundaries.

The project focuses on two key research libraries as field sites: the University of Edinburgh Library and the National Library of Scotland.

Considering ‘what makes a library?’, the research will work with theories of ‘Code/Space’ (Kitchin and Dodge 2011), exploring the relationships between software, data, physical space, and the library user. The research addresses issues of making ‘good’ use of library data and considers the wider implications of the code/ space for the cultural industries.

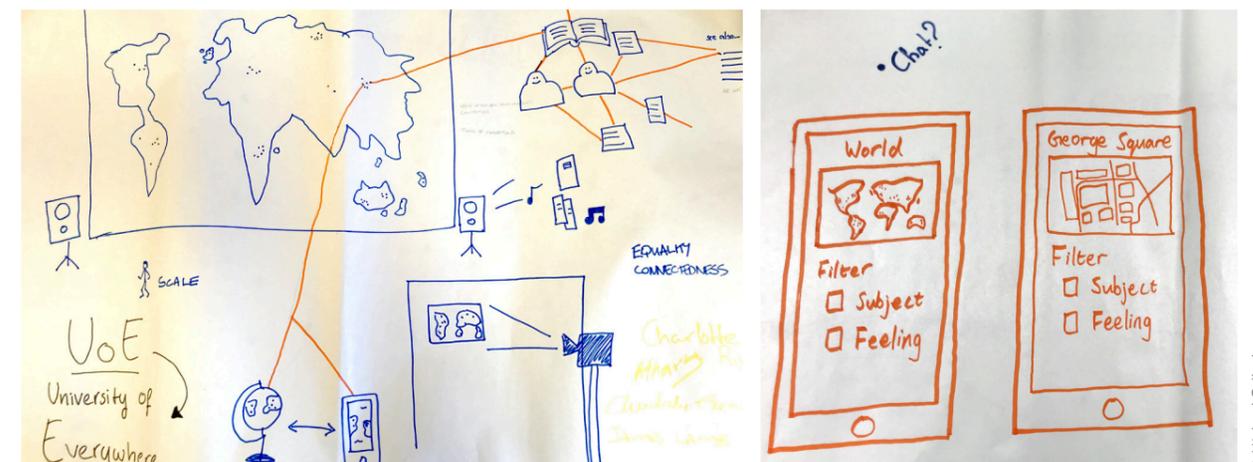
The research will address critical questions, of significance to universities, libraries, and the wider cultural sector, about the practical and problematic issues that might be associated with making ‘good’ use of user data while addressing concerns around the increase in user ‘datafication’.

Principal investigator: **Philippa Sheail**
Team: **Niklas Berliner**
Funder: **Challenge Investment Fund (University of Edinburgh)**
Award: **£11,427**
Project dates: **Aug 2017 – Jul 2018**
Website: **www.de.ed.ac.uk/project/data-bodies-library**



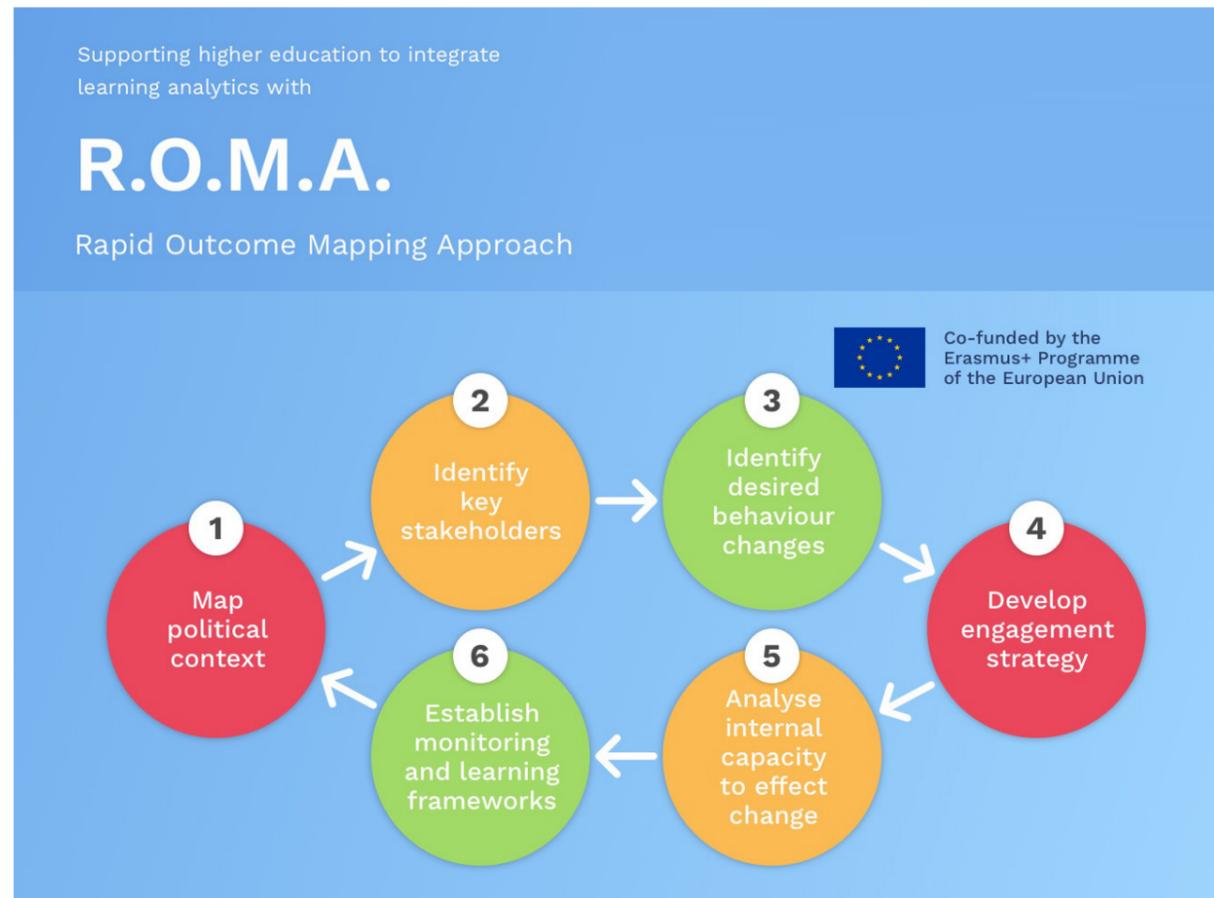
Author Catalogue

© James Lamb



Internet of (Campus) Things Event (Festival of Creative Learning)

© Michael Gallagher



PROJECT EXAMPLE

SUPPORTING HIGHER EDUCATION TO INTEGRATE LEARNING ANALYTICS (SHEILA)



To assist European universities to become more mature users and custodians of digital data about their students as they learn online, the SHEILA project will build a policy development framework that promotes formative assessment and personalized learning, by taking advantage of direct engagement of stakeholders in the development process.

By merging technical methods for data mining with current educational theory, research and practice, Learning Analytics has provided novel and real-time approaches to assessing critical issues such as student progression and retention, establishment of indicators of 21st century skills acquisition, as well as personalised and adaptive learning.

The project will use participatory action research and the Rapid Outcome Mapping Approach (ROMA), specifically designed for policy making derived from scientific evidence. The outputs will be validated through

case studies, using the policy framework to guide the development, implementation, and evaluation of LA policy and strategy in four HEIs in different regions of Europe. The project will use innovative strategies to disseminate and translate the outputs, and to set up a long term learning analytics policy agenda and community among HEIs across Europe.

Principal investigator: **Dragan Gašević**
 Team: **Jeff Haywood, Sian Bayne, Pete Evans, Yi-Shan Tsai, Jeremy Knox**
 Funder: **European Commission**
 Award: **£136,857 (total grant value €460,612)**
 Project dates: **Jun 2015 – Jun 2018**
 Website: **www.sheilaproject.eu**

LEARNING ANALYTICS REPORT CARD

SHEILA

SUPPORTING HIGHER EDUCATION TO INTEGRATE LEARNING ANALYTICS

WEARABLE TECHNOLOGIES

PULSE

CODE/SPACE

DATA BODIES IN THE LIBRARY

TRACES

(RE)CONNECTING CHILDREN WITH NATURE THROUGH MINECRAFT

DIGITAL/NATURE

DOCTORAL RESEARCH

Four doctoral students have graduated from the Centre since 2016 and our community currently includes 25 more.

Nora'ayu Ahmad Uzir

Learning Analytics, Information Visualization and Self-Regulated Learning.

Supervisor: Professor Dragan Gašević and Professor Abelardo Pardo (University of South Australia)

Athary Almuhan

The effects of the flipped classroom model on the learning environment.

Supervisors: Dr Christine Sinclair and Professor Jeff Haywood

Nada Alsayegh

The Cultural Implications of Arabic Massive Open Online Courses in the Middle East.

Supervisors: Dr Jen Ross and Dr Jeremy Knox

Valentia Andries

Promoting play in a children's hospital: a person-centred approach to technology design with families.

Supervisors: Professor Judy Robertson and Professor Lydia Plowman

Assem Berniyazova

Worldwide diffusion of XXI century educational innovations: opportunities and challenges for educational institutions in Kazakhstan.

Supervisors: Dr Christine Sinclair and Dr Hamish Macleod

Sharon Boyd

Student-community engagement activities at distance – digital narrative methods to capture a sense of “place” in research.

Supervisors: Dr Jen Ross and Dr Beth Christie

Murray Craig

Technology-related attitudes, beliefs and practices of secondary school physical education teachers in Scotland.

Supervisors: Dr Christine Nash and Dr Jen Ross

Noreen Dunnett

An exploration of disengagement from learning as a product of the socio-material assemblage of the learning environment – classroom, or the game environment, rather than a characteristic of the individual human subject (student).

Supervisors: Professor Sian Bayne and Dr Hamish Macleod

Maureen Finn

Experience edited: mobile pupils and the material environment of the school.

Supervisors: Professor Lydia Plowman and Dr Jen Ross

Stuart Gray

Investigating the effectiveness of an active smart-phone game as a tool for improving executive function in children.

Supervisor: Professor Judy Robertson

Chris Hambley

Sociomaterial reading of learning spaces, specifically how people negotiate power in the context of transforming an ICT learning centre, and how users experience this space because of its design patterns.

Supervisors: Professor Sian Bayne and Dr Christine Sinclair

Nicola Kiernan

Use of technology in STEM Education and learning progressions (Chemistry).

Supervisors: Dr Andrew Manches and Dr Michael Seery (School of Chemistry)

James Lamb

How teaching, learning and assessment are affected by the pedagogic and societal shift to the digital. Funded by ESRC.

Supervisors: Professor Sian Bayne and Dr Jen Ross

Xin Luo

Parents' voices on WeChat: exploring the modernisation of early years education in China.

Supervisors: Professor Lydia Plowman and Dr Shari Sabeti

Wannisa Matcha

Beyond data presentation: learning analytics to uncover learning strategies and the influences of feedback.

Supervisor: Professor Dragan Gašević

John Morrison

Understanding the real and perceived barriers for participation in higher education among care experienced individuals. Exploring what value digital tools can bring to Jean Rouch's 'Shared Anthropology' approach.

Supervisors: Professor Chris Speed (Design Informatics) and Dr Jen Ross

Clara O'Shea

Kinds of learning and kinds of play: an exploration of identity development in formal and informal digital environments.

Supervisors: Professor Sian Bayne and Dr Hamish Macleod

Eder Paula

The Impact of Educational Robotics in Interest towards Technology Careers and Technology Skills in Brazilian Primary and Secondary School Students – a Longitudinal Case Study Approach.

Supervisors: Dr Judy Robertson and Dr Jeremy Knox

Alexia Revueltas Roux

Exploring the cognitive neurocorrelates that could influence embodied science learning and how scientific thinking develops in early childhood through interactive exhibits at science centres/museums. Funded through Wellcome Trust and Mexico's National Council of Science and Technology (CONACYT).

Supervisors: Dr Andrew Manches, Professor Judy Robertson, Dr Josie Booth

John Saint

Self-regulated learning and feedback with learning analytics.

Supervisors: Professor Dragan Gašević and Professor Abelardo Pardo (University of South Australia)

Sabina Savadova

Exploring parental agency and pre-school-aged children's interactions with technology at home: A comparative study of Georgia and Azerbaijan.

Supervisors: Professor Lydia Plowman and Dr Holly Linklater

Debbie Schachter

Understanding the awareness and development of critical information literacy frameworks for higher education library instruction.

Supervisors: Dr Pauline Sangster and Dr Jen Ross

Arabella Sinclair

Language complexity discourse-based language learning.

Supervisors: Professor Dragan Gašević and Dr Maria Wolters (Informatics)

Sarah Treloar

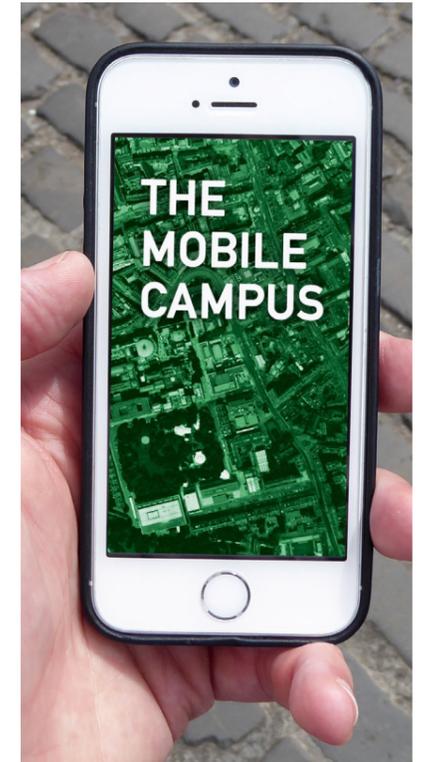
How online social network sites are being used for informal language learning.

Supervisors: Dr Jen Ross and Dr Maria Dasli

Paul Udofia

Designing, developing and implementing an effective e-learning model for senior secondary school mathematics in Nigeria.

Supervisors: Dr Christine Sinclair and Dr Rory Ewins



The Mobile Campus by James Lamb



Exploration of disengagement from learning by Noreen Dunnett

EXTERNAL FUNDING

Digital Education has benefited from £960,561 in external grant funding during the period 2016–2018.



Interaction, Embodiment and Technologies in early learning

PRINCIPAL INVESTIGATOR:
Dr Andrew Manches

TIMELINE:
01 Sep 2013 – 30 Sep 2016

FUNDING:
ESRC Future Research Leaders

AWARD:
£204,045



Supporting Higher Education to Integrate Learning Analytics (SHEILA)

PRINCIPAL INVESTIGATOR:
Professor Dragan Gašević

TIMELINE:
01 Jan 2015 – 30 Jun 2018

FUNDING:
European Commission

AWARD:
£136,857 Total grant value: €460,612



Research for Emergency Aftershock Forecasting (REAR)

CO-INVESTIGATOR:
Professor Sian Bayne

TIMELINE:
01 Nov 2016 – 30 Jun 2017

FUNDING:
Natural Environment Research Council (Global Challenges Research Fund) with University of Edinburgh School of Geosciences

AWARD:
£35,832 Total grant value: £200,516



The role of embodied cognition in computing education

PRINCIPAL INVESTIGATOR:
Dr Andrew Manches

TIMELINE:
1 Jan 2016 – 30 June 2016

FUNDING:
Carnegie Trust for the Universities of Scotland

AWARD:
£7,257 Total grant value: £14,177



Artcasting

PRINCIPAL INVESTIGATOR:
Dr Jen Ross

TIMELINE:
01 May 2015 – 30 Jun 2016

FUNDING:
Arts and Humanities Research Council

AWARD:
£149,542 Total grant value: £173,394



Young Children's Digital Play

PRINCIPAL INVESTIGATOR:
Professor Lydia Plowman

TIMELINE:
07 Nov 2016 – 30 May 2017

FUNDING:
ESRC Impact Grant

AWARD:
£18,930



Construit: Making construals as a new digital skill for creating interactive open educational resources

UOE LEAD RESEARCHER:
Dr Hamish Macleod

TIMELINE:
01 Sep 2014 – 31 Aug 2017

FUNDING:
Erasmus+

AWARD:
£28,817 Total grant value: €418,160



Computing in Children's Early Years

PRINCIPAL INVESTIGATOR:
Dr Andrew Manches

TIMELINE:
01 Aug 2016 – 31 Oct 2016

FUNDING:
ESRC Impact Accelerator Grant

AWARD:
£4,870



Move2Learn: Embodied learning for pre-school scientists

PRINCIPAL INVESTIGATOR:
Dr Andrew Manches

TIMELINE:
01 May 2017 – 01 May 2020

FUNDING:
Wellcome Trust

AWARD:
£374,411 Total grant value: £701,656

INTERNAL FUNDING

Digital Education has benefited from £108,107 in funding from The University of Edinburgh.



THE UNIVERSITY of EDINBURGH

Digital/Nature: (re)connecting children with nature through Minecraft

PRINCIPAL INVESTIGATOR:
Dr Jeremy Knox

TIMELINE:
01 Jul 2015 – 30 Jun 2016

FUNDING:
College of Humanities and Social Sciences Stramash 'transformations' funding

AWARD:
£9,450

Artcasting at the Edinburgh Art Festival

PRINCIPAL INVESTIGATOR:
Dr Jen Ross

TIMELINE:
09 May 2016 – 16 Sep 2016

FUNDING:
College of Humanities and Social Sciences Knowledge Exchange and Impact Grant

AWARD:
£4,400

Academic Networking Fund (UoE)

PRINCIPAL INVESTIGATOR:
Dr Jen Ross

DATE:
01 Jan 2016

FUNDING:
Digital Cultural Heritage Research Network

AWARD:
£3,400

Learning Analytics Report Card

PRINCIPLE INVESTIGATOR:
Dr Jeremy Knox

TIMELINE:
01 Sep 2015 – 31 Aug 2016

FUNDING:
Principal's Teaching Award Scheme and IS Innovations Fund

AWARD:
£21,600

Lecture Recording for Inclusive Education

PRINCIPAL INVESTIGATOR:
Dr Jeremy Knox

DATE:
08 Jan 2018

FUNDING:
Principal's Teaching Award Scheme

AWARD:
£14,397

Pulse

PRINCIPLE INVESTIGATOR:
Dr Jeremy Knox

TIMELINE:
01 Sep 2016 – 31 Aug 2017

FUNDING:
Challenge Investment Fund (UoE)

AWARD:
£12,483

"A Live Pulse": Yik Yak for understanding teaching, learning and assessment at Edinburgh

PRINCIPAL INVESTIGATOR:
Professor Sian Bayne

TIMELINE:
01 Sep 2016 – 31 Aug 2017

FUNDING:
Principal's Teaching Award Scheme (UoE)

AWARD:
£15,000

Asking the Right Question

PRINCIPAL INVESTIGATOR:
Dr Christine Sinclair

TIMELINE:
01 Jan 2017 – 31 Dec 2017

FUNDING:
Principal's Teaching Award Scheme (UoE)

AWARD:
£5,000

Methodological innovations for assessing learning in digital spaces

UOE RESEARCH TEAM:
**Professor Dragan Gašević,
Dr Jen Ross**

TIMELINE:
01 July 2017 – 30 Apr 2018

FUNDING:
University of Edinburgh and University of Sydney Partnership Collaboration Award

AWARD:
£10,950

Data Bodies in the library

PRINCIPAL INVESTIGATOR:
Dr Philippa Sheail

TIMELINE:
01 Aug 2017 – 31 Jul 2018

FUNDING:
Challenge Investment Fund (UoE)

AWARD:
£11,427

CONSULTANCY WORK

We acknowledge the importance of consultancy work and value industry engagement for the opportunities it presents to contribute social, cultural and economic benefit through collaboration and knowledge exchange.

Since 2016, the centre has generated £67,879 in consultancy funding, working with **BBC CBeebies**, **Historic Environment Scotland**, the **Phillip and Patricia Frost Museum of Science**, the **National Library of Scotland**, **Sage Publishing**, and **World Bank**.

As an example of our consultancy work, the Phillip and Patricia Frost Museum of Science pilot brought together researchers from the University of Illinois and the University of Edinburgh with informal learning practitioners and cognitive scientists from the US and UK. The planning phase culminated in the development of a research plan for investigating how applying the principles of embodied cognition to the design of informal learning environments can support young children's (ages 2-6) engagement with, and understanding of, science topics and concepts. This initial consultancy work led on to a successful Wellcome Trust funding application in 2012 for the Embodied learning for preschool scientists (Move2Learn) project worth £374,411 (total grant value: £701,656).

Phil Sheail and Jen Ross, with Rob Robinson Heritage Consulting, were appointed as consultants in early 2018 for the National Library of Scotland (NLS): 'Here is where you are: cultural heritage connections for the 21st century' study. They developed a first-stage feasibility study to enhance NLS engagement with audiences across Scotland, looking particularly beyond the Central Belt and other large urban centres. Drawing on their experience in digital education and work with cultural heritage organisations, including galleries, libraries, archives and museums, the consultancy team made a series of recommendations for new engagement activities and approaches, framed around the theme of 'mobilities'.

Through our previous work engaging with the creative industries, cultural heritage, finance, development, telecommunications and pharmaceuticals industries we now have established links across a broad range of sectors ensuring we are well-positioned to continue attracting consultancy funding.



Top: Phillip and Patricia Frost Museum of Science
Middle and bottom: Water table and River of Grass exhibits
(Phillip and Patricia Frost Museum of Science)

© Phillip and Patricia Frost Museum of Science

KNOWLEDGE EXCHANGE EVENTS



© James Lamb

'Wondering about the city: making meaning in Edinburgh's Old Town'

Through knowledge exchange activities we promote our research and share findings with students, peers, members of the public and practitioners. We do this through workshops, conferences, networking and seminar events.

In 2016, we hosted two major international conferences. Hundreds of digital education researchers came to Edinburgh in April 2016 for **Learning at Scale**, chaired by Jeff Haywood, covering interdisciplinary research at the intersection of the learning sciences and computer science. **Learning Analytics and Knowledge (LAK)**, was co-chaired by Dragan Gasevic and run in partnership with the Society for Learning Analytics.

Andrew Manches, Judy Robertson, Lydia Plowman and other colleagues and students working in Children and Technology ran a workshop at the **Edinburgh International Science Festival** in May 2016. They gave children and parents an opportunity to get hands-on

with recent technologies designed for young children and to and share thoughts and experiences of technology in children's lives.

In June of the same year, drawing on findings from the Learning Analytics Report Card project (L.A.R.C.), Jeremy Knox ran a **'Practical strategies for ... playing with student data'** workshop for students exploring how to make good use of their own data gathered through learning analytics.

In November, Jeremy Knox and James Lamb hosted a workshop titled **'Wondering about the city: making meaning in Edinburgh's Old Town'**. As participant-researchers they gathered visual, aural and other digital data with a view to investigating how we experience and understand our urban surroundings.

With funding from The University Academic Networking Fund Jen Ross lead the creation of the **Digital Cultural Heritage Research Network**, bringing together representatives of the cultural heritage sector with

an interdisciplinary group of University of Edinburgh researchers. Workshops were held in January, March and May in order to share research, practice and foster new research relationships. Two further DCHRN events took place in April 2017 ('Working with the public') and February 2018 (Professor Melissa Terras, 'Wandering through OpenGlam').

In 2017, the Centre hosted a conference titled 'Computational thinking in primary schools', a free one day event to learn about the new computing curriculum for Scottish schools.

We participated in the ESRC Festival of Social Science on 11 November with "Help! My Teacher Is a Robot!". Twelve academic staff and masters students, led by Yi-Shan Tsai, held a family event at Ocean Terminal to invite children and parents to join a critical discourse of teaching automation through a series of fun activities (storytelling, mind mapping, drawing, Lego building, AI applications, and vox pops). 140 participants shared their hopes and worries about the future of teaching, with helpful classroom assistants on the one hand and a loss of emotional engagement and interaction on the other. These and other ideas helped the researchers and families engage in conversations about what digital futures we might want for our schools and challenge assumptions about what automation can and should do for us. This event marks a success in engaging the public with issues around the adoption of automation technology in education.

In December, the Children and Technology group organised a successful workshop titled 'Children & Technology: towards interdisciplinary collaboration', funded by the Scottish Informatics Computer Science Alliance (SICSA). The event attracted people from the children's technology industry, academia, museums, and beyond to share their research and develop wider networks.



Help! My Teacher Is a Robot!



Children and Technology: towards interdisciplinary collaboration

SEMINAR PROGRAMME

Since 2016 we have arranged **39 seminars**, a full list of which can be found below. To date, we have had over **1100 enrolments** on our seminar programme.

2016

JANUARY

Problem spaces: interface methods and compositional methodology

Professor Celia Lury
University of Warwick

FEBRUARY

Code, methods and the production of educational data

Dr Cormack O'Keeffe
YES 'N' YOU, Paris

APRIL

Creating Living Knowledge: Understanding interdisciplinary and community-engaged research in the arts, humanities and social sciences

Professor Keri Facer
University of Bristol

Can Education Scale?

Professor John C Mitchell
Vice Provost for Teaching and Learning
Stanford University (April 2016)

MAY

Long-term and actionable prediction of student outcomes using automated detectors of engagement and affect

Dr Ryan Baker
Columbia University

Exciting times require exciting actions: Opportunities for learning analytics in higher education

Professor George Siemens
Professor and Executive Director of the Learning Innovation and Networked Knowledge Research Lab at University of Texas

Dr Mark Milliron
Co-Founder and Chief Learning Officer of Civitas Learning

The global educational data scientist: Pearson plc and digital methods

Dr Ben Williamson
University of Stirling

JUNE

The difference between human and posthuman learning

Professor Cathrine Hasse
University of Aarhus, Denmark (June 2016)

2016/17

OCTOBER

Quantitative Ethnography

Professor David Williamson Shaffer
University of Wisconsin, Madison

Designing Play: young children's play and communication practices in relation to designers' intentions for their toy

Dr Dylan Yamada-Rice
Dubit

NOVEMBER

Appropriation, Affordance and Minecraft: What the methods people use to navigate Minecraft tell us about approaches to technology use

Dr Tom Flint
Edinburgh Napier University

DECEMBER

Making Bananas: Design Pedagogy and Social Learning at a Distance

Derek Jones
Lecturer in Design at The Open University

JANUARY

Digitalised Dialogues Across the Curriculum (DiDiAC): Enhancing classroom dialogue by using Talkwall to 'Think Together'

Dr Louis Major
University of Cambridge

FEBRUARY

The Labour of Digital Scholarship

Dr Karen Gregory
University of Edinburgh

FEBRUARY

"it should be necessary to start": critical digital pedagogy for troubled political times – an American perspective

Dr Amy Collier
Associate Provost for Digital Learning
Middlebury College, Vermont

MARCH

More than Just Words: Education and research in the age of visual cultures

Dr Peter Jandric
Zagreb University of Applied Sciences

Rhythms of academic mobility

Dr Judith Enriquez-Gibson
Liverpool John Moores University

Automating Education and Teaching Machines

Audrey Watters
Hack Education

Nasty Women, Private Servers, and Digital Purity Myths

Dr Liz Losh
Associate Professor of English and American Studies,
William and Mary University (May 2017)

Presented in collaboration with College of Arts, Humanities and Social Sciences Digital Scholarship Office; Digital Education; and Digital Sociology.

APRIL

Surprises & confirmations in large-scale learning analytics research @Blackboard

Dr. John Whitmer
Analytics and Research Director at Blackboard

Authority relations behind the scenes of online education – processes of erosion and sedimentation

Bjarke Lindso Anderson
Aarhus University

Standard setting in national examinations: what are exam standards?

Professor Jo-Anne Baird
Director of the Department of Education,
University of Oxford

MAY

The Interplay of Discussion, Cognition and Instruction in Computer-Supported Collaborative Learning Environments

Professor Frank Fischer
Chair of Education and Educational Psychology at the University of Munich (LMU)

Towards a radical digital citizenship in digital education

Dr Karen Gregory (Chair)
University of Edinburgh
Dr Akwugo Emejulu
University of Warwick
Dr Callum McGregor
University of Edinburgh
Dr Huw Davies
Oxford Internet Institute and Convener of the BSA's Digital Sociology study group
Dr Emma Dowling
Friedrich-Schiller-University Jena, Postgrowth Societies Research Group

This seminar was jointly organised by colleagues in Education, Digital Education and Digital Sociology, with funding from the University of Edinburgh's Global Justice and Global Development Academies' Innovation Initiative Fund.



JUNE

Emerging participatory culture: Making sense of social media use for learning in, across and with Higher Education and the cultural heritage sector

Dr Narelle Lemon
Swinburne University of Technology, Australia

Open Education and the Unenlightenment

Professor Martin Weller
Institute of Educational Technology at the Open University

Robots, virtual environments and developmental disorders: technology advancement needs neurodiversity

Dr Thusha Rajendran
Director of the Developmental Psychology in Action Lab based in the Department of Psychology, Heriot-Watt University

2017/18

SEPTEMBER

Patterns, approaches and systems to support teachers in designing for technology-enhanced collaborative learning

Seminar with Professor Yannis Dimitriadis
Director of GSIC/EMIC Research Group, University of Valladolid, Spain (September 2017)

OCTOBER

Virtual Internships: From MOOCs to MACROSIMS

Professor David Williamson Shaffer
Vilas Distinguished Achievement Professor of Learning Sciences, University of Wisconsin-Madison

What was enhanced? Three cases of Technology Enhanced Learning research projects and their unexpected outcomes

Dr Mark Gaved
IET, The Open University

NOVEMBER

Creators and Copyright: Voices from the field

Dr Smita Kheria
School of Law, University of Edinburgh

DECEMBER

TTM: Using Micro Learning and Learning Analytics to Improve Student Self-Reflection

Dr Christopher Cheong
School of Business IT and Logistics, RMIT University, Melbourne, Australia

Doing Speculative Research: Knives, Nature and an Ecology of Futures

Professor Mike Michael
Department of Sociology, Philosophy and Anthropology, University of Exeter (December 2017)

Providing personalized student support in flipped classrooms at scale

Professor Abelardo Pardo
The University of Sydney (December 2017)

JANUARY

Figuring the future: from the geographies, materialities and cultures of rural South Africa to the technocracy and continuing coloniality of higher education

Dr Sue Timmis
University of Bristol

FEBRUARY

Schooling data citizens

Dr Giovanna Mascheroni
Università Cattolica di Milano
Professor Judy Robertson
University of Edinburgh
Dr Ben Williamson
University of Stirling

Supporting learning of social-emotional competencies with technology

Dr Petr Slovak
University College London

MARCH

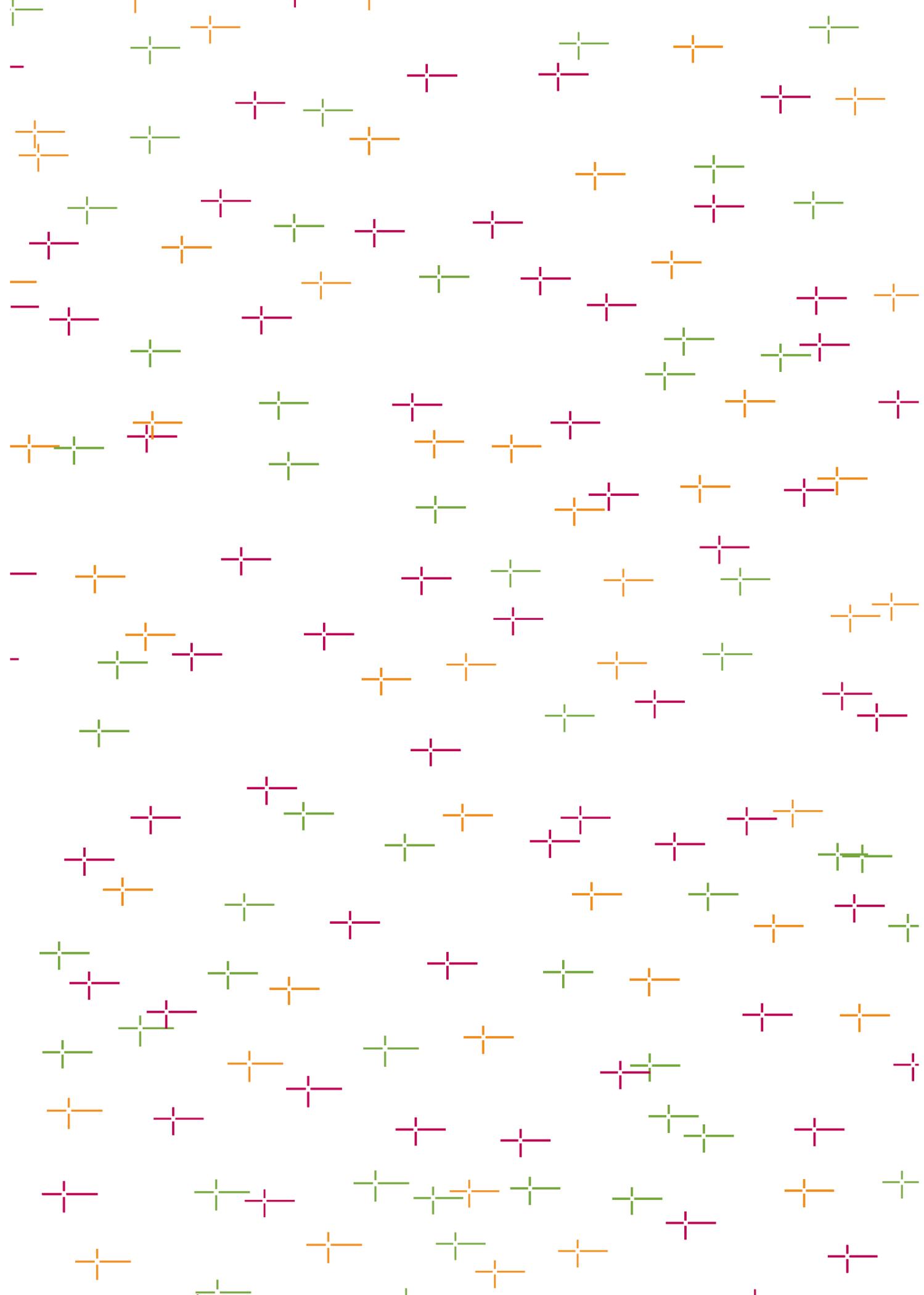
Beyond Computing and 21st Century Skills. What's missing?

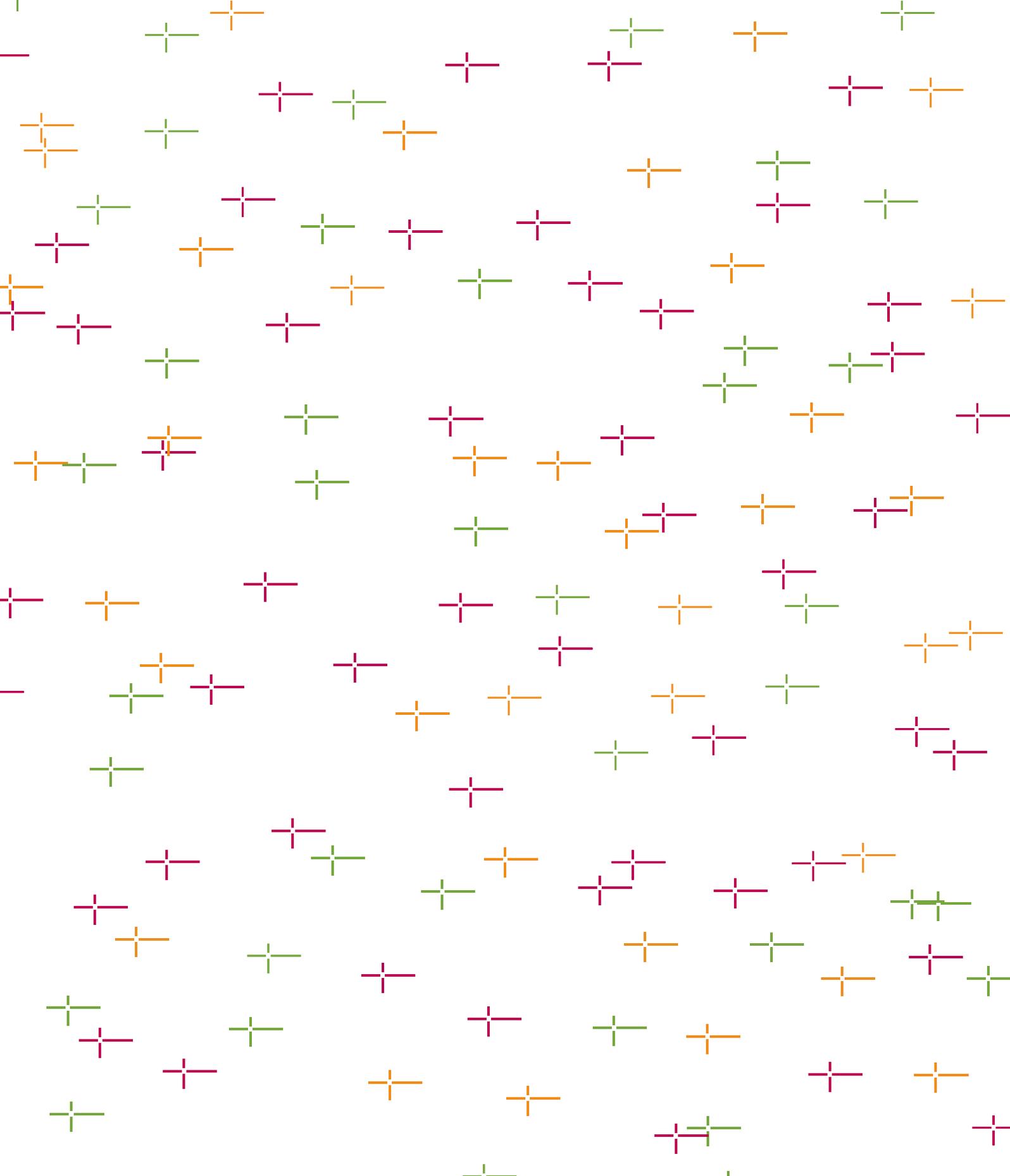
Dr Peter Rich
Brigham Young University in Provo, Utah

APRIL

Analytics: The Datafication of Higher Education and Work

Dr Jeremy Knox
University of Edinburgh
Dr Terrie Lynn Thompson, Dr Anna Wilson and Professor Cate Watson
University of Stirling
Dr Karen Gregory
University of Edinburgh





General enquiries: DEResearch@ed.ac.uk
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