



CENTRE FOR RESEARCH
IN DIGITAL EDUCATION

The text 'REPORT 2022' is centered in a large, bold, black, sans-serif font. It is enclosed within a decorative, hand-drawn border made of multiple parallel lines in shades of pink, green, and yellow. The border has a wavy, organic shape with small circles at its corners, resembling a stylized frame or a piece of string.

REPORT 2022



THE UNIVERSITY of EDINBURGH
Moray House School of
Education and Sport

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The Centre for Research in Digital Education is based in the Moray House School of Education and Sport at the University of Edinburgh. We are interested in how research and practice in education intersects with technology, and the impact of this on culture, policy and pedagogy. We work with many partner universities as well as policymakers, the cultural heritage sector, schools and other public and private sector organisations. We take a critical, cross-disciplinary approach to learning, teaching and technology in formal and informal education, and combine our research with world-leading practice in digital education and learning.

Editorial

The work of our Centre has always been characterised by its interdisciplinarity, its partnerships and the breadth of its connections. This has been more evident than ever this year, as we have expanded our interdisciplinary scope via newly funded large collaborative projects. These include Jen Ross's inclusion in the AHRC 'Towards a National Collection' partnership working with the Scottish National Collections, and our involvement in two new ESRC Centres – one for Early Mathematics Learning (Andrew Manches) and another for Sociodigital Futures (Ben Williamson). We have also welcomed David Overend, our new Lecturer in Interdisciplinary Studies to the team.

Our international partnerships have expanded, as Michael Gallagher secured new project funding to work with refugees studying in Ugandan higher education. Michael and Jeremy Knox also gained funding from the British Council to provide scholarships and a programme of R&D for educational leaders in sub-Saharan Africa to join us via our Masters programme in Digital Education.

These and our many other activities are all set out in this report, which once more celebrates the diversity of our research and its championing of work addressing educational inequalities, digital and data ethics and education futures. We also have a new design – created by Bart Manders – which brings all this to life in a new way. I hope you enjoy reading it.

PROFESSOR SIÂN BAYNE
Director

People

Academics

PROFESSOR SIÂN BAYNE

Chair in Digital Education,
Centre Director

Siân is also Director of Education for the Edinburgh Futures Institute and Assistant Principal Education Futures. Her research is focused on higher education futures and on interdisciplinary and critical approaches to researching digital education.

sian.bayne@ed.ac.uk sianbayne.net [@sbayne](https://twitter.com/sbayne)



DR SERDAR ABACI

Lecturer in Data and Digital Literacies

Serdar works on the Data Education in Schools project. His research interests include data and digital literacies, formative assessment and feedback, online learning, and evaluation of teaching and learning technologies.

serdar.abaci@ed.ac.uk [@drsabaci](https://twitter.com/drsabaci)

DR VALENTINA ANDRIES

Postdoctoral Research Assistant

Valentina is working on an EPSRC-funded project, tackling the issue of biased technology design and exploring school-aged children's perceptions of conversational agents (such as Amazon's Alexa). Her research interests largely lie at the intersection of education and Human-Computer Interaction (HCI): educational technology, participatory approaches, inclusive design and evaluation of technology, ethics in technology design, AI ethics.

valentina.andries@ed.ac.uk [@tina_andries](https://twitter.com/tina_andries)

DR SEONGSOOK CHOI

Senior Lecturer in TESOL

Seongsook's research focuses on interdisciplinary engagement and the development of analytical tools for mapping interactional patterns and representing these dynamically in visual formats.

s.choi@ed.ac.uk

DR HUW DAVIES

Lecturer in Digital Education

Huw's research addresses the relationships between technology, gender, race, generation, and social class. Huw is currently investigating AI's impact on education and why it is hailed as a solution to educational problems.

hdavies2@ed.ac.uk [@huwcdavies](https://twitter.com/huwcdavies)

DR PETER EVANS

Senior Lecturer

Pete's research interests are in vocationality and higher education, and in organisational implications of digital education. His research currently is focused on micro-credentials and on institutional resilience in higher education.

peter.evans@ed.ac.uk [@eksploratore](https://twitter.com/eksploratore)

DR RORY EWINS

Lecturer in Digital Education

Rory's research interests include how we teach and learn about digital citizenship, the implications of intellectual property for digital education, and digital education in development contexts.

rory.ewins@ed.ac.uk speedysnail.com

DR MICHAEL GALLAGHER

Senior Lecturer in Digital Education

Michael is Programme Co-Director of the MSc Digital Education. He researches digital education in development contexts with a particular focus on educational mobilities, how technology structures and manages these mobilities, and the impact of these movements on local knowledge practices and communities.

michaelseangallagher.org [@mseangallagher](https://twitter.com/mseangallagher)
michael.s.gallagher@ed.ac.uk

DR JEREMY KNOX

Senior Lecturer in Digital Education, Centre Co-Director (Data Society)

Jeremy's research is focused on critical approaches to AI, machine learning, and algorithms in education, and their relationships to learning theory, with a particular interest in China. Jeremy also co-convenes the Society for Research in Higher Education (SRHE) Digital University network.

jeremyknox.net [@j_k_knox](https://twitter.com/j_k_knox)
jeremy.knox@ed.ac.uk

DR DIMITRA KOTOUZA

Research Fellow

Dimitra is a Research Fellow for the Leverhulme Trust funded project 'Biology, Data Science, and the Making of Precision Education'. Her research interests are in how forms of power are enacted and structural inequalities reproduced or contested through the nexus between scientific knowledge production, new technologies and policies of social reproduction (education, healthcare, work).

d.kotouza@ed.ac.uk [@demetra_ktz](https://twitter.com/demetra_ktz)

DR JAMES LAMB

Lecturer in Digital Education

James teaches on the MSc Digital Education, and is Programme Co-Director for the MSc Education Futures within the Edinburgh Futures Institute. His current research focuses on the relationship between digital technologies and learning spaces, and in developing sonic methods of education research.

james.lamb@ed.ac.uk [@james858499](https://twitter.com/@james858499)
james858499.net

PROFESSOR ANDREW MANCHES

Chair in Children and Technology, Centre Co-Director (Children & Technology)

Andrew has led multiple Learning Sciences projects including the UK side of Move2Learn. He researches the role of interaction in how we think and learn, and the implications for early learning. He marries his academic world with industry as CEO of an early learning technology company, Pling Ltd.

a.manches@ed.ac.uk

DR KATE MILTNER

Postdoctoral Fellow

Kate is a TRAIN@Ed Postdoctoral Fellow and a Co-Director of the Digital Social Science Cluster at the Centre for Data, Culture, and Society. Her research focuses on the intersections between technocultures and structural power; her postdoctoral project is an examination of coding initiatives in the UK.

kmiltner@ed.ac.uk [@katemiltner](https://twitter.com/@katemiltner) katemiltner.com



PAUL NISBET

Senior Research Fellow

Paul is a Senior Research Fellow and Director of CALL (Communication, Access, Literacy and Learning) Scotland. Paul's research explores the application of assistive technologies for learners with additional support needs.

paul.nisbet@ed.ac.uk

DR DAVID OVEREND

Lecturer in Interdisciplinary Studies

David joined the Centre earlier this year to research interdisciplinary education with the Edinburgh Futures Institute, where he is currently developing a new undergraduate programme in Interdisciplinary Futures. His background is in arts and performance and he is interested in applying creative methods to generate new relationships in different types of space, including digital environments. Recent books include Making Routes: Journeys in Performance (Triarchy 2021) and Rob Drummond Plays with Participation (Bloomsbury 2021).

david.overend@ed.ac.uk

CLARA O'SHEA

Teaching Fellow

Clara teaches on the MSc in Digital Education. Her research interests focus on assessment and feedback, games-based learning and identity development in digital environments.

clara.o'shea@ed.ac.uk [@claraoshea](https://twitter.com/@claraoshea)

PROFESSOR JUDY ROBERTSON

Chair in Digital Learning, Centre Co-Director (Data Education in Schools)

Judy has been developing educational technology in collaboration with children and teachers since 1997. She is interested in computer 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 [@judyrobertsonuk](https://twitter.com/@judyrobertsonuk)

DR JEN ROSS

Senior Lecturer in Digital Education, Centre Co-Director (Digital Cultures)

Jen researches and publishes on digital cultural heritage engagement and learning, online and open education, digital futures and speculative methods. She also works with the Edinburgh Futures Institute, the Centre for Data, Culture and Society, and the Digital Cultural Heritage Research Network at Edinburgh.

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



DR PHILIPPA SHEAIL

Lecturer in Digital Education

Phil's research interests are based in digital and higher education, but also draw on organisational theory, science and technology studies, and social theories of time. Phil is currently developing work on research libraries, digital volunteers, and public pedagogy in digital cultural heritage. She also works with the Centre for Data, Culture and Society.

p.sheail@ed.ac.uk [p.sheail@ed.ac.uk](https://twitter.com/@philsh)

DR RHIANNON THOMAS

Postdoctoral Research Assistant

Rhiannon is exploring how theories of embodied learning shape early years science experiences as part of the Move2Learn research project.

rhiannon.thomas@ed.ac.uk

DR BEN WILLIAMSON

Chancellor's Fellow, Centre for Research in Digital Education and the Edinburgh Futures Institute

Ben researches educational data infrastructures and 'intimate data' relating to students' psychological states, neural activity, and genetic profiles. He focuses on the implications for educational policy and practice.

ben.williamson@ed.ac.uk [@benpatrickwill](https://codeactsineducation.wordpress.com)
<https://codeactsineducation.wordpress.com>

Research Support

RAMONE AL BISHAWI

Digital Education Research Associate

Ramone is coordinating and developing the Digital Education Thematic Hub to identify and support the needs of our local research community.

ramone.bishawi@ed.ac.uk

ANGELA HUNTER

Centre Administrator

Angie organises all aspects of the day-to-day running of the Centre and provides focused support to Data Education in Schools.

angela.hunter@ed.ac.uk

DR CLAIRE SOWTON

Communications and Knowledge Exchange Coordinator

Claire leads on communications and manages the knowledge exchange work of the Centre. She is Co-Investigator on the Move2Learn4Teachers project.

claire.sowton@ed.ac.uk [@_claiesowton](https://twitter.com/claiesowton)



Data Education Programme Team

JENNI DOONAN

Curriculum & Partnerships Manager

Jenni is responsible for building industrial partnerships with the Data Education in Schools project to bring relevant data into the classroom. Her interests lie in STEM education in primary schools.

jenni.doonan@ed.ac.uk

KATE FARRELL

Director of Curriculum Development and Professional Learning

Kate is developing a data science curriculum for Primary and Secondary schools in Scotland as part of the Data Education in Schools project.

kate.farrell@ed.ac.uk [@digitalkatie](https://twitter.com/digitalkatie)

TOMMY LAWSON

Schools Technology Advisor

Tommy works on the Data Driven Innovation programme with a focus on empowering learners through digital technologies.

tommy.lawson@ed.ac.uk [@_tommylawson](https://twitter.com/_tommylawson)

JO SPILLER

Strategic Programme Director

Jo is co-lead of the Data Education in Schools programme. Her focus is to build partnerships across the Data Skills Gateway and DDI programme, with industry, local authorities, schools and third sector organisations. Her particular areas of interest are on how data skills embed across curricula, especially into arts and social science subjects and how to encourage diversity of participation in data skills programmes. Jo also has an interdisciplinary interest in medical history and in her spare time works with the School of Medicine on public engagement around Edinburgh's early women medical students - the Edinburgh Seven.

jo.spiller@ed.ac.uk [@spillerjaye](https://twitter.com/spillerjaye)

Honorary Scholars

PROFESSOR DRAGAN GAŠEVIĆ

Professor of Learning Analytics

Dragan is based at Monash University (Melbourne, Australia) where he develops computational methods that can shape next-generation learning technologies and advance our understanding of self-regulated and social learning.

dragan.gasevic@monash.edu
<https://www.de.ed.ac.uk/people/professor-dragan-gasevic>

PROFESSOR JEFF HAYWOOD

Professor Emeritus

Jeff conducts research in the area of digital education policy and strategy, and previously led the policy research strand of work for the Centre for Research in Digital Education.

jeff.haywood@ed.ac.uk
<https://thinking.is.ed.ac.uk/jeffhaywood/research-activities>



PROFESSOR MARTIN LAWN

Honorary Professor

Martin has researched and published on teacher professionalism and the labour process of teaching. Currently, he researches European education policy and the 20th Century history of the educational sciences and comparative education.

martin.lawn@ed.ac.uk

DR HAMISH MACLEOD

Honorary Fellow

Hamish is an Honorary Fellow with research interests in the use of computer-mediated communications and game-informed approaches in teaching and learning. Hamish was a Senior Lecturer with the Centre for Research in Digital Education until his retirement and continues to supervise doctoral students.

h.a.macleod@ed.ac.uk

PROFESSOR GREG MICHAELSON

Honorary Professor

Greg is supporting the Data Education in Schools research strand with a longstanding interest in how people understand programs, and in the pedagogic bases for teaching programming.

g.michaelson@hw.ac.uk

PROFESSOR SIR TIM O'SHEA

Professor Emeritus

Professor Sir Timothy O'Shea was Principal and Vice-Chancellor of the University of Edinburgh from October 2002 – February 2018. His academic output, produced mainly in collaboration with others, covers topics relating to computer based learning, artificial intelligence, and mathematics education.

timothy.oshea@ed.ac.uk

PROFESSOR LYDIA PLOWMAN

Professor Emerita

Lydia has more than twenty years' experience of conducting research with children and digital media. Her research focuses on the ways in which technology is integrated into family life, leisure, work and for educational purposes in the home.

lydia.plowman@ed.ac.uk

DR CHRISTINE SINCLAIR

Honorary Fellow

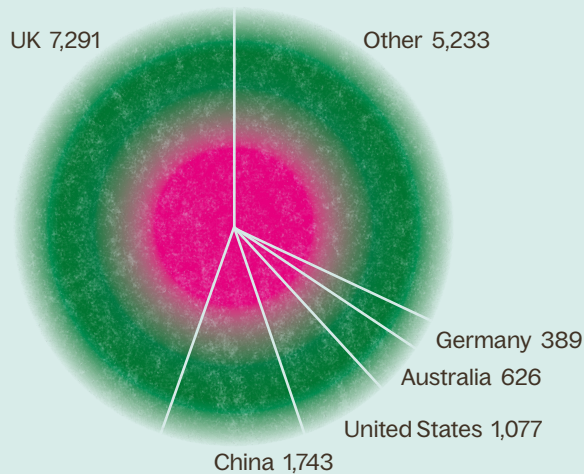
Christine was Programme Director on the MSc in Digital Education from 2015 to 2018. She is interested in the changing uses of language and the role of dialogue in digital environments. In addition to writing, she continues to supervise and examine doctoral students.

christine.sinclair@ed.ac.uk

Sharing Our Research

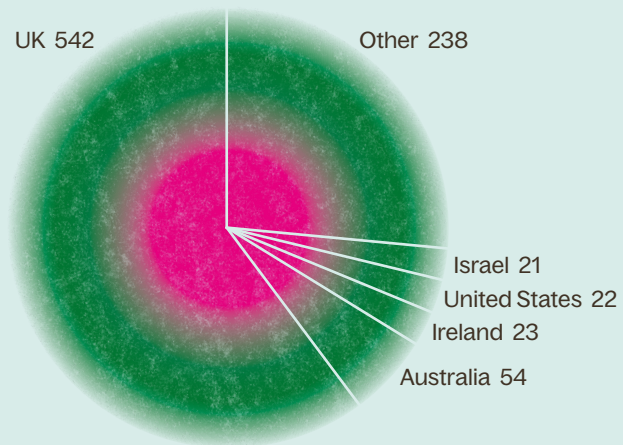
Engagement

GLOBAL REACH (WWW.DE.ED.AC.UK) 2021–2022



Total 16,359 users from 100 countries. Excludes global reach of www.dataschools.education (UK audience).

GLOBAL REACH (EVENT ENROLMENTS) 2021–2022



Total 900 enrolments from 58 countries. Total event enrolments (3022) includes Data Education in Schools events (UK audience).

Engagement

MAILING LISTS

2020–2021	1,254 subscribers
2021–2022	1,716 subscribers

RESOURCE DOWNLOADS

2020–2021	2,925 downloads
2021–2022	19,062 downloads

The large increase in resource engagement corresponds with the launch of Defend the Rhino, Data Selfie, and Plug in the Numbers live lessons for P7-S4 learners

MEDIA HOPPER EVENT VIEWS

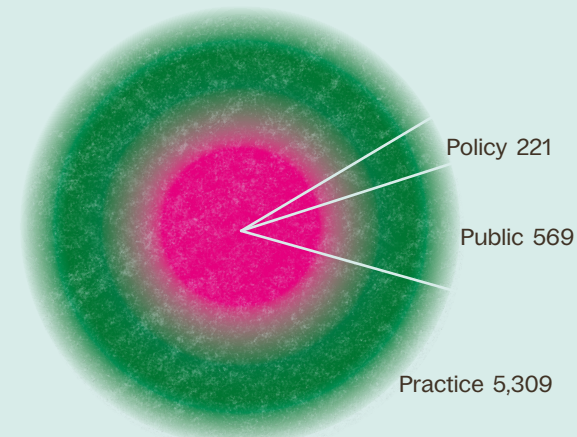
2020–2021	2,892 views
2021–2022	2,661 views

EVENT ENROLMENTS (TOTAL)

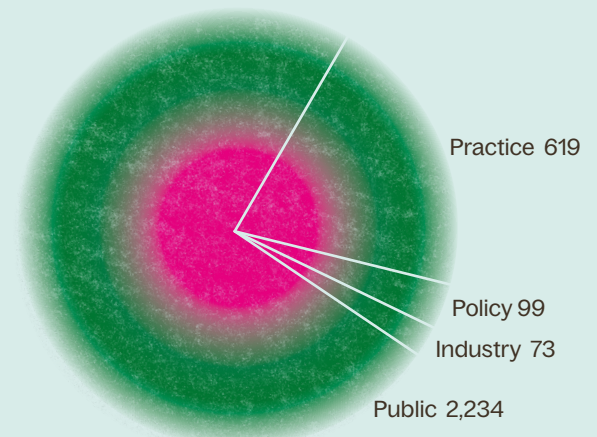
2020–2021	6,097 enrolments
2021–2022	3,022 enrolments

The large enrolment of practitioners in 2020-2021 demonstrates the impact of the pandemic, our shift to online events only, and the high relevance of our research and KE that year. In 2021-22 we have seen welcome growth in public engagement with our research.

Enrolments 2020–2021



Enrolments 2021–2022



Funding

TOTAL ONGOING AND NEW FUNDING £5,045,456



ONGOING PROJECT FUNDING 2021-2022 £4,581,845

EU (H2020) £167,000



Charities + Other £1,065,170



UKRI (AHRC, GCRF, NERC, ESRC, EPSRC) £572,498



Government £2,777,177



NEW FUNDING 2021–2022 £463,612



GRANT APPLICATIONS UNDER SUBMISSION £1,392,020



Teaching

The Centre leads two postgraduate programmes: the MSc Digital Education which has been running since 2006, and the new MSc Education Futures run through the Edinburgh Futures Institute (there is more about this exciting new programme later in this report). In addition, this year we are working on a new joint doctoral programme co-ordinated between the eight universities of the Una Europa consortium. Una-Her-Doc is a unique European programme in Cultural Heritage, with a focus on interdisciplinarity, internationalization of learning, international networking and the co-creation of a transnational research ecosystem in the field of Cultural Heritage.

Doctoral candidates on the programme are simultaneously enrolled in two Una Europa Universities, with supervisors in both and a programme of activities and events to support their research and learning. Phil Sheail is co-supervisor for one of the members of the first cohort of Una-Her-Doc, and Jen Ross is part of the academic committee that is developing and directing the overall programme. Jen Ross and Claire Sowton co-organised a PhD workshop in digital cultural heritage with colleagues at the University of Edinburgh and University of Helsinki.

More information at <https://una-her-doc.una-europa.eu/programme-information>

Doctoral Students

Three of our students graduated in 2021-2022:

VALENTINA ANDRIES

PhD

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

SARAH TRELOAR

PhD

Multiple, dynamic and complex: An Investigation of Investment in English as a Second Language on Facebook

MAUREEN FINN

EdD

A socio-material reading of belonging: mobile children and mobile devices in school spaces

KAWLA ALHAMAD

The Impact of Augmented Reality (AR) Books on the Reading Enjoyment, Engagement and Comprehension of Struggling Readers

Supervisors: Dr Sarah McGeown, Professor Andrew Manches

CANEDA ALICI

Would Children's Computational Thinking Skills Affect Their Peer Relation?

Supervisors: Professor Andrew Manches, Dr Serdar Abaci

STUART ALLAN

Space-time, technology and posthuman subjectivity in 'offline-online' digital education

Supervisors: Professor Siân Bayne, Dr Jen Ross

NADA ALSAYEGH

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

Supervisors: Dr Jen Ross, Dr Jeremy Knox

ARI BECKINGHAM

Designing emerging digital technologies for young learners in informal learning environments

Supervisors: Dr Larissa Pschetz (Edinburgh College of Art), Professor Andrew Manches

SHARON BOYD

Place-responsive higher education at a distance

Supervisors: Dr Jen Ross, Dr Beth Christie

ANA HIBERT

The use of Automated Writing Evaluation (AWE) technologies as a support tool for students of English as a second language

Supervisors: Professor Dragan Gašević (Monash University), Dr Seongsok Choi

CATHY HILLS

Blinding Data: exploring data ethics and epistemologies in school

Supervisors: Dr Jeremy Knox, Dr Ben Williamson

NICK HOOD

Circles around the grit: an enquiry into multi-modal pedagogy

Supervisors: Dr Michael Lynch, Dr James Lamb

WAN FAIZATUL ISMAYATIM

Synchronous and Asynchronous Corrective Feedback Strategies on Students' Learning Via Computer-Mediated Environment

Supervisors: Dr Serdar Abaci, Dr Jill Northcott

NICOLA KIERNAN

Mind over Matter – Digital STEM Education... Child's Play?

Supervisors: Professor Andrew Manches, Professor Michael Seery (School of Chemistry)

SHIKHA KUMARI

Emerging Digital Technologies and their influence in Higher Education: A Sociomateriality Approach

Supervisors: Dr Jeremy Knox, Dr Michael Gallagher

EDWARD MARTIN

Sonification of Biological Sequences

Supervisors: Dr Daniel Barker (Biology), Professor Thomas Meagher (University of St Andrews), Dr James Lamb

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), Dr Jen Ross

ZARINA MUMINOVA

Parental engagement in young children's learning in rural Tajikistan

Supervisors: Professor Lydia Plowman, Dr Jack Lee

JOE NOTEBOOM

The University of Data: Ethical and Social Futures of Data-Driven Education

Funded by Baillie Gifford
Supervisors: Dr Karen Gregory (Sociology), Dr Jen Ross

CARLOS ORTEGON BANOY

The role of the new Educational technology brokers in secondary schools

Supervisors: Dr Ben Williamson, Mathias Decuyper

DIEGO RATES

Analytics to help staff and students in the evaluation and enhancement of the student experience in Scottish Universities: a design research

Supervisors: Professor Dragan Gašević (Monash University), Professor Siân Bayne, Dr Jeremy Knox

DAVID REID

Exploratory user interfaces for remote laboratories in engineering education

Supervisors: Professor Timothy Drysdale (Engineering), Dr David Laurensen (Engineering), Dr Ross Galloway (Physics and Astronomy), and Professor Siân Bayne

NARJES ROHANI

Data-driven insights into Precision Medicine training

Supervisors: Dr Kobi Gal (Infomatics), Dr Areti Manataki (University of St Andrews), Dr Michael Gallagher

ALEXIA REVUELTAS ROUX

What does engagement look like in early science learning?

Funded through the Wellcome Trust and Mexico's National Council of Science and Technology (CONACYT).

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

SABINA SAVADOVA

Living journals: Young children, their digital practices and families in Azerbaijan

Supervisors: Professor Lydia Plowman, Dr Holly Linklater

STEPHEN SOWA

Preparing for the Future of Work: Job Automation Risks and Primary School Pupils' Career Aspirations and Development

Supervisors: Professor Andrew Manches, Dr Julie Smith

ALLI SPRING

Technology Appropriation in Peace Pedagogy

Supervisors: Dr Morgan Currie (School of Social and Political Science), Dr Michael Gallagher

CLARE THOMSON

Tensions in reflective practice - exploring the everyday reflective work of undergraduate medical students

Supervisors: Dr Jen Ross, Dr Tim Fawns (Edinburgh Medical School)

GURMIT UPPAL

Children's online experiences: A case study exploring children's and teachers' perceptions of occurrence, typology, impact and resilience in relation to online bullying and its connection to school-based bullying

Supervisors: Dr ML White, Professor Andrew Manches

CHEN WU

China's 'double reduction' policy and its impacts on local practices: an ethnographic study

Supervisors: Professor Siân Bayne, Dr Peter Evans

MSc Digital Education

Since 2006, the MSc in Digital Education has provided research-led teaching on how digital technologies are reshaping education. Fully online from the start, this was one of the first research-led and critically-oriented programmes in this area, and it continues to lead the field internationally. It has now educated over 700 students from 57 nations in advanced online teaching practice, research and leadership. Its alumni have transformed policy and practice in their own institutions, and many are now in senior leadership roles in universities around the globe.

The programme pushes back on the idea that technology eases institutions into impoverished, transmission-based teaching models, and emphasises how digital and online approaches can help universities, colleges, schools and organisations to teach creatively, engagingly and in line with a strong social purpose. At the same time, it takes an evidence-based, critical approach to understanding future trajectories for digital education, not all of which are desirable.

The MSc programme is taught by academics in the Centre for Research in Digital Education: what and how we teach informs our research. We cover digital culture, data in education, digital education futures, the impact of digital technologies on learning spaces, information literacy, digital strategy and policy, course design and digital education as practiced in the majority world. We teach these topics critically because they matter for anyone interested in the equity of digital education. We teach them creatively to imagine alternatives that move toward more just digital educational futures.

In April 2022, we were awarded £300,000 from the British Council to work with 16 future policymakers from sub-Saharan Africa through our MSc. We will welcome this new cohort of students to the programme with dedicated cohort tuition and bespoke assignments, plus two intensive face-to-face events in Accra and Edinburgh. Students will complete their studies with dissertation research projects focused on issues of importance in digital education in Ghana, Kenya, Nigeria, and South Africa. We are delighted to be able to grow our community of students in this way, and to have a chance to engage with African education leaders over an extended period. We also see it as a way of developing new curricula, and new research programmes, focused on digital education in the majority world.

https://bit.ly/MSc_DE

MSc Education Futures

In the current context of profound social, technological and ecological change, there is a need to think deeply about the kinds of educational experiences and environments we envisage for the future. What role will education play in future societies? Whose needs should education serve? What form will learning organisations take? What might educational responses to wicked problems involve? What gains and losses come from increasingly data-driven approaches to education? These and other vital questions are explored in a new postgraduate programme, the MSc Education Futures, being offered through the Edinburgh Futures Institute.

Taking an interdisciplinary approach, the programme has been developed by Jen Ross and James Lamb from the Centre for Research in Digital Education, working with a team of colleagues teaching and researching within art and design, business, psychology, sociology and beyond. The programme's interdisciplinary approach also involves a cross-sectoral focus, which encompasses but also extends beyond schools, colleges, universities, libraries, museums, companies, community organisations and other settings where teaching and learning happen.

Education Futures will be distinct for its fusion delivery model, with students having the freedom to study on site or online, yet within a single course group. For the most part, it is structured as 5-week, 10-credit courses, enabling students to build a programme from across a wide range of subjects.

Although Education Futures will be delivered for the first time in September 2022, two of its courses were successfully piloted earlier this year. Tim Fawns, a Senior Lecturer in Clinical Education within the University's Medical School, used his Postdigital Society course to explore methods of analysing the ways in which digital resources and practices have become woven together with culture, economics, politics and human and non-human interests. Meanwhile, The Future of Learning Organisations, led by James Lamb, challenged students to work critically and speculatively as they explored education through themes of evaluation, environments, and agents and people. Early feedback about the subject matter, and the modes of fusion teaching, has been extremely positive.

As these pilots were taking place, there was a refining and finalising of other courses where students might confront issues around personalisation, social change, creativity, resilience and beyond. The exploration of these and other themes will be enhanced through the study of 'core' EFI courses designed to nurture the creative and data skills that are vital to anticipating, interrogating and shaping our educational futures.

<https://bit.ly/38fzSyn>

DIGITAL CULTURES

‘Work in this strand offers crucial insights into how digital cultures influence and are influenced by education in a wide range of contexts – from museums to universities, from workplaces to low-resource community settings’

—DR JEN ROSS

Education, knowledge, labour, creative industry and heritage systems globally are being re-shaped by digital and data technology. Technologies, in turn, are shaped by the cultural contexts in which they are made and used. Digital Cultures is committed to

developing critical perspectives on these issues from diverse disciplinary perspectives. We are actively researching high-impact areas including digital pedagogies and futures, digital cultural heritage, work-place learning and international development and education.

Contact: Dr Jen Ross, Co-Director for Digital Cultures jen.ross@ed.ac.uk

GCRF URBAN DISASTER RISK HUB

Working across countries to bring disaster risk management to the centre of global urban policy and practice.

PI: Professor John McCloskey,
School of Geosciences
Team: Co-I Professor Siân Bayne
Funder: UKRI Global Challenges Research Fund
Award: £40,552 (total grant value: £19.6M)
Dates: 1 Feb 2019 - 31 Jan 2024
Duration: 5 years
Information: <https://bit.ly/30skybk>

FOUNDATIONS FOR ALL

Supporting success in higher education for displaced and refugee young people through online distance learning.

PI: Dr Jean-Benoit Falisse
(School of Social and Political Science)
Team: Co-I Dr Michael Gallagher,
Co-I Dr Kate Symons (Open University),
Co-I Dr Georgia Cole
(School of Social and Political Science)
and Co-I Mr Michael Crawley
(Durham University)
Funder: Mastercard Foundation
Award: £72,705 (total grant value £218,115)
Dates: 1 Jul 2019 - 30 Dec 2021
Duration: 2.5 years
Information: <https://bit.ly/2BU4Yex>

THE UNIVERSITY OF DATA: ETHICAL AND SOCIAL FUTURES OF DATA-DRIVEN EDUCATION

This studentship, held by Joe Noteboom, is exploring higher education as a site of data-driven innovation and ethical debate.

Project Lead: Dr Karen Gregory
(School of Social and Political Science)
and Dr Jen Ross
Funder: Edinburgh Futures Institute
(Baillie Gifford Data Ethics studentship)
Dates: Oct 2020 – Sept 2023
Duration: 3 years

DIGITAL FOOTPRINTS AND SEARCH PATHWAYS

Working with National Collections in Scotland during Covid-19 lockdown to design future online provision.

PI: Professor Gobinda Chowdhury,
University of Strathclyde
Team: Dr Jen Ross (Co-I), Centre for Research
in Digital Education, Christopher Ganley
(Co-I), National Galleries of Scotland,
Chanté St Clair Inglis (Co-I), National
Museums Scotland
Funder: AHRC Towards a National Collection /
UKRI Covid-19 Fund
Award: £7,228 (total grant value £160,010)
Dates: 1 Feb 2021 - 1 Feb 2022
Duration: 1 year
Information: <https://bit.ly/2QaGe8Y>

DIGITAL EDUCATION RESEARCH CLUSTER, NIGERIA, TANZANIA, UGANDA

Interdisciplinary research to understand the New Urban Agenda, adopted at the United Nations Conference on Housing and Sustainable Urban Development in 2016.

PI: Dr Michael Gallagher
Team: Co-I Dr Joel Mtebe (University of Dar es Salaam, Tanzania), Co-I Dr Rovincer Najjuma (Makerere University, Uganda), Co-I Dr Maryam J. Ismail (State University of Zanzibar, Tanzania), Co-I Professor Adamu Hassan (Ahmadu Bello University, Nigeria)
Funder: GCRF Theme Development Fund
Award: £23,000
Dates: 1 Jan 2019 - 31 Dec 2023
Duration: 5 years
Information: <https://bit.ly/2UsAHdc>

REFUGEE ACCESS AND PARTICIPATION IN HIGHER EDUCATION IN UGANDA: THE NEXUS OF BROKERS, BARRIERS, AND THE DIGITAL

This project surfaces the lived experiences and challenges refugee students face in accessing and participating in higher education in Uganda.

PI: Dr Michael Gallagher
Team: Dr Rovincer Najjuma, Makerere University (Co-I), Dr Rebecca Nambi, Makerere University (Co-I)
Funder: GCRF Theme Development Fund
Award: £23,000
Dates: 1 Mar 2021 – 1 Mar 2023
Duration: 2 years
Information: <https://bit.ly/37JI768>

DIGITAL EDUCATION FOR CHANGE MAKERS IN SUB-SAHARAN AFRICA

Developing an innovative cohort model and R&D framework for 16 scholarship students from sub-Saharan Africa to study the full-online MSc in Digital Education programme.

PI: Dr Jeremy Knox
Team: Dr Michael Gallagher (Co-I), Professor Sian Bayne (Co-I), Dr Serdar Abaci (Advisor), Dr Jean-Benoit Falisse, School of School and Political Science (Advisor)
Funder: British Council
Award: £300,000
Dates: 1 Apr 2022 – 31 Jul 2025
Duration: 3 years
Information: <https://bit.ly/3vbuOTe>

Case Study

Refugee access and participation in higher education in Uganda: the nexus of brokers, barriers, and the digital

PI: Dr Michael Gallagher
Team: Dr Rovincer Najjuma, Makerere University (Co-I), Dr Rebecca Nambi, Makerere University (Co-I)
Funder: GCRF Theme Development Fund
Award: £23,000
Dates: 1 Mar 2021–1 Mar 2023
Information: <https://bit.ly/37JI768>

This project surfaces the lived experiences and challenges refugee students face in accessing and participating in higher education in Uganda.

ABOUT

Led by Dr Michael Gallagher, the project is designed to surface the lived experiences and challenges refugee students face in accessing and participating in higher education in Uganda. It is working to identify the initiatives, activities and policies designed to support refugee students, examining the role these have in brokering access to higher education.

WHO ARE YOU WORKING WITH?

The project was funded by the UKRI Global Challenges Research Fund Theme Development Fund. The team brings together academics from the University of Makerere and the University of Edinburgh.

IMPACT SO FAR?

We have engaged with universities in Uganda all with large refugee student populations, as well as refugee support organisations in Kampala. University staff and over twenty refugee students have helped us build understanding of the nature of their transitions into and through higher education, and what role technology has in mediating those transitions. The research will lead into further work to co-design support for these students which better accounts for their lived experiences.

WHY IS IT IMPORTANT?

As the number of refugees worldwide shows no sign of abating, there is a renewed focus on how higher education can help support individuals' inclusion and integration with host societies, and – where desired – a successful return to their home countries. Countless barriers exist in that pursuit, however, many of which are explored in this project. This research is designed to build understanding of the role of digital education in managing participation in university life, and how it can help students navigate the challenges that they routinely encounter in university and their everyday lives.

CHILDREN & TECHNOLOGY

‘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 interactions and informing the design of new technologies’

—PROFESSOR ANDREW MANCHES

Digital technology increasingly shapes the way young people live and learn. Our research actively builds insights into the place of technology in young children’s lives, engaging decision-makers and other stakeholders in

this vital issue. In doing so it helps create richer learning experiences by informing technology design processes, and provides valuable insights and support for parents and teachers.

Contact: Prof. Andrew Manches Co-Director for Children & Technology a.manches@ed.ac.uk

MOVE2LEARN: EMBODIED LEARNING FOR PRE-SCHOOL SCIENTISTS

Advancing understanding of the role of embodied interaction in young children’s learning about science in informal settings.

PI: Professor Andrew Manches
Team: Dr Rhiannon Thomas, Dr Claire Sowton
Funder: Wellcome Trust
Award: £413,400 (total grant value: £767,623)
Dates: 1 May 2017–30 Oct 2022
Duration: 5.5 years
Information: <http://move2learn.net>

CO-CREATION OF AN EMBODIED LEARNING TECHNOLOGY FOR EARLY SCIENCE

Developing a digital ‘embodied learning’ exhibit as part of Move2Learn.

PI: Professor Andrew Manches
Funder: Wellcome Trust Translational Partnership Award
Award: £19,519
Dates: 1 Jan 2019–30 Oct 2021
Duration: 4 years
Information: <https://bit.ly/2Ylyj90>

EDTECH ENTREPRENEURSHIP AT UOE

Developing and testing an (early years) prototype Internet of Things ethical EdTech platform.

PI: Professor Andrew Manches
Partners: Pling Ltd, Cramasie, Playable
Funder: Data-Driven Innovation Small Grant Funding – COVID-19
Award: £10,000
Dates: 1 Jan 2021 - 30 Jun 2021
Duration: 6 months
Information: <http://bit.ly/EdTechUoE>

MOVE2LEARN4TEACHERS: CO-DESIGN OF EARLY STEM TRAINING AND RESOURCES

Working with teachers and informal science learning practitioners to promote improved enjoyment and understanding of STEM in schools.

PI: Professor Andrew Manches
Co-I (UoE): Dr Claire Sowton, Alexia Revueltas Roux
Co-I (UCL): Professor Sara Price, Minna Nygren
Partners: Dr Sharon Macnab (Glasgow Science Centre), Karen Davies (Science Museum), Euan Mitchell (SSERC), Ben Johnson (Graphic Science)
Funder: ScotPEN Wellcome Engagement Award
Award: £68,895
Dates: 1 Sep 2020–30 Oct 2022
Duration: 2 years
Information: <http://bit.ly/M2L4T>

CENTRE FOR EARLY MATHEMATICS LEARNING

Exploring the cognitive, emotional, social, and environmental factors influencing the development of children’s maths skills.

PI: Professor Camilla Gilmore (Loughborough)
Team: Professor Andrew Manches (University of Edinburgh), Loughborough University, University of Bristol, Ulster University, University of Oxford, University of York, University College London
Funder: ESRC
Award: £90,555 (total grant value: £7,975,343)
Dates: 1 January 2022–31 December 2026
Duration: 5 years
Information: <https://bit.ly/3vKE6qL>

SENSE: SENSORY EXPLORATIONS OF NATURE IN SCHOOL ENVIRONMENTS

Exploration and design of haptic technologies turning phones into multi-sensory nature learning tools.

PI: Professor Advait Siddharthan (Open University)
Team: Professor Andrew Manches (Co-I), Dr Laura Colucci-Gray (Co-I), Professor Stefan Reuger (Co-I) (Open University)
Funder: EPSRC
Award: £282,117 (total grant value £828,677)
Dates: 1 October 2021–30 September 2024
Duration: 3 years
Information: <https://bit.ly/3OWOkf3>

Case Study

Supporting Entrepreneurship in Educational Technology

PI: Professor Andrew Manches
Partners: Pling Ltd, Cramasie, Playable
Funder: Data-Driven Innovation Small Grant Funding – COVID-19
Award: £10,000
Dates: 1 Jan 2021–30 Jun 2021
Information: <http://bit.ly/EdTechUoE>

ABOUT

This project builds on research conducted in the Centre for Research in Digital Education, in order to develop a product which will enable young children to create and access digital media using physical objects. The prototype – Magic Cloud – is a wireless Internet of Things artefact funded by the Data-Driven Innovation Initiative. The project was focused on developing expertise and experience in educational entrepreneurship and collaboration.

WHO DID YOU WORK WITH?

The Magic Cloud prototype was achieved by working with three Edinburgh based private companies: Playable, Cramasie and Pling to co-develop a physical-digital prototype educational technology. Pling Ltd focused on the technical development, Cramasie on hardware and Playable on software development.

WHAT WAS THE IMPACT?

The Magic Cloud prototype was selected as a case study for the Scotsman's Doing Data Better conference 2021. It both progresses commercialisation of the underpinning research and works as a powerful and accessible provocation for discussion of some fundamental questions about children and data.
<https://bit.ly/3FjASNx>

WHY WAS IT IMPORTANT?

The project has informed a range of future initiatives including the recently approved EdTech Entrepreneurship course for Edinburgh Futures Institute starting in 2023.

DATA SOCIETY

‘Data Society research focuses on the vital issues emerging from the collection and processing of digital data in education. It develops a critical research agenda around analytics, ‘big data’, algorithms, machine learning, and other data-intensive practices’

—DR JEREMY KNOX

This theme is concerned with innovative interdisciplinary studies of data-processing technologies and data-intensive socio-technical systems, with a particular focus on developing educational perspectives that can enhance the technical, sociological, political, and ethical understanding of the contemporary ‘data society’. Key directions for research

involve examining the relationships between technical areas such as artificial intelligence (AI), machine learning, algorithms, and ‘big data’, and educational issues such as curricular and policy development, classroom practices, educational theory, the learning sciences, and education technology development.

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

BIOLOGY, DATA SCIENCE, AND THE MAKING OF PRECISION EDUCATION

Generating insights into the ways biological and data sciences are becoming new sources of knowledge and authority in technological societies.

PI: Dr Ben Williamson,
Co-I: Dr Martyn Pickersgill, University of Edinburgh, Co-I: Dr Jessica Pykett, University of Birmingham
Funder: Leverhulme Trust
Award: £151,516
Dates: 1 Sep 2021–1 Sep 2023
Duration: 2 years
Information: <https://bit.ly/3wZzN9x>

WHO'S CODING: INVESTIGATING UK CODING EXPERIENCES AND OUTCOMES

How social locations and identities of participants impact their experience and outcomes.

PI: Dr Kate Miltner
Co-I: Dr Gitat Kadar-Satat, University of Warwick
Funder: European Research Council H2020 Marie Skłodowska-Curie Actions and the Edinburgh and South East Scotland City Region Deal Data-Driven Innovation Initiative
Award: £167,000
Dates: 13 Nov 2019–12 Nov 2022
Duration: 3 years
Information: <https://bit.ly/2AlKgnm>

CO-DEVELOPING ETHICAL PRINCIPLES FOR THE USE OF AI IN EDUCATION WITH SQUIRREL AI

Engaging with ethical concerns related to the use of AI in education in the context of China.

PI: Dr Jeremy Knox
Co-I: Dr Li Yuan, Beijing Normal University, Dr Tore Hoel, Oslo Metropolitan University
Funder: ESRC Impact Acceleration Award
Award: £11,950
Dates: 5 Jan 2021–30 Dec 2021
Duration: 1 year
Information: <https://bit.ly/3smWHEI>

CENTRE FOR SOCIODIGITAL FUTURES

Investigating how different claims about digital futures shape our lives today.

PI: Professor Susan Halford, Director, Centre for Sociodigital Futures (University of Bristol)
Team: Dr Ben Williamson with academics from University of Bristol, the University of the Arts London, University of Birmingham, Goldsmiths University of London, Lancaster University
Funder: ESRC
Award: £73,055
Dates: 1 Jan 2022–31 Dec 2026
Duration: 5 years
Information: <https://bit.ly/38fiTIP>

Case Study

Co-developing ethical principles for the use of AI in education with Squirrel AI

PI: Dr Jeremy Knox
Co-I: Dr Li Yuan, Beijing Normal University,
Dr Tore Hoel, Oslo Metropolitan University
Funder: ESRC Impact Acceleration Award
Award: £11,950
Project Dates: 5 Jan 2021–30 Dec 2021
Information: <https://bit.ly/3smWHEI>

Engaging with ethical concerns related to the use of AI in education in China.

ABOUT

Squirrel AI have emerged as a key player in the development of artificial intelligence (AI) for education in China, having been involved in private after-school training as well as formal school provision. As such, their AI-driven software has impacted millions of students in China, through the provision of data-driven and 'personalised' functions. In collaboration with Squirrel AI, this project developed methodologies for the multi-stakeholder participative co-design of ethics, through direct engagement with leadership teams, teachers, and learning centres.

WHO ARE YOU WORKING WITH?

The project brings together an academic team from the University of Edinburgh, Beijing Normal University, and Oslo Metropolitan University, in collaboration with Shanghai-based education company Squirrel AI. The project engaged a range of methods - including observations, interactive workshops, and interviews - to develop, share, and assemble multiple perspectives, understandings and assumptions about the ethics of AI in education.

IMPACT SO FAR

The project produced a report for Squirrel AI, outlining the international landscape of AI ethics research and development, as well as providing a series of recommendations for ethical ways of working within the organisation. This included specific recommendations related to privacy, accountability, safety and security, transparency and explainability, and fairness.

WHY IS IT IMPORTANT?

AI technologies developed by private companies are increasingly being deployed in education settings, where huge volumes of data are being collected, processed, and used to intervene in educational activity. These practices prompt various ethical concerns, such as the extent to which student privacy is being protected, or whether automated decision-making about student progress is transparent and accountable.

While many ethical principles for AI have been published in recent years, including a small number of education-specific examples, concerns have also been expressed over the extent to which such frameworks really impact day-to-day practice. The publishing of ethical principles has also raised questions about inclusion, and the extent to which different voices are included in the definition of the ethics, morals, and values associated with AI. As an alternative to the publishing of ethical codes, a range of participatory design methods are emerging as innovative approaches to multi-stakeholder engagement in the development of ethics for new technologies. This project explored ways in which participative co-design might inform the development of ethical understanding among private education companies, technology developers, teachers, students, and educational institutions. In doing so, it developed methods through which many voices might participate in the development of ethics for the increasing use of AI technologies in education.

DATA EDUCATION IN SCHOOLS

‘Data Education in Schools is supporting young people across the City Region to develop the confidence, competence and ambition to use data to benefit themselves and their communities’

—PROFESSOR JUDY ROBERTSON

Data Education in Schools is part of the Data Skills Gateway programme, funded by the Edinburgh and South East Scotland City Region Deal.

The overall programme aims to offer learners across the region pathways to both qualifications and employment in data-focussed fields. Data Education in Schools is

the foundational strand of the gateway, offering opportunities for both learners and educators to develop data literacies and skills across all curricular areas and at all stages of the 3-18 curriculum. The Data Education in Schools research strand focuses on the evidence base that ensures our programme evolves as the understanding of data, ethics and society advances.

Contact: Professor Judy Robertson, Co-Director for Data Education in Schools judy.robertson@ed.ac.uk

PI: Professor Judy Robertson
Team: Jo Spiller, Kate Farrell, Tommy Lawson, Jenni Doonan, Dr Serdar Abaci
Funder: Integrated Regional Employability and Skills programme (Edinburgh and South East Scotland) City Region Deal
Award: £2.4M
Dates: 1 Apr 2019—31 Mar 2027

PROFESSIONAL LEARNING

Developing curricula related content and opportunities to develop data skills for primary, secondary and student teachers while building community around qualification delivery and general engagement with digital and data literacy.

Understanding how data is relevant to whatever learners want to do - not necessarily about getting students into data science courses.

Information: <https://bit.ly/3uUfOaI>

CURRICULUM DEVELOPMENT

Developing the National Progression Award in Data Science (Levels 4,5,6) and resources for broad general education (BGE), with core modules in data citizenship and data science along with optional units including machine learning, data security and computer programming.

A world-first data science qualification for school-aged learners, developed in Scotland.

Information: <https://bit.ly/33kDR6H>

LEARNER SUPPORT

Developing interactive data skills activities/workshops for learners across the 3-18 curriculum including an online Data Skills live lesson series, which 15,000 learners have so far participated in.

Working with teachers and student teachers to develop data skills lessons for learners.

Information: <https://bit.ly/3PmOw7R>

IOT IN SCHOOLS TEACHING AND LEARNING SUPPORT

Supporting the rollout of IoT Sensor networks in primary and secondary schools across Edinburgh and South East Scotland.

Building knowledge sharing across schools participating in the IoT in Schools programme through teacher and learner-focused events.

Information: <https://bit.ly/3LUeQns>

PARTNERSHIP ENGAGEMENT

Working with industry, community and academic partners to combine and share expertise on related initiatives.

By working with a range of industry, community agency and academic stakeholders we aim to combine a diverse range of expertise: data education and pedagogy; real world application of data skills; accessibility; inclusion and outreach.

Information: <https://bit.ly/3fkw0dp>

BRITISH SIGN LANGUAGE GLOSSARY PROJECT: COMPUTING SCIENCE

PI: Kate Farrell
Funder: Skills Development Scotland
Award: £22,125
Dates: March 2021–July 2021
Duration: 4 months
Information: <http://bit.ly/BSLDataSci>

Creating inclusive routes for digital, data and computing education by creating a suitable British Sign Language (BSL) vocabulary for Computing Science, Data Science and Cyber security terms.

CONSULTING YOUNG PEOPLE AND TEACHERS ABOUT COMPUTING EDUCATION IN SCOTLAND

PI: Professor Judy Robertson
Team: Dr Fiona McNeill,
Scottish Computing Education Committee
Funder: ESRC Impact Acceleration Grant
Award: £9100
Dates: 1 Jan 2021–31 Dec 2021
Duration: 1 year
Information: <http://bit.ly/CYPComputing>

Including the voices of teachers and learners in policy making for computing related qualifications at school.

DESIGNING CONVERSATIONAL ASSISTANTS TO REDUCE GENDER BIAS

PI: Professor Judy Robertson
Research Assistant: Dr Valentina Andries
Funder: EPSRC
Award: £188,353
Dates: 1 Jun 2020–31 May 2023
Duration: 3.5 years
Information: <http://bit.ly/3hH60NC>

Exploring gender bias in conversational assistants to reduce the risk of reinforcing gender stereotypes.

Case Study

ESES city region Internet of Things project – teaching and learning support

Funder: Integrated Regional Employability and Skills programme
Award: The IoT project teaching and learning support is offered through the Data Education in Schools project
Information: <https://bit.ly/3LUeQns>

Helping the pupils of today become the data citizens of tomorrow.

ABOUT

The aim of the Internet of Things project is to support primary and secondary classes across south-east Scotland to collect and interpret data from sensors tracking environmental conditions in their schools. Using data from the sensors, learners will be able to contribute to real world change in their school environment.

WHO DID YOU WORK WITH?

The project has been piloted with Roslin Primary School and Newbattle High School in Midlothian but will extend to every school in Edinburgh, the Lothians, Fife and the Scottish Borders.

A group of P6 'data champions' at Roslin Primary have led different activities using the sensors in their classroom and in exterior locations around the school. They have looked at light, humidity, air pressure, CO2 levels and temperature data and considered what the data can tell them about their classroom environment and the world around them.

IMPACT SO FAR?

The P6 data champions have gone on to teach other classes about the internet of things and data. The project provides valuable opportunities for contextualised and live discovery learning for young people beginning their data skills journey. It has given real-world meaning to the data sets generated by the sensors and the analytical skills and techniques needed to interpret and better understand what the data is telling them. In January 2022, the Tongan volcanic eruption registered a noticeable blip in atmospheric pressure on the sensors in Roslin which resulted in a wide-ranging, pupil-led investigation to understand what connected the two events.

WHY IS IT IMPORTANT?

Learning how to make sense of the data will not only enable pupils to improve their school environment but also equip them to navigate an increasingly complex digital landscape. It will also help to prepare them for work in new data-driven industries.

Publications 2022

ARI, F, ARSLAN ARI, I, ABACI, S & INAN, F

Online simulation for information technology skills training in higher education
Journal of Computing in Higher Education
DOI:10.1007/s12528-021-09303-0

BEETHAM, H, COLLIER, A, CZERNIEWICZ, L, LAMB, B, LIN, Y, ROSS, J, SCOTT, A-M & WILSON, A

Surveillance practices, risks and responses in the post pandemic university
Digital Culture and Education, vol. 14, no. 1, pp. 16-37
Available at: <https://bit.ly/3jYgTdT>

FAWNS, T, GALLAGHER, M & BAYNE, S

Institutional contexts in supporting quality online postgraduate education: Lessons learned from two initiatives at the University of Edinburgh
in T Fawns, G Aitken & D Jones (eds), Online Postgraduate Education in a Postdigital World: Beyond Technology, 1 edn, Postdigital Science and Education, Springer
DOI:10.1007/978-3-030-77673-2_11

MANCHES, A & AINSWORTH, S
Learning about viruses: Representing Covid-19

2022, Frontiers in Education, vol. 6, 736744
DOI:10.3389/feduc.2021.736744

Covid-19 has significantly impacted children's lives, requiring them to process multiple messages with significant emotional, social, and behavioural implications. We sought to understand the relative benefits and limitations of different forms for learning about the underlying biology of Covid-19. Applying an embodied learning lens, we analysed pictures, 3d models, gestures, dynamic visualisations, interactive representations, and extended reality identified through a state-of-the-art-review. We used this to develop a representational checklist that teachers and other adults can use to help them support children and young people's learning about the biology of Covid-19.

JANDRIĆ, P, MACKENZIE, A & KNOX, J
Postdigital research: Genealogies, challenges, and future perspectives

Postdigital Science and Education
DOI:10.1007/s42438-022-00306-3

KNOX, J, HOEL, T & YUAN, L

'From principles to processes': lessons for higher education from the development of AI ethics.

in Strategy, Policy, Practice, and Governance for AI in Higher Education Institutions
IGI Global
Available at: <https://bit.ly/3Ktxy3S>

KNOX, J

The Metaverse, or the serious business of tech frontiers

Postdigital Science and Education
DOI:10.1007/s42438-022-00300-9

KNOX, J, CUI, X, JIN, Y & SUN, B

Data, Artificial Intelligence, and the future of learning
The Chinese Journal of ICT in Education
vol. 28, no. 509, pp. 5-12.
Available at: <https://bit.ly/3jUoSbY>

ABACI, S, ROBERTSON, J, LINKLATER, H, & MCNEILL, F
Supporting school teachers' rapid engagement with online education

2021, Education Tech Research Dev, vol. 69, pp. 29-34
DOI:10.1007/s11423-020-09839-5

In response to Philipsen et al.'s article titled "Improving teacher professional development [TPD] for online and blended learning [OBL]: a systematic meta-aggregative review", we apply their proposed framework of important components of TPD for OBL to the support we provided to primary and secondary teachers as they engaged with online education during the COVID-19 pandemic. We reflect on observations of particular challenges for school teachers and the reasons behind them. We suggest future work to differentiate educational levels in order to account for operational differences.



WILSON, A, ROSS, J, MCKIE, J, COLLIER, A & LOCKLEY, P

Telling Data Stories: Developing an online tool for participatory speculative fiction
SAGE Research Methods
DOI:10.4135/9781529603514

BAYNE, S, GALLAGHER, M, GREK, S, MIRANDA, J-J, SMITH, WC, XU, J, WAD, S & WILLIAMSON, B

The 2023 Global Education Monitoring (GEM) Report Concept Note on Technology and Education: A Joint Response from the University of Edinburgh's Centre for Research in Digital Education and Comparative Education and International Development (CEID) Research Group
Available at: <https://bit.ly/3vBvr8A>

Publications 2021

BAYNE, S, GALLAGHER, M, BROZEK, B, CAPITANT, D, ESPOSTI, MD, PIEL, B, RYBOWSKI, R, SALMI, A-M, SINTUBIN, M & VILLAVARDE LOPEZ, G

The European University of the Future: Bold, Integrated, Open
UNA Europa
Available at: <https://bit.ly/3Ewfwvq>

BISSELL, L & OVEREND, D

Making Routes: Journeys in Performance 2010-2020
Triarchy Press, Axminster
Available at: <https://bit.ly/3k0YvB0>

EVANS, P

The manifesto for teaching online and the complexities of digital education
in S Jagannathan (ed.),
Reimagining Digital Learning for Sustainable Development: How Upskilling, Data Analytics, and Educational Technologies Close the Skills Gap
1 edn, Routledge
DOI:10.4324/9781003089698



EVANS, P

Exploring the potential of micro-credentials and digital badging: The rise of the micro-credential – What's in it for students?
The Quality Assurance Agency for Higher Education 2021
Available at: <https://bit.ly/3vxcz0>

GREK, S, ZHANG, S, SABETI, S & GALLAGHER, M

Complex and intersecting barriers to access: some concluding thoughts
In Smith, W.C., Voigt, A. & Zhang, Y. (eds.), Barriers to Secondary Education in the Asia Pacific Region: A Scoping Review of Four Countries: Final report of the Scotland Funding Council GCRF project Universal Secondary Education in the Asia Pacific Region, pp. 65-69
Available at: <https://bit.ly/386ZrRK>

JANDRIC, P & KNOX, J

The postdigital turn: Philosophy, education, research
Policy Futures in Education
DOI:10.1177/14782103211062713

JANDRIĆ, P & KNOX, J

The postdigital turn: Philosophy, education, research
Journal of Distance Education in China
vol. 2021, no. 11
Available at: <https://bit.ly/3MjI5jh>

KNOX, J

How the 'taming' of private education in China is impacting AI
On Education: Journal for Research and Debate
no. 12
DOI:10.17899/on_ed.2021.12.6

KNOX, J

Book review: Jeremy Knox on Posthumanism and the Digital University: Texts, Bodies and Materialities by Lesley Gourlay, 2020
Educational Philosophy and Theory
DOI:10.1080/00131857.2021.1923004

KOTOUZA, D, CALLARD, F, GARNETT, P & ROCHA, L

Mapping mental health and the UK university sector: Networks, markets, data
Critical Social Policy
DOI:10.1177/02610183211024820

KOTOUZA, D

Book-Self: Surplus Citizens
Greek Studies Now - Cultural Analysis Network
Available at: <https://bit.ly/3k0zAhc>

MANCHES, A, & PLOWMAN, L

Smart toys and children's understanding of personal data
International Journal of Child-Computer Interaction
DOI:10.1016/j.ijcci.2021.100333

MILTNER, KM & GERRARD, Y

"Tom had us all doing front-end web development": A nostalgic (re)imagining of Myspace
Internet Histories
DOI:10.1080/24701475.2021.1985836

MILTNER, KM

Everything old is new again: A comparison of mid-century American EDP schools and contemporary coding bootcamps
Information & Culture
Available at: <https://bit.ly/388PeEm>

MTEBE, JS, FULGENCE, K & GALLAGHER, M

COVID-19 and technology enhanced teaching in higher education in sub-Saharan Africa: A Case of the University of Dar es Salaam, Tanzania
Journal of Learning for Development
vol. 8, no. 2, pp. 383-397
Available at: <https://bit.ly/3Ov1G1R>

NISBET, P

SQA Assessment Arrangements and Assistive Technology following Covid-19
CALL Scotland, University of Edinburgh, Edinburgh
Available at: <https://bit.ly/3MjwQr9>

LAMB, J & ROSS, J

Lecture capture, social topology, and the spatial and temporal arrangements of UK universities
European Educational Research Journal
DOI:10.1177/1474904121993982

BAYNE, S & GALLAGHER, M

Near Future Teaching: Practice, policy and digital education futures
2021, Policy Futures in Education, vol. 19, no. 5, pp. 607-625
DOI:10.1177/14782103211026446

When considering digital futures for universities it is the instrumentalising narratives developed by corporate 'ed-tech' which often drive the debate. These are narratives which, aligning tightly to marketisation, unbundling and other dominant ideological trends, describe a highly technologised, datafied and surveillant future for teaching. This future is often framed as an imperative, leaving university communities with the sense that a future is being designed for them over which they have relatively little control. This paper describes the theory, methods and outcomes of a project which set out to counter this tendency, using participative, co-design methods within a 'top down' policy initiative to envision an alternative future for digital education within our own institution.

LAMB, J, CARVALHO, L, GALLAGHER, M & KNOX, J

The postdigital learning spaces of higher education
Postdigital Science and Education
DOI:10.1007/s42438-021-00279-9

LAURIE, MH, MANCHES, A & FLETCHER-WATSON, S

The role of robotic toys in shaping play and joint engagement in autistic children: Implications for future design
International Journal of Child-Computer Interaction
pp. 100384
DOI:10.1016/j.ijcci.2021.100384

MACGILCHRIST, F, POTTER, J & WILLIAMSON, B

Shifting scales of research on learning, media and technology
Learning, Media and Technology
vol. 46, no. 4, pp. 369-376
DOI:10.1080/17439884.2021.1994418





KNOX, J
**Refocusing Zuboff’s ‘division of learning’
 on education**

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This paper examines the concept of the ‘division of learning’, and the broader thesis of ‘surveillance capitalism’ within which it is situated. It begins with defining the term, before suggesting two key ways in which aligning the ‘division of learning’ with perspectives from educational research might provide productive insights for both domains. [T]he ‘division of learning’ is suggested to maintain, rather than challenge, the dominant practices of data exploitation, for which further engagement with a purposive, political, and emancipatory form of ‘data science’ is suggested.

OVEREND, D (ED.) & DRUMMOND, R

Rob Drummond: Plays With Participation
 1 edn, Bloomsbury Methuen Drama, London
 Available at: <https://bit.ly/3L7V5bG>

OVEREND, D

Field works: Wild experiments for
 performance research
 Studies in Theatre and Performance
 DOI:10.1080/14682761.2021.1895543

**SUN, X, ADAMS, SA, LI, C, BOOTH, JN,
 ROBERTSON, J & FAWKNER, S**

Validity of the Fitbit Ace and Moki devices
 for assessing steps during different walking
 conditions in young adolescents
 Pediatric Exercise Science
 DOI:10.1123/pes.2021-0026

WAUGH, K & ROBERTSON, J

Don’t touch me! A comparison of usability on
 touch and non-touch inputs
 in C Ardito, R Lanzilotti, A Malizia, H Petrie, A Piccinno,
 G Desolda & K Inkpen (eds),
 Human-Computer-Interaction – INTERACT 2021:
 18th IFIP TC 13 International Conference, Bari, Italy,
 August 30–September 3, 2021
 Proceedings, Part V. Lecture Notes in Computer
 Science, Springer, pp. 400-404.
 DOI:10.1007/978-3-030-85607-6_46

**WEBBER, C, WILKINSON, K,
 ANDRIES, V & MCGEOWN, S**

A reflective account of using
 child-led interviews as a means to promote
 discussions about reading
 Literacy
 DOI:10.1111/lit.12278

WILLIAMSON, B

Education technology seizes a
 pandemic opening
 Current History, vol. 120, no. 822, pp. 15-20
 DOI:10.1525/curh.2021.120.822.15

**WILLIAMSON, B, MACGILCHRIST, F &
 POTTER, J**

Covid-19 controversies and critical research in
 digital education
 Learning, Media and Technology
 vol. 46, no. 2, pp. 117-127
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Director:
 Siân Bayne, sian.bayne@ed.ac.uk

Editor:
 Claire Sowton, claire.sowton@ed.ac.uk

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How technology, culture,
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