

# **Report for the Period October 2018 – September 2019**

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# **Director's Overview**



The past twelve months have seen some significant events in the life of CARPE. In January 2019, Prometric committed to another three-year funding period. I am grateful for this vote of confidence in what CARPE has achieved since 2016 and how it can support the company in the future. I want to acknowledge the role played by Linda Waters, Li-Ann Kuan, Garrett Sherry and Steve Williams in ensuring that the relationship with DCU continues to bear fruit. A very special thank you to Charlie Kernan, former Prometric President and CEO, for all his support and

encouragement over the past two years. I look forward to working with Charlie's successor, Roy Simrell, and wish him every success in the future.

I am delighted to announce that three distinguished scholars have agreed to sit on the Advisory Board for CARPE. They are:

- Dr. Marguerite Clarke, World Bank, Washington
- Dr. Gerry Shiel, Educational Research Centre, Dublin
- Dr. Matthias Von Davier, National Board of Medical Examiners, Philadelphia

These members replace Profs. Jannette Elwood, Jo-Ann Baird and Patrick Griffin who served a threeyear term. I am very grateful for all their support, advice and guidance. My good friend, Dr Eugenio Gonzales from the Educational Testing Service (ETS), has agreed to join CARPE's distinguished group of international research advisors. I am fortunate to be able to avail of his vast experience and expertise.

A sub-committee of the CARPE Advisory Board – the CARPE Advisory Panel (CAP) – was established in 2019 to ensure that the process of reviewing and revising Prometric's annual research agenda for CARPE occurred on a more frequent basis. The current membership is Linda Waters and Li-Ann Kuan from Prometric and Michael O'Leary and Zita Lysaght from CARPE/DCU. The CAP plans to meet four times in the year.

The annual CARPE Advisory Board meeting will take place on Monday October 21 and will be followed the CARPE Public Lecture 2019. The lecture, to be delivered by Matthias von Davier, is entitled: *What you always wanted to know about process data but were afraid to ask*.

For the first time CARPE has been part of a consortium seeking large scale research funding. The centre was part of a successful bid involving 12 partners across seven EU countries for European Erasmus+ grant to undertake research into the Assessment of Transversal Skills in STEM (ATS-STEM). DCU is the lead organisation and is being represented the National Institute for Digital Learning (NIDL) and the Centre for Advancement of Science and Mathematics Teaching and Learning (CASTEL), as well as CARPE. Katherine Reynolds and Olivia Szendey travelled from Boston College to work with me during the months of June and July on three research papers that will form part of the outputs for this project.

The members of the CARPE team have all had a very successful twelve months. Prometric postdoctoral researcher, Darina Scully completed her three-year contract at the end of March last and takes up a full time appointment as a lecturer in the School of Human Development in January next. On April 10<sup>th</sup>, she and her husband Brian celebrated the arrival of their son Cian into the world. Darina has made an outstanding contribution to CARPE over the past three years and I am thrilled that she will now be a colleague at the Institution of Education. I wish her every happiness and success in her multiple new roles.

The search for a new Prometric post-doctoral researcher is ongoing.

The inaugural Prometric PhD scholar, Anastasios Karakolidis, successfully defended his doctoral dissertation in July. This outstanding research focused on the use of animations in testing was completed in just under three years. Anastasios' family will be travelling from Greece to celebrate his graduation at DCU in November. With my wholehearted support, Anastasios has now decided to pursue a full-time position as a researcher outside of CARPE. Any organisation that will have him as an employee will be lucky indeed.

New Prometric PhD scholar, Conor Scully, began his studies at DCU and CARPE in September. Conor's background in Economics and Sociology means he brings something new to CARPE. He is currently preparing his doctoral dissertation proposal which is likely to be focused on assessment in medical education.

Current Irish Research Council (IRC) scholar, Vasiliki Pitsia, successfully negotiated the pathway from doctoral track to doctoral candidate following her progress viva last April. She is on target to complete her important research on Irish primary and post-primary students' performance at the upper levels of achievement in mathematics and science by the end of 2020. I know policy makers are awaiting the results of her research with great interest. I am delighted to announce that in October 2019 Paula Lehane will become the second PhD at CARPE to be awarded an IRC scholarship. Paula's successful application to the Council was based on the topic of computer based assessment.

CARPE staff continue to engage in professional development to ensure they improve their research skills and our research outputs are of the highest quality possible. In November 2018, CARPE hosted the International Association for the Evaluation of Educational Achievement (IEA)/ Educational Testing Service Research Institute (IERI) three-day academy on the use of Item Response Theory (IRT) and population modelling in large-scale assessments. The academy was designed and taught by Eugenio Gonzales and Peter van Rijn from the Educational Testing Service (ETS), both of whom have substantial experience in working with large-scale assessments such as TIMSS, PIRLS and PISA. The CARPE team, along with more than 20 delegates from Germany, Ireland, Mexico, Norway the UAE, the UK and the US attended the academy. A summer highlight was the week-long professional development seminar for CARPE staff on Hierarchical Linear Modelling and Rasch modelling delivered by Professors Laura O'Dwyer and Larry Ludlow from Boston College

Over the past year CARPE staff and research associates have delivered full research reports to Prometric on topics related to the measurement of non-cognitive factors affecting performance in education and the workplace, the application of Webb's model of alignment for credentialing exam design and score interpretation, and the assessment of emotional intelligence in credentialing contexts. In addition, two new styles of report were submitted to the company this year. The first was a *flyer* outlining the salient features of computer adaptive testing (CAT) and the affordances it provides and was written specifically for Prometric clients who little knowledge of CAT. The second was a *trend report* on the topic of personalisation in assessment, submitted in July. Further flyers and trend reports are due to be delivered to the company in the year ahead.

These reports and the dozen or so others that have been delivered to Prometric remind me that since being appointed Director of CARPE, I have learned so much about workplace assessment. While preparing a recent keynote on the maintenance of certification in medical education in the US, I was struck by the fact that research on workplace assessment and research on educational assessment often run in parallel, with few opportunities taken to share knowledge and experience. I hope CARPE can play a role in helping to bridge some of these gaps in the future.

Over the past months a good deal of work has gone into getting a variety of research papers ready for publication in 2020 on a variety of topics including Irish teachers' conceptions of assessment, the assessment of non-cognitive factors, the assessment of critical thinking in higher education, Webb's model of alignment, interviews as a selection mechanism for entry to postgraduate programmes in teacher education, measuring bullying awareness in the workplace and teachers use of and attitudes to standardised tests. Papers were also prepared as submissions to the 2020 conferences of the Association of Test Producers (ATP) and the American Educational research association (AERA). Without the contributions of Lisa Abrams, Zita Lysaght, Angela Mazzone, Mark Morgan, and Katherine Reynolds so much of this work would not have been possible.

I mentioned in last year's report that one of the goals I set for CARPE at the outset was that the educational research conducted at the centre would be relevant to policy making in Ireland and elsewhere. While it has taken some time for this to become a reality, the response to three recent outputs indicate that CARPE research is having an impact. In relation to the survey on teachers' attitudes to and use of standardised tests, a communication from DES inspector, Evelyn O'Connor noted that this report will "a very useful source document for the Department and will be used in the context of developing a new assessment strategy/policy and practice." (I was glad to see too that this research received quite a bit of attention in the national TV, press, radio and on social media). With respect to the CARPE white paper on computer based assessment, the CEO of the National Council for Curriculum and Assessment (NCCA), John Hammond wrote:

As you are aware, LC Computer Science was first introduced in schools in September 2018 and it was designed to be assessed through a computer-based examination at the end of the course. The research conducted by CARPE has directly informed the deliberations of the DES Computer Science Steering Group as they consider the proposals from the State Examinations Commission for the implementation of the first LC Computer Science examination in June 2020. In this context, it is fair to say that the research has and will inform next steps in the development of the final examination.

The contents of an email from Arlene Forster, NCCA Deputy CEO are also worth reporting:

"...the Council's ongoing review and redevelopment of the primary curriculum draws on an extensive research base which includes the paper, *Aligning Assessment, Learning and Teaching in Curricular Reform and Implementation*. ...The paper has helped shape key ideas and directions for change in the NCCA's work on the Draft Primary Curriculum Framework which will form the basis for consultation in 2020. The research paper will also feed into the development of primary curriculum specifications in the coming years.

These comments are reassuring and I am very grateful for them. The support and encouragement everyone at CARPE receives from colleagues inside and outside of DCU and Prometric will spur us on to do even better work. My sincere thanks go to the members of CARPE's Advisory Board, Brian MacCraith (President, DCU), Anne Looney (Executive Dean, IOE) and Elaine McDonald (School of Policy and Practice, HOS) for their on-going and very active support throughout the year. Finally, I would like to highlight Paula Lehane's great contribution to maintaining CARPE's website and social media profile and in collating and formatting this report.

wichael o'hear

Prof. Michael O'Leary Prometric Chair in Assessment / Director – CARPE

# The Centre

# Governance

As a research centre within the Institute of Education, CARPE is managed by the Research Centres & Groups Committee (an Education Faculty Committee) comprising the Chairs/Directors of Research Centres and chaired by rotation. The Associate Dean for Research is an ex officio member of the committee and the committee chair represents all DCU's Research Centres on the Faculty Research Committee. In addition, CARPE has an Advisory Board which meets annually. The function of the Board is to:

- provide ongoing advice to the Director on academic/research aspects of the Centre;
- assist in the development of strong collaborative links (national and international) with other assessment organisations and research centres;
- help to maintain the Centre's visibility and reputation in research;
- review the Centre's annual report and provide feedback of a strategic nature;
- attest to the quality of the research outputs from the Centre;
- evaluate the Centre's operational functioning and processes.

Membership of the Board (comprising five external representatives from academia, a representative from Prometric and a representative from the Institute of Education) is by invitation of the Director and is for three years. Current members of the Board are:

- Dr. Marguerite Clarke, World Bank, Washington
- Professor John Gardner, University of Stirling
- Professor Larry Ludlow, Boston College
- Dr. Zita Lysaght, Dublin City University
- Mr. Garrett Sherry, Prometric
- Dr. Gerry Shiel, Educational Research Centre
- Dr. Matthias von Davier, National Board of Medical Examiners, Philadelphia

The Board meets at least once a year. All proceedings and decisions are minuted and circulated for comment to the Board members and to those in attendance. The draft minutes are circulated prior to the subsequent meeting and are approved and signed at that meeting.

A standing committee of the advisory board, the CARPE Advisory Panel (CAP), meet three to four times a year using online or face-to face sessions to review and plan individual projects related to Prometric's needs and interests. The members of CAP are:

- Professor Michael O'Leary
- Dr. Zita Lysaght
- Dr. Linda Waters (Prometric)
- Dr. Li-Ann Kuan (Prometric)

#### Staff



## Prof. Michael O'Leary Prometric Chair in Assessment

Michael holds the Prometric Chair in Assessment and is the Director of CARPE. He is a graduate of the B.Ed. Programme at St Patrick's College and holds an M.Ed. from Trinity College, Dublin. He gained his Ph.D. in

Educational Research and Measurement at Boston College in 1999. He has acted as Ireland's representative on the OECD's Network A (student outcomes) and sat on the Board of Participating Countries of PISA during its first cycle. He was a member of the NCCA working group that developed the guidelines on assessment for Irish primary schools. He was also a member of the Child Development and Education Panel of the National Longitudinal Study of Children in Ireland during its planning phase. Michael has provided statistical analysis of data for the national surveys of reading and mathematics achievement in Ireland and collaborated over many years with colleagues on a variety of research projects ranging from the introduction of calculators at Junior Cycle to teaching for social justice. Between 2007 and 2015 he was director of postgraduate studies in education at St Patrick's College. He now leads an extensive programme of research at CARPE focused on assessment and measurement at all levels of the educational system and in the workplace. He also contributes to teaching of modules in classroom assessment and quantitative research methods as well as the examining and supervision of doctoral students



## Dr. Darina Scully

#### **Prometric Post-Doctoral Researcher**

Darina is the Prometric Postdoctoral Researcher at CARPE. She holds a B.A. (Mod) and a Ph.D. in Psychology from Trinity College, Dublin. Prior to joining CARPE, Darina worked full-time as a Research Assistant at the Educational Research Centre (ERC), Drumcondra and part-time as a Tutor

in Research Methods and Psychology at the National Institute of Digital Learning (NIDL), DCU. At the ERC, Darina was involved in the development of a suite of computer-based tests of literacy, numeracy and reasoning for primary and post-primary school children, and in extensive piloting of a platform to support the delivery of these tests, the *Drumcondra Online Testing System (DOTS)*. She also worked on national and international research projects such as the evaluation of the DEIS (Delivering Equality of Opportunity in Schools) programme, and the implementation of TIMSS (Trends in International Maths and Science Study) in Ireland. Darina contributes to the full programme of research at CARPE. She also teaches within the IoE on modules in assessment and quantitative research methods, and she supervises both undergraduate and postgraduate students within the IoE.

# **Doctoral Students**



**Anastasios Karakolidis (Αναστάσιος Καρακολίδης)** was the first Prometric PhD candidate at CARPE (2016-2019). He holds a B.A. in Primary Education Teaching from the University of Ioannina, Greece, and an M.Sc. in Quantitative Methods and Statistical Analysis in Education from Queen's University, Belfast. He was a member of the research team

responsible for the Programme for International Student Assessment (PISA) 2015 report for Greece. Anastasios delivers lectures on research methodology and advanced statistical techniques (e.g. multilevel modelling) to Master's students in Greece and Ireland. His research interests include research methodology, statistical analysis, measurement, assessment, testing and large-scale international studies.

Anastasios successfully defended his doctoral thesis in July 2019, passing with minor revisions. After making the required changes, he is ready to graduate in November 2019.

**PhD:** Animated Videos in Assessment: A Comparison Study of Validity Evidence from and Test-takers' Reactions to an Animated and Text-Based Version of a Situational Judgement Test

Supervisors: Prof. Michael O'Leary, Dr. Darina Scully Progress: Completed



**Conor Scully** is the current Prometric PhD candidate at CARPE (2019-2021). He holds a BA in philosophy, political science, economics, and sociology from Trinity College Dublin and an MSc in sociology from the University of Amsterdam. His Master's thesis research was on the presentation of heterosexuality in Irish secondary school aged boys. His research interests include emotional intelligence, gender, sexuality,

education, and their intersection.

PhD Working Title: TBD Supervisors: Prof. Michael O'Leary Progress: 1st year



Vasiliki Pitsia (Βασιλική Πίτσια) is a PhD candidate working in in collaboration with CARPE and the IoE, DCU. Her research is funded by the Irish Research Council. She holds a B.Sc. in Primary Education Teaching from the University of Ioannina, Greece, and an M.Sc. in Quantitative Methods and Statistical Analysis in Education from Queen's University, Belfast. Vasiliki has worked on various research

projects in Greece and Ireland and previously received funding from the Geary Institute to work on the 'Preparing for Life' data. She is a member of the PISA research team in Greece and a short-term consultant at the World Bank Group. In addition to her doctoral studies, Vasiliki is a part-time lecturer in research methodology and advanced statistical techniques for the online MSc programme, *Interdisciplinary Approach to STEM in Education*, at the University of Patras and the National and Kapodistrian University of Athens. Vasiliki is also responsible for designing and teaching a series of professional development workshops on using SPSS software for academic staff at the IOE, DCU. Her broader research interests include research methods, statistical analysis and educational assessment, with a focus on large-scale international and national studies.

**PhD Working title:** Irish primary and post-primary students' performance at the upper levels of achievement in mathematics and science across national and international assessments

Supervisors: Prof. Michael O'Leary, Dr. Gerry Shiel, Dr. Zita Lysaght Progress: 3rd year



**Paula Lehane** was previously the 2018 Prometric PhD candidate at CARPE. Her research is currently being funded by the Irish Research Council (2019-2021). She graduated from Mary Immaculate College (University of Limerick) with a first class honours degree in Education and Psychology in 2011. She completed her Postgraduate Diploma in Special Educational Needs (SEN) at University College Dublin (UCD) in

2015 and then completed a part-time Master's in Education there in 2016. She was previously the SEN and IT Co-Ordinator of a large urban primary school and has taught all class levels within the primary sector. Alongside her studies and work as a teacher, Paula has been employed as a research supervisor and guest lecturer in UCD, delivering inputs on topics including collaborative instruction, response to intervention and the use of statistics and digital tools in schools. She assisted in UCD's development of an online course for Irish teachers on the topic of Inclusive Assessment and she has also worked with the Professional Development Service for Teachers (PDST). Her research interests include SEN, school-based assessment practices and technology-based assessments.

PhD Working Title: Multimedia Items in Technology-Based Assessments (TBAs)

Supervisors: Prof. Michael O'Leary, Dr. Darina Scully, Prof. Mark Brown Progress: 2nd year



**Sylvia Denner** is a part-time PhD candidate at CARPE. She holds an M.Soc.Sc. from University College Dublin and a Higher Diploma in statistics from Trinity College Dublin. Sylvia works in the Educational Research Centre, where she is currently working on PISA 2018. She was also one of the authors on the PISA 2015 report.

**PhD Working Title:** What is the impact on student performance in reading, mathematics and science in PISA when students in age-based samples are tested at different times of the year (*i.e. a*utumn vs. spring testing), and what variables can explain the impact?

Supervisors: Prof. Michael O'Leary, Dr. Gerry Shiel

Progress: 2<sup>nd</sup> year



**Deirdre Dennehy** is a part-time PhD student at CARPE. She holds a Bachelor of Education in Education and Psychology and a Masters of Education from Mary Immaculate College (University of Limerick). Her research interests include the assessment of well-being, standardised testing and the use of digital assessment tools. Deirdre works as a primary

school teacher and has taught a range of classes across the primary sector.

## PhD Working Title: TBD

Supervisors: Prof. Michael O'Leary, Dr Zita Lysaght

Progress: 1<sup>st</sup> year

# **Adjunct Professors**



# Prof. John Gardner, University of Stirling

Professor Gardner has over 120 academic publications to his name and has authored or co-authored seven books, the most recent being: *Assessment and Learning* (2012, Sage), *Developing Teacher Assessment* (2010, McGraw-Hill/Open University) and *The Classroom X-Factor* (2011, Routledge). He has

presented numerous international keynote addresses and been principal investigator for research projects exceeding £2.5million in total funding. From 1994 until 2010, he was a member of the globally influential Assessment Reform Group (ARG) and is currently a visiting professor at the University of Oxford's Centre for Educational Assessment.

Prof. Gardner is a fellow of the British Computer Society, a fellow of the Chartered Institute of Educational Assessors, and an Academician of the Academy of Social Sciences. He is currently a member of the steering committee of the Economic and Social Research Council's Technology Enhanced Learning (TEL) programme and a member of the ESRC's Peer Review College. In 2011, he completed a two-year term of office as President of the British Educational Research Association. From 2004 to 2008 he was a member of the UK RAE Education panel and he is a current member of the Research Excellence Framework (REF) Panel 25 (Education).



## Prof. Gerry Shiel, Educational Research Centre

Professor Shiel is a Research Fellow at the Educational Research Centre, St Patrick's Campus. He has overall responsibility for the centre's standardised test development programme in reading, mathematics and science for primary and secondary schools. Over the past 25 years, Gerry has

developed high level expertise in the teaching and assessment of reading literacy and has been centrally involved in multiple cycles of large scale testing programmes including the national assessments of English reading and mathematics and the TIMSS, PISA and PIRLS international studies. He has extensive experience of test development and item writing, scoring of student responses, scaling and analysis of data, report writing and communicating findings across a range of media. He has worked at the highest level of decision making on the OECD's testing programme having been a member of its PISA Board of Participating Countries for many years. Gerry has had a multitude of peer reviewed articles and reports published and has presented on his research all over the world. Most recently, alongside Associate Professor Damian Murchan (Trinity College), he published an important textbook on assessment for pre-service and practising teachers internationally. *Understanding and Applying Assessment in Education* (2017) is the first textbook of its kind with Irish authors.

# **Research Associates**

The CARPE team collaborate with a number of individuals from other centres within the IoE, other faculties within DCU, and indeed other institutions globally on various projects. Biographies of these Research Associates are provided below. Further details of the projects in which each person is involved are provided in the section on 'Ongoing Projects' (see p.19-35).



#### Prof. Lisa Abrams, Virginia Commonwealth University

Lisa is an Associate Professor of Research and Evaluation in the School of Education at Virginia Commonwealth University (VCU), where she teaches graduate courses in assessment, measurement, programme evaluation and educational research design. She is a graduate of Boston College, with a

doctoral degree in Educational Research, Measurement and Evaluation. She specializes in test-based accountability policy, assessment design and date-use practice. Lisa spent three months of her sabbatical as a Visiting Professor at CARPE from May to July 2018, during which time she worked on a number of projects in the areas of test development and assessment literacy & professional development. Lisa continues to collaborate with the Centre and will be returning in the autumn of 2018 to co-deliver the Annual CARPE Lecture.



# Dr. Sarahjane Belton (ACT@DCU Project)

Sarahjane graduated with a degree in Physical Education and Maths from the University of Limerick in 2001. She taught physical education for a year in second level education before completing a Ph.D. in Physical Activity Measurement at the University of Limerick in 2006. Sarahjane lectured in

Physical Education in St. Patrick's College from 2006 - 2007, and has lectured in Physical Education in the School of Health and Human Performance at DCU from 2007 to present.



**Prof. Mark Brown (Critical Review of Learning Portfolios)** Mark is Ireland's first Chair in Digital Learning and Director of the National Institute for Digital Learning (NIDL). He is currently Chair of the Innovation

in Teaching and Learning Steering Committee for the European Consortium of Innovative Universities (ECIU) and is both an EDEN Fellow and member of the Executive Committee of European Distance and e-Learning Network

(EDEN). He also serves on the Supervisory Board of the European Association of Distance Teaching Universities (EADTU) and co-leads the Empower Online Learning Leadership Academy (EOLLA) for new and emerging institutional leaders in European universities. In 2016, Mark was appointed as a representative of the Irish Universities Association on the Board of the National Forum for the Enhancement of Teaching and Learning in Higher Education.



# Prof. Deirdre Butler (Assessment of Transversal Skills in STEM; Minecraft in Irish Schools)

Deirdre works in DCU's Institute of Education and is internationally known as a leading scholar and creative practitioner of methods supporting teachers' professional development and students' learning. She has a

particular expertise in developing sustainable, scalable models of teacher professional learning and has managed projects and school based initiatives which focus on creative uses of digital technologies. She advises ministries of education around the globe on redesigning education systems for the challenges that face the world now and in the future. She has worked across a broad range of stakeholders in education, technology, government, corporate and non-profit sectors. She played a key role in developing the recently launched Digital Strategy for Schools (2015) and the 21CLD MOOC, the first Irish-designed MOOC for teacher professional learning. She also established flagship Lego Education Innovation Studio within DCU's Institute of Education along with a purpose-built Minecraft Studio.



## Gulsah Gurkan (Assessment of Well-Being)

Gulsah is a doctoral student at the Department of Measurement, Evaluation, Statistics and Assessment (MESA) at the Lynch School of Education, Boston College. She holds a B.S. and an M.S. degree in Teaching Physics from Bogazici University, Istanbul. Prior to beginning her

doctoral studies, she worked as a measurement and evaluation specialist at the Educational Volunteers Foundation of Turkey (TEGV) in Istanbul for three years, where she led many research and evaluation studies to foster the development of evidence-based programs implemented across the country. Her current research interests mainly focus on psychometrics, item response theory, large-scale data analysis, quasi-experimental research, and education policy.



## Dr. Li-Ann Kuan (Various Projects)

Li-Ann is an educational psychologist with over 20 years of experience in the testing industry, engaging both in content development and psychometrics. Over the course of her career, Dr. Kuan has managed the development and delivery of large-scale educational and professional

assessments both in the United States and in developing countries such as Pakistan, Namibia, and Zambia. Dr. Kuan received her Bachelor of Science in Psychology from Brown University, and a Master of Arts and a Doctor of Philosophy in Psychological Studies in Education from the University of California, Los Angeles.



**Dr. Francesca Lorenzi (Assessment for Learning Audit Instrument Project)** Francesca is a lecturer at DCU. Her teaching is primarily in the areas of Intercultural Education, Ethics and Values Education, Philosophy of Education and Curriculum Implementation; Assessment and Feedback. She obtained a PhD in Education from the National

University of Ireland, Maynooth with a thesis focusing on the role of dialogue in assessment and the democratisation of practices in education. Her specific research interests include but are not limited to dialogue in education, democratic and inclusive approaches to educational assessment, creativity in education, ethics in the classroom, values and identity in relation to education for sustainable development.



#### Dr. Zita Lysaght (Various Projects)

Zita is an Assistant Professor in the School of Policy and Practice at the Institute of Education (St. Patrick's Campus), DCU; she lectures in assessment and research methodology on undergraduate, masters and doctoral programmes and coordinates the final year BEd4 and PME2 research projects. She is Director of the Assessment for Teaching and Learning (ALT) Project, a member of the Advisory Board of the Centre for Assessment Research and Policy in Education (CARPE) and a former Chair of Post-Graduate Studies by Research and Co-chair of the EdD programme. As part of her current role, Zita provides professional development nationally and internationally in assessment (particularly formative assessment as it relates to teaching and learning), mixed methods research design and theoretical and conceptual frameworks. Her work has been published in Ireland, Europe and the US. Zita has twice received the President's Award for Excellence in Teaching and Learning.



## Dr. Kay Maunsell (Assessment of Well-Being)

Kay is a Senior Lecturer in Psychology at the School of Human Development at the Institute of Education, Dublin City University. Catherine lectures primarily in the area of developmental and educational psychology and since 2010 is the Subject Co-ordinator of Developmental and Educational Psychology on the B.Sc. Psychology programme offered

through the School of Nursing and Human Sciences at DCU. She has been engaged as Irish Co-ordinator on a range of large-scale EU research projects, in the broad areas of education, lifelong learning and social justice.



#### Dr. Angela Mazzone (Assessment of Workplace Bullying)

Angela is a Postdoctoral Researcher at the National Anti-Bullying Research and Resource Centre (ABC), Dublin City University. She is involved in a large-scale national study on workplace bullying which is funded by the Health Service Executive (HSE). Her main research interests are workplace-bullying, school bullying, bullying towards immigrant

youth, peer relations and socio-moral development



## Dr. John McKenna (ACT@DCU Project)

John has been a Lecturer in the School of Computing at Dublin City University since September 2000. He graduated with the degree of B.Eng. in Electronic Engineering in 1988 from NIHE, Limerick (now University of Limerick). He obtained the degrees of M.Sc. in Speech and Language

Processing and Ph.D. from the University of Edinburgh in 1996 and 2004 respectively. More recently (2012) he received a Postgraduate Diploma in Technology and Learning from Trinity College, Dublin. Prior to lecturing, he worked as a design engineer in electronics and telecommunications in the London area and as a communications consultant in Seoul, Korea.



## Sebastian Moncaleano (Assessment of Workplace Bullying)

Sebastian is a doctoral student at the Department of Measurement, Evaluation, Statistics and Assessment (MESA) at the Lynch School of Education, Boston College. He majored in mathematics with a minor in education at Universidad de los Andes in Bogota, Columbia. Following this,

he worked for two years as a maths teacher at an international high school in Bogota. His current research interests include the use of technology-enhanced items in large-scale assessments, the development of measurement scales, and the impact of career related events on the teaching quality of higher education faculty.



#### Prof. Mark Morgan (Assessment of Non-Cognitive Constructs)

Mark was the first Cregan Professor appointed in St. Patrick's College, Drumcondra (now DCU's Institute of Education). His scholarship can be categorized under four broad headings: motivation and job satisfaction, substance misuse and prevention, literacy and educational disadvantage.

These are derived from his training and experience as both a primary teacher and social psychologist. Mark will be co-delivered the annual CARPE lecture in October 2018.



# **Prof. Damian Murchan (Assessment in the Primary School)** Damian has collaborated with CARPE staff on their recent discussion paper for the NCCA on assessment in the re-developed primary school curriculum. He also acted as a reviewer for the CARPE/INTO Standardised Testing Project. Damian is Head of the School of Education in Trinity

College Dublin where he leads a school with extensive national and international engagement with teaching, research and policy. A former teacher and school principal, Damian's research interests include educational reform, assessment methods, elearning and assessment, incorporation of key skills into the curriculum, and teacher professional development. He co-chairs a consortium established by Trinity and the Educational Research Centre Drumcondra that will host the Annual Meeting of the Association for Educational Assessment - Europe in Dublin in November 2020.



#### Dr. Deirbhile Nic Craith (Survey on Standardised Testing)

Deirbhile is Director of Education & Research and secretary to the Irish National Teachers Organisation (INTO) Education Committee. Her remit includes education issues and policy, including curriculum and assessment, special education, social inclusion, early childhood education and Gaeilge. She represents the INTO on many external education bodies including the Council of the NCCA, An Chomhairle um Oideachas Gaeltachta & Gaelscolaíochta, and the Standing Committee of Heads of Education and Teacher Unions. Deirbhile holds Masters' and Ph.D. degrees in education from University College Dublin.



**Dr. James O'Higgins Norman (Assessment of Bullying in the Workplace)** Dr. James O'Higgins Norman is Associate Professor in Sociology and Director of the National Anti-Bullying Research and Resource Centre (ABC). He is best known for his research on homophobic bullying in second-level schools in Ireland which has drawn international media attention and was

referenced in parliamentary proceedings in Ireland and at the EU Commission when these bodies were debating the implementation of policy and laws on bullying in schools. Other research interests include gender and cyberbullying, and diversity and bullying in schools. He also taught professional ethics at University College Dublin and was a teacher in a postprimary school.



## Naoimh O'Reilly (ACT@DCU Project)

Naoimh is a lecturer at the School of Business at DCU. She holds a B.A. (hons) in International Marketing & Languages and an MBS in Strategic International Marketing, both from Dublin City University. Her teaching interests lie in digital marketing and she is currently pursuing her Ph.D. in

Technology Enhanced Learning at Lancaster University.



# Katherine Reynolds (ACT@DCU Project; Test Specifications using the Webb Model of Alignment; Assessment of Transversal skills in STEM Micro-Credentialing)

Katherine is a doctoral student at the Department of Measurement, Evaluation, Statistics, and Assessment at the Lynch School of Education,

Boston College. She holds a B.A. in History and an M.S. Educational Policy Studies and Evaluation, both from the University of Kentucky. While at Boston College, she has worked as a graduate assistant at the TIMSS and PIRLS International Study Center. Prior to graduate studies, she taught 7th and 8th grade science in Charlotte, North Carolina. Katherine's research interests include scale development and university student-faculty interaction.



# Associate Prof. Steven Stemler (Situational Judgment Tests)

Steven is an Associate Professor of Psychology at in the Psychology Department, Wesleyean University, Connecticut. He has spent nearly two decades systematically studying the purposes of school (elementary

through post-secondary) and how those purposes get measured via testing. He and his colleagues have developed a number of innovative new ways of measuring broad constructs such as creativity, cultural competence, practical intelligence, and ethical reasoning. Dr. Stemler has published more than 40 peer-reviewed articles, books, and chapters.



#### Olivia Szendey (Assessment of Transversal skills in STEM)

Olivia works on the Assessment of Transversal Skills in STEM project for CARPE. Olivia is a doctoral student studying Measurement, Evaluation, Statistics, and Assessment in the Lynch School of Education and Human Development at Boston College. She holds a B.S. in psychology from

James Madison University. At Boston College Olivia works as a graduate assistant at the office of Institutional Research, Planning, and Assessment. She is also a research assistant for Dr. Larry Ludlow and is working with him and others to develop a scale measuring "leading a life of meaning and purpose".



# **Dr. Linda Waters (Reviewer of all Prometric-Related Projects)** Linda began her career in testing at the Educational Testing Service in Princeton, New Jersey, working as part of the team to transition the first large-scale United States-based licensure examination program from paper-and-pencil testing to computer-based testing. Dr. Waters joined

Prometric in 2004 and is a member of the Global Business Development team. Dr. Waters has previously held faculty positions at the University of South Carolina and the University of Delaware. Dr. Waters is a registered nurse and a graduate of the University of Delaware with a Ph.D. in Educational Measurement and Statistics. She is also Prometric's representative on CARPE's advisory panel.

# **International Research Advisors**



**Dr. Marguerite Clarke** is a Senior Education Specialist in the Human Development Network of the World Bank. She holds a PhD in educational measurement and program evaluation from Boston College. A former primary and secondary school teacher, she now leads the Bank's work program on learning assessment. Currently based in India, her recent blog

has focused on the impact of citizen-led assessments (CLAs) in that country and elsewhere.



**Dr. Eugenio Gonzalez** has a vast and varied experience in the field of largescale assessments in education. He is a Strategic Advisor at ETS (Educational Testing Service) and the Director of the IEA-ETS Research Institute. His previous positions include Head of the IEA's (International Association for the Evaluation of Educational Achievement) Research & Analysis Unit, and

Director of Quality Control and Field Operations at the US National Assessment of Educational Progress (NAEP). While working on his doctorate at Boston College, he oversaw the development and implementation of TIMSS (The Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study).



**Prof. Therese Hopfenbeck** is a professor of Educational Assessment at Oxford and Director of the Oxford University Centre for Educational Assessment. Originally a secondary school teacher with many years' experience, Therese has worked as school district supervisor and as a consultant on national examinations for the Norwegian Directorate for

Education. Therese has been published widely in her native Norway, in the UK and across the English speaking world. Her book *From Political Decisions to Change in the Classroom: Successful Implementation of Education Policy* was published in 2014. With colleagues at Oxford, her influential *State of the Field Review: Assessment and Learning* was published in 2014. She is the current editor of the prestigious journal: *Assessment in Education*.



**Prof. Larry Ludlow** is Professor and Chair of the Department of Measurement, Evaluation, Statistics, and Assessment (MESA) in the Lynch School of Education at Boston College. He teaches courses in research methods, statistics, and psychometrics. His research interests include development of: a) Rasch-based scenario scales, b) longitudinal models for

understanding and predicting faculty teaching evaluations, and c) longitudinal teacher retention and attrition prediction models.



**Prof. Laura O'Dwyer** is a member of the Department of Educational Research, Measurement, and Evaluation in the Lynch School of Education at Boston College. She teaches courses in applied data analysis (basic to advanced topics), quantitative research methods, survey construction, and experimental design. O'Dwyer's research focuses on examining the impact

of technology-based interventions on student and teacher outcomes, and on international comparative studies in education. She has conducted several studies that employ randomized experimental designs to examine educational interventions including the effects of online professional development on teaching practices and learning outcomes.



**Dr. Matthias von Davier** is a Distinguished Research Scientist at the National Board of Medical Examiners (NBME), in Philadelphia. Previously he was a Senior Research Director in the Research & Development Division at Educational Testing Service (ETS), and co-director of the Center for Global Assessment at ETS, where he led psychometric research and operational

analysis for assessments such as PISA, PIAAC, TIMSS and PIRLS. He earned his Ph.D. in psychology from University of Kiel, Germany, in 1996, specializing in psychometrics. His areas of expertise include item response theory, latent class analysis, diagnostic classification models (distribution models, computational statistics, person-fit, item-fit etc.,) and the analytical methodologies used in large scale educational surveys. His current work is concerned with extending, implementing and applying multidimensional IRT, IRTree, and latent response models, as well as speed/accuracy models to process data research using log-file and timing data using data from large scale tests e.g. PISA, PIAAC.

# **Linked Centres**

CARPE and the Anti Bullying Centre (ABC) at DCU are now linked through the Assessment of Bullying in the Workplace Project. See: <u>http://www4.dcu.ie/abc/index.shtml</u>





National Institute for Digital Learning CARPE is linked to the National Institute for Digital Learning (NIDL) through its research on learning portfolios and the assessment of transversal skill in STEM funded by an Erasmus+ grant. NIDL Director, Professor Mark Brown was co-author with Darina Scully and Michael O'Leary on the Review on the Use of Learning Portfolios in Higher Education, published in February 2018. See:

http://www.dcu.ie/nidl/index.shtml

The current director of the Oxford University Centre for Educational Assessment (OUCEA), Professor Therese Hopfenbeck, plays an important advisory role in CARPE. Prof. Hopfenbeck was the external examiner for Anastasios Karakolidis's doctoral thesis. See: http://oucea.education.ox.ac.uk/



CAST<sup>e</sup>L

CASTEL is Ireland's largest research centre in Science, Technology, Engineering, and Mathematics (STEM) education. CASTEL and CARPE are collaborating on the ATS-STEM s project funded by ERASMUS+. See: <u>http://castel.ie/</u>

# Research

CARPE continues to pursue an extensive research programme in assessment, spanning topics relevant to all levels of the education system and across the professions. Some of our projects focus on Irish educational assessment, whilst others address more global issues such as the assessment of "hard to measure" skills, technology-based assessment, and issues in the field of certification and licensure assessment. An overview of all of our projects and the progress made with each in the past twelve months is provided below.

# **Recently Completed and Ongoing Projects**

# (i) Standardised Testing: Survey of Irish Primary Teachers

Project Directors: Michael O'Leary, Deirbhile NicCraith (INTO)

Recent policy changes have afforded a new and more central role to the use of standardised assessments in Irish primary schools. In response to these changes, this research – a collaborative effort between CARPE and the Irish National Teachers' Organisation (INTO) – sought to gather information on the attitudes and practices of Irish primary teachers with respect to standardised testing. In May 2019, the CARPE/INTO report (available online at <u>www.dcu.ie/carpe</u> and in hardcopy upon request) was launched outlining the key findings of this three-year long project. Full details of this launch are on page 41.

This research received extensive coverage in the press and popular media. Authors of the report were invited to discuss the key findings on various radio shows including <u>NewsTalk KildareFM</u>, and TodayFM. A range of newspaper outlets also covered the report, including this article from the <u>Irish Times</u>. Members of the public also contributed to the discussions that resulted from the launch as demonstrated by their <u>letters</u> to the Editor of the Irish Times. A small selection of some of the media coverage resulting from this report has been included in Appendix 1 (p. 48).



Authors of the CARPE/INTO report along with members of the steering committee who contributed to the project. Dr. Anne Looney and INTO General Secretary John Boyle are also pictured.

(ii) Animated Videos in Assessment: A Comparison Study of Validity Evidence from and Test-Takers' Reactions to an Animated and a Text-Based Version of a Situational Judgment Test (PhD Project)

PhD Candidate: Anastasios Karakolidis Project Supervisors: Michael O'Leary, Darina Scully

Although technology provides a great range of opportunities for facilitating assessment, text is usually the main – if not the only – means used to explain the context, present the information, and communicate the question in a testing process. However, the overuse of text may have consequences for the validity of the inferences drawn from test-takers' scores. This may be true especially in the case of assessments taken by test-takers with poor reading comprehension skills or with low levels of proficiency in the language of the test. More specifically, linguistic complexity can be a source of construct-irrelevant variance as test-takers' performance can be negatively affected by factors that are beyond the focus of the assessment itself.

This PhD project examined the extent to which the use of animated videos, as opposed to static text, can (i) reduce construct-irrelevant variance in test scores and (ii) have a positive impact on test-takers' reactions to the test. A true experiment was conducted with 129 native and non-native English speakers, using an animated-video and a text-based version of the same situational judgment test of practical knowledge.

Anastasios successfully defended his doctoral thesis last July, passing with minor revisions. After making the changes that the examiners required, he is ready to graduate this autumn. Anastasios is the first full-time, Prometric funded PhD candidate to graduate from CARPE and we are all extremely proud of him.



Anastasios' Viva July 12, 2019 (L-R) Prof. Michael O'Leary, Anastasios Karakolidis, Dr. Margaret Leahy, Prof. Thérèse Hopfenbeck, Dr. Gerry MacNamara & Dr. Zita Lysaght

## (iii) Assessment of Transversal Skills in STEM (ATS-STEM)

DCU Project Leads: Eamon Costello NIDL, Michael O'Leary (CARPE), Deirdre Butler & Eilis McLoughlin (Centre for the Advancement of STEM Teaching and Learning-CASTel)

In December 2018, an ambitious research project that aims to address the lack of classroom-based digital tasks and activities that can cultivate STEM literacy in schools received €2.34 million in funding from the Erasmus+ Programme. In March 2019, the President of DCU welcomed partner organisations from 8 EU countries (Ireland, Austria, Cyprus, Belgium, Slovenia, Spain, Finland and Sweden) to the Institute of Education to officially begin this DCU-led project titled Assessment of Transversal Skills in STEM (ATS-STEM). The project is led by three DCU Research Centres: The National Institute for Digital Learning (NIDL), The Centre for Assessment Research Policy and Practice in Education (CARPE) and the Centre for the Advancement of STEM Teaching and Learning (CASTEL). Working with 120 schools across Europe, the partners will devise, test and scale new digital assessments for STEM education that engage and enhance students' transversal skills such as teamwork, communication and discipline-specific critical thinking.

During the months of June and July, Katherine Reynolds and Olivia Szendey from Boston College worked with Michael at CARPE to conduct desk-based research related to three of the ATS-STEM work packages (WP).

- WP 1.4 Review of digital assessment approaches: Digital Assessment of Learning of STEM Skills
- WP 2.1 Formative Assessment Design: Building Critical Skills in STEM: How Digital Assessment Can Give Learners Feedback
- WP2.2 Architectural Implementation of the tool platform for Formative Assessment of Key STEM Skills

The two extensive draft reports were completed at the end of July 2019 have been very well received by the partners. Both now form part of a set of literature reviews that will be used to guide the empirical work element of the project planned for 2020.



Partners working on the DCU-led Erasmus+ Project in March 2019

# (iv) Aligning Assessment, Learning and Teaching in Curricular Reform and Implementation (NCCA Consultation)

Project Directors: Zita Lysaght, Darina Scully, Damian Murchan, Michael O'Leary & Gerry Shiel

The National Council for Curriculum and Assessment (NCCA) are currently in the process of redeveloping the Irish primary school curriculum to reflect the cultural, ethnic, religious and linguistic diversity now present in Irish society. While both inclusion and integration are welcomed in our education system, they place increased demands and expectations on teachers and principals to respond to a diverse range of teaching, learning and assessment needs. A major part of the redevelopment work is the production of a series of short research papers to generate discussion and debate on what a future curriculum should do for children in the next five, ten and fifteen years. CARPE were commissioned by the NCCA to complete one such research paper, addressing six key assessment related questions:

**1.** What clear definitions or statements of assessment would provide clarity in the primary education system level?

**2.** What definitive principles of assessment should be promoted to support an outcomes based curriculum at primary level?

**3.** How can a theoretical framework for assessment enhance and promote greater teacher autonomy and agency in the context of a redeveloped curriculum?

**4.** How do we conceive standardised tests to avoid distortions or narrowing in the education process such as teaching-to-the-test and narrowing of the curriculum? (in the context of the 2007 continuum)

**5.** What is the rationale for designating or not designating domain specific assessment practices in a primary curriculum?

**6.** How or what is it that should be spotlighted when we think about a broad and balanced curriculum?

The report discussed several key issues such as the tripartite understanding of assessment (where teaching and learning cannot be removed from any definition of assessment) and the value of informal



Michael presenting the paper to the NCCA in January 2019

assessment. The report was submitted to the NCCA in January 2019, and Michael and Zita presented the report to various stakeholders that month. The paper will inform the NCCA's current and ongoing plans for curricular reform in the primary and post-primary sectors.

# (v) Leaving Certificate Computer Science: Factors to consider when developing a computer-based examination (NCCA Consultation)

#### Project Director: Paula Lehane

In September 2018, forty schools were selected to trial the implementation of the newly developed Computer Science (CS) curriculum for Leaving Certificate students. Assessment for this subject will include an end-of-course computer-based examination in Summer 2020, representing 70% of a student's overall CS grade. The use of a computer-based exam (CBE) is a significant departure in tradition for the Leaving Certificate programme. This challenge of developing and delivering a high-stakes CBE is also magnified by the inherent difficulties associated with the evaluation of students' knowledge and learning in computing courses.

To ensure that the pending CS exam delivers a CBE in a responsible manner that preserves the fairness, validity, utility and credibility of the Leaving Certificate examination system, CARPE was commissioned by the NCCA to conduct an in-depth Literature Review on the use of CBEs in post-primary settings. The purpose of this piece of desk research was to provide an overview of current issues pertaining to the use of CBEs in post-primary schools using relevant literature from international peer-reviewed research, testing organisations and other education systems (e.g. New Zealand). The report discussed the key issues arising from the returned literature under four broad headings: Test Mode Comparability, Human-Computer Interaction, Test Design and Test Deployment and Delivery.

The report was submitted to the NCCA in January 2019 where it was then distributed to other stakeholders involved in the development of this CBE such as the State Examinations Commission (SEC) and the Department of Education and Skills (DES). Paula presented the report to a small group of high-ranking officials from the NCCA, the SEC and the DES in May 2019 and again to the Senior Cycle Review Board in September 2019. Many of the current guidelines and expected practices for the Summer 2020 CS exam have their origins in this report. For example, the report's recommendation that a field trial should be conducted to determine the key technical, logistical and security issues around a school-based CBE system will be realised in October 2019. While initially written to support the development of the CBE for the subject of CS, this report will help to guide discussions surrounding the possible computerisation of other Leaving Certificate exams.

# (vi) Assessment of Critical Thinking at Dublin City University (ACT@DCU) Project Director: Michael O'Leary

ACT@DCU is a pilot study investigating the extent to which an online test developed by the Educational Testing Service (ETS) in the United States to assess *critical thinking* skills in higher education is suitable for use in DCU. It is an inter-disciplinary collaboration between CARPE and researchers from DCU's Schools of Business, Computing, and Health & Human

Performance. A pilot study of the HEIghten CT test involving 214 First Year and 264 Fourth Year DCU students was conducted between September 2017 and May 2018 and provides reasonable validity evidence to support its use in an Irish context. A paper detailing the background to the study and the findings is in preparation and due to be submitted for publication before the end of 2019. A paper has also been submitted to the American Educational Research Association (AERA) 2020 conference committee for review.

The proposal now is to continue using the HEIghten CT test in DCU with two major goals in mind: (1) to provide evidence of institutional and program-level learning outcomes in CT (including growth in DCU students' critical thinking skills as they progress through their university programmes); (2) to facilitate conversations among staff regarding pedagogy, curricula and educational interventions pertinent to developing CT skills.

# (vii) The Interview as a Selection Mechanism for Entry into Initial Teacher Education Programmes

Project Directors: Paula Lehane, Zita Lysaght & Michael O'Leary

Educational research has consistently shown that teachers have a considerable effect on students' academic progress as well as their social and emotional well-being (e.g. Slater et al., 2009). Therefore, the goal of Initial Teacher Education (ITE) in Ireland should be to produce these 'good' teachers for employment in primary and post-primary schools. To achieve this, the admissions procedures for ITE programmes have a responsibility to select those applicants who are most suited to the profession and most likely to succeed in the required preparatory courses. Many countries, including Ireland, now consider a range of admission criteria and selection tools when screening applicants for entry to under- and post-graduate ITE programmes. Most institutions use interviews as a selection tool.

However, research on the efficacy of interviews as a selection measure for ITE programmes is mixed and it is unclear if they can act as an accurate indicator of an applicant's future teaching performance or suitability to the profession. With that in mind, the current literature review set out to address the following question: What is research telling us about the efficacy or otherwise of interviews as a selection mechanism for university based postgraduate programmes, with particular reference to teacher education? This literature review is being used by the Conference of Heads of Irish Colleges of Education (CHOICE) to help inform discussions on current and future selection policies for entry into ITE in Ireland. Future publications from this white paper will be forthcoming in 2020.

# (viii) Development of an Assessment for Learning Audit Instrument for Secondary Schools (AfLAi)

## Project Directors: Zita Lysaght, Michael O'Leary, Larry Ludlow, Dr. Francesca Lorenzi

This project has its roots in assessment challenges identified from research conducted in the Irish context. This research highlighted: (a) the dearth of assessment instruments nationally and internationally to capture changes in children's learning arising from exposure to, and engagement with, Assessment *for* Learning (AfL) pedagogy; (b) the nature and extent of the professional challenges that teachers face when trying to implement AfL with fidelity and; (c) the urgent need for a programme of continuous professional development to be designed to support teachers to learn about AfL and integrate it into their practice.

Since the initiation of this project, significant progress has been made in all three areas: An Assessment for Learning Audit instrument (AfLAi) developed by Zita and Michael has been used across a range of Irish primary schools and in educational systems in Australia, Netherlands, Norway, Malaysia, Chile and South Africa. In addition, data from almost 600 Irish primary teachers have been used to develop a research-focused Assessment for Learning Measurement instrument (AfLMi). In 2018 an audit instrument for use in secondary schools was developed (the AfLAi2) and data gathering using this instrument continued in 2019 with 147 audits completed by teachers across five schools. Finally, programmes of professional development in assessment continue to be implemented in undergraduate and post-graduate teacher education programmes and as part of site based in-service teacher education.

# (ix) Multimedia Items in Technology-Based Assessments (PhD Thesis)

## PhD Candidate: Paula Lehane

## Supervisors: Michael O'Leary, Mark Brown, Darina Scully

The use of digital devices and technology to conduct assessments in educational settings has become more and more prevalent in recent times. While paper-based assessments are largely restricted to traditional item types such as multiple choice or short answer questions, the possibilities for items in TBAs are more extensive (e.g. drag-and-drop items, simulations) and continue to expand as technology develops. However, the impact of these item types and their interaction with multimedia stimuli on test-taker performance and behaviour in *assessment* situations has yet to be fully clarified. Failure to address this shortcoming in research could lead to poorly designed digital assessments that could impact on the accuracy of interpretations being made from such tests.

Paula's PhD project aims to examine the influence of multimedia items and different item types on test-taker performance in TBAs by investigating the following research questions:

• How do test-takers allocate attention in TBAs that include multimedia stimuli and involve different item types (e.g. multiple-choice questions, drag-and-drop items)?

- What is the impact of (i) multimedia stimuli and (ii) item types on test-taker performance in TBAs?
- Is there a difference in test-taker performance and attentional allocation behaviours in TBAs involving different types of multimedia items?

In 2019, Paula received the news that she had been awarded one of the prestigious Irish Research Council (IRC) Postgraduate Scholarships for the period 2019-2021. This is a tremendous achievement: the IRC Scholarship programme is highly competitive, with an average success rate of 19% over the last five years. Applications from all disciplines are considered, and the award is made on the basis of a rigorous, objective selection process

using international, independent expert peer review. Successful scholars are considered by the IRC to have demonstrated "world-class potential as future research leaders and in the quality of their ideas." She is the second of CARPE's students to be awarded this scholarship. Needless to say, the team at CARPE are extremely proud of Paula's success!



# (x) Irish students' performance at the upper levels of achievement in mathematics and science across national and international assessments (PhD Thesis)

PhD Candidate: Vasiliki Pitsia Supervisors: Michael O'Leary, Gerry Shiel, Zita Lysaght

Students in Ireland have often performed well on national and international assessments of mathematics and science, however, there is a notable absence of students scoring at the highest proficiency levels. Additionally, the scores of high achievers in Ireland (i.e. those performing at the national 90th percentile in these subjects) have tended to be lower than their counterparts in other countries. A pattern of declining performance among high achievers have been also detected in the Irish state examinations. Reports of low performance among students in Ireland on national and international assessments have not yet been given sufficient attention. Taking into account Ireland's overall performance in science and mathematics and the large proportion of high achievers in reading literacy, it seems that more Irish students have the potential to perform at the highest levels.

With all of the above in mind, this study aims to undertake an in-depth investigation of the trends and nature of high achievement in mathematics and science in Ireland, by combining national and international large-scale assessment data. The overarching aims are to inform policy and practice, to provide country-specific recommendations, and to advance the development of exceptional skills needed to succeed in a modern, competitive society. Over the past 12 months, Vasiliki has prepared the national and international large-scale

databases for the purposes of the analyses and has begun to analyse these data. During these stages of database preparation and decision-making, Vasiliki aimed at submitting papers on her research and also presenting at international conferences in order to share her research and gather feedback from experts in the field, and she continues to prepare

additional papers for publication based on her work. In April 2019, Vasiliki completed her viva to transfer from the PhD track to the PhD register. Vasiliki hopes to submit her thesis in 2020. This research is funded by the Irish Research Council under the prestigious government of Ireland Postgraduate Programme.



# (xi) Embedding Assessment of Emotional Intelligence within Collaborative Problem Solving Tasks: An Exploratory Study (PhD thesis proposal)

PhD Candidate: Deirdre Dennehy Supervisors: Michael O'Leary and Zita Lysaght

# (xii) A Study of Factors Affecting the Reliability of Judgements about Performance on Objective Structured Clinical Examinations (OSCEs) used in Medical Education (PhD thesis proposal)

Prometric PhD Candidate: Conor Scully Supervisors: Michael O'Leary, AN Other

# (xiii) Assessment of Teachers' Interpersonal Skills

Project Directors: Darina Scully, Vasiliki Pitsia, Anastasios Karakolidis, Steve Stemler

Effective teaching encompasses both a pedagogical and an interpersonal dimension. Despite this, the latter typically receives little attention in initial teacher education and professional development programmes due to its tacit, non-conscious and context-specific nature. Using the Tacit Knowledge Inventory for High-School Teachers (TKI-HS), this study set out to explore how the interpersonal dimension of teaching plays out in an Irish context, and to compare the findings to those from other countries.

In early 2018, the TKI-HS was circulated to a sample of practising post-primary school teachers in Ireland. The resultant data were analysed in conjunction with data from corresponding samples of English and Russian teachers, previously collected by Steve Stemler (Wesleyan University) and Julian Elliott (Durham University). The findings revealed some interesting discrepancies in how teachers from these three contexts viewed various

strategies for dealing with challenging social situations encountered in the teaching profession. In April 2018, the team presented these findings as part of a roundtable discussion at the American Educational Research Association (AERA) Annual Meeting in New York. Darina, Vasiliki and Anastasios have completed further analyses on the Irish data, and they have submitted a manuscript to an Irish peer-reviewed journal.

## (xiv) Face Validity and Test Performance

## Project Directors: Katherine Reynolds & Anastasios Karakolidis

Face validity is often underappreciated by assessment professionals, but can be a key concern of assessment consumers. Drawing on aspects of Katherine's work in the field of micro-credentialing, and data from Anastasios' doctoral work involving non-traditional item types, this collaborative effort will seek to evaluate the contribution of test-takers' perceptions of face validity to test performance. Anastasios and Katherine have submitted a manuscript to an international peer-reviewed journal.

## (xv) Assessment of Bullying in the Workplace

Project Directors: Michael O'Leary, Angela Mazzone (Anti-Bullying Centre)

Bullying research has gained a substantial amount of interest in recent years because of its impact on the emotional and social development of children, adolescents and adults. One of the greatest tools in combatting bullying behaviours in schools and workplaces is ensuring that people have a good knowledge of *what* bullying behaviour actually looks like so that they can then implement appropriate procedures.

As part of the 2017 CARPE Research Experience Programme, Sebastian Moncaleano, a PhD student from Boston College, conducted a literature review on current approaches to the assessment of workplace bullying. Drawing on this review, and on skills learned during the Professional Development week in the summer of 2018 and 2019, the CARPE team, in collaboration with subject matter experts from the IoE's Anti-Bullying Centre, are working to develop scenarios and Rasch measurement approaches to develop an instrument to assess workers' knowledge of workplace bullying.

# (xvi) Assessment of Learning about Well-Being

## Project Directors: Kay Maunsell, Gulsah Gurkan

The significance of wellbeing with respect to developmental and educational outcomes for children and young people is unequivocal. However, the objective measurement of wellbeing is a relatively recent academic pursuit. In light of the recent introduction of wellbeing as a subject area within the reformed Junior Cycle programme in Ireland, the

development of objective assessment tools in this area is likely to warrant serious academic attention in the coming years. With this in mind, this study seeks to examine the potential use of scenarios/vignettes to measure young people's experience of wellbeing as a consequence of their engagement with efforts to enhance it within second-level schooling.

As part of her work for the CARPE Research Experience Programme, and for her coursework requirements at Boston College, Gulsah Gurkan has developed a scale to measure adults' attitudes toward physical and emotional wellbeing, and has conducted some piloting of this scale with a US adult college sample. In collaboration with Kay Maunsell (DCU IOE), Gulsah hopes to expand on this work in the coming year, and ultimately, to develop a suitable scale for use with Irish Junior Cycle students.

# (xvii) Considering Emotional Intelligence in Licensure and Certification Tests (Lit Review) Project Directors: Darina Scully, Paula Lehane & Michael O'Leary

A framework for the construct of emotional intelligence (EI) was first put forward by social psychologists Peter Salovey and John Mayer in 1990. However, it was not until five years later that the term became widely popularized, following the release of journalist Daniel Goleman's international bestseller, Emotional Intelligence: Why It Can Matter More Than IQ. The sentiment in Goleman's title attracted widespread appeal. Indeed, the work is largely responsible for the perception that there is a construct – distinct from classical notions of cognitive ability – that is a more important predictor of success in a range of contexts, such as education and the workplace.

Despite the plethora of academic research conducted on the topic of EI in the intervening years, the veracity of this statement remains largely unknown. A substantial proportion of the EI literature has sought merely to define the construct – either through attempts to delineate its various 'facets', or attempts to distinguish it from aspects of cognitive ability and/or personality. Studies investigating its predictive validity for a range of outcomes are also common, but it is difficult to make any definitive conclusions, as several hundred purported 'measures' of EI are currently in existence, and these do not always converge.

From Prometric's point of view, pertinent questions in relation to EI seem to be:

- i. what is EI?
- ii. what methods of measuring EI are currently in existence?
- iii. should Prometric's clients be encouraged to incorporate a measure of EI in their certification/licensure processes?

Notwithstanding the limitations outlined above, the current paper addressed these questions by providing a brief synopsis of the current state-of-the-art in relation to the

conceptualization, measurement and applications of EI. Michael and Paula presented this research in September 2019 at SIG-EATP (Vienna) and E-ATP (Madrid) conferences respectively.

# (xviii) The Potential of Webb's Model of Alignment for Supporting Score Interpretation and Use Claims in Credentialing Examinations

## Project Directors: Lisa Abrams, Katherine Reynolds & Michael O'Leary

Determining the inferences that can be drawn from test scores, along with appropriate uses for those scores, should always be important early considerations in test design and specification. Articulation of these ideas is commonly referred to as the interpretation/use argument (IUA) and involves providing documentary evidence to demonstrate the validity of the intended inferences, conclusions and/or decisions made on the basis of test scores. This paper focuses on the initial test specification stage which involves "... documentation of the purpose and intended uses of the test, as well as detailed decisions about test content, format, test length, psychometric characteristics of the items and test, delivery mode, administration, scoring and score reporting" (AERA et al., 2014, p. 76). A key component of test specification is identifying the content domains measured in relation to the test's purpose. Credentialing tests are intended to measure the extent to which examinees have acquired the necessary knowledge, skills, and dispositions to engage in safe and effective practice in the workplace. In contrast, achievement tests aim to measure mastery of specific content and skills and are most commonly used in educational settings. Credentialing tests focus on job or occupation responsibilities, while achievement tests centre on academic content. In both cases, considerable emphasis is placed initially on defining test content with sufficient precision and clarity so that item and tasks can be developed and subsequently used to make valid inferences about examinees (Webb, 2006). With that in mind, this paper considers current test content specification practices in the credentialing field and then considers how these might be improved by drawing on best practices in achievement testing. How these practices might be documented in an Interpretation and Use Argument Report is also addressed.

# (xvix) The Measurement of Non-Cognitive Factors Influencing Educational and Workplace Performance

## Project Directors: Lisa Abrams, Mark Morgan & Michael O'Leary

There is growing consensus that learners need skills beyond academic and cognitive proficiency to thrive in schools and ultimately the workplace. Generally, these non-cognitive areas include students' attitudes, behaviours, skills and strategies that influence performance, learning or cognition. Often times, these areas are considered "soft skills" or described as 21<sup>st</sup> century learning skills or social and emotional learning that include broad

categories of non-cognitive factors (NCFs) including sub-domains such as belongingness, mind-set and self-efficacy; effort, perseverance, and self-control; and goal setting, social skills, and self-regulation. Recent research has seen a major increase in the number of publication drawing on such skills; an increase that reflects both enhanced areas of application as well as an expansion in the different types of NCFs. This increased focus has significant implications for the measurement as there is little consensus about how many of the non-cognitive constructs are operationalized and measured. This report is a first step for CARPE in examining the current measurement practices of non-cognitive factors in an effort to identify next steps for advancing measurement in this area. The report is organized into six sections:

- (1) an initial introduction and background on NCFs;
- (2) a description of the range and multitude of NCFs;
- (3) the importance of NCFs to achievement and learning outcomes;
- (4) the significance of NCFs in the workplace;
- (5) the situational and contextual conditions that influence NCFs;
- (6) current measurement practices, with a focus on three key areas self-efficacy, perseverance, and social/interpersonal skills.

The report concludes with a discussion of the gaps in the literature on the measurement of non-cognitive factors and future directions for their measurement.

# **Research Outputs Oct 2018-Sept 2019**

#### Reports

- Lehane, P. (2019). *Leaving Certificate Computer Science: Factors to consider when developing a computer-based examination.* National Council for Curriculum and Assessment: Dublin.
- Lysaght, Z., Scully, D., Murchan, D., O'Leary, & Shiel, G. (2019). Aligning assessment, learning and teaching in curricular reform and implementation. National Council for Curriculum and Assessment: Dublin.
- O' Leary, M., Lysaght, Z., Nic Craith, D., & Scully, D. (2019). Standardised testing in English reading and Mathematics in the Irish primary school: A survey of Irish primary teachers. Dublin: Dublin City University. Centre for Assessment Research, Policy and Practice in Education and the Irish National Teachers' Organisation



#### **Industry Reports**

- Abrams, L., Morgan, M., & O'Leary, M. (2019). *The Measurement of Non-Cognitive Factors Influencing Educational and Workplace Performance*. Unpublished manuscript, Centre for Assessment Research Policy & Practice in Education (CARPE), Dublin City University.
- Abrams, L., Reynolds, K., & O'Leary, M. (2019). *The Application of Webb's Model of Alignment to Enhance Credentialing Exam Design and Documentation of Score Interpretation and Use Claims.* Unpublished manuscript, Centre for Assessment Research Policy & Practice in Education (CARPE), Dublin City University.
- Scully, D. & Lehane P. (2018). Considering Emotional Intelligence in Certification and Licensure Testing. Unpublished manuscript, Centre for Assessment Research Policy & Practice in Education (CARPE), Dublin City University.

Industry Reports on Trending Topics in Assessment

Szendey, O., & O'Leary, M. (2019). *Automated Item Generation*. Unpublished manuscript, Centre for Assessment Research Policy & Practice in Education (CARPE), Dublin City University. Szendey, O., & O'Leary, M. (2019). Computer Adaptive Testing. Unpublished manuscript, Centre for Assessment Research Policy & Practice in Education (CARPE), Dublin City University.

#### **Conference Presentations**

- Clifford, I., & Karakolidis, A. (2019, September) The challenges and opportunities of including animated items in licensure examinations: Insights from two research studies. Paper presented at the European Association of Test Publishers (E-ATP) Conference, Madrid, Spain.
- Karakolidis, A. (2019, April). The use of animations in assessment: Comparing an animated and a text-based situational judgment test. Paper presented at the *American Education Research Association (AERA) Annual Meeting*. Toronto, Canada.
- Lehane, P. (2019, April). Assessment 2.0: Factors to consider when developing technologybased assessment. Paper presented at the Educational Studies Association of Ireland (ESAI) conference, Sligo, Ireland.
- Lehane, P. & Kuan, L. (2019, March). *Finding a suitable task analysis for developing competency-based statements.* Paper presented at the Association of Test Publishers (ATP) Conference, Orlando, United States.
- Lehane, P. & Waters, L. (2019, March). What makes a difference for candidates taking computer-based tests? The impact of devices and user interface tools. Paper presented at the Association of Test Publishers (ATP) Conference, Orlando, United States.
- O'Leary, M. & Champagne, K. (2019, March). *Alternative and high-fidelity item types*. Paper presented at the Association of Test Publishers (ATP) Conference, Orlando, United States.
- O' Leary, M., Scully, D. & Lehane, P. (2019, September). *Considering emotional intelligence in certification and licensure testing*. Paper presented at the Association of Test Publishers (ATP) Public Sector Special Interest Group Conference, Vienna, Austria.
- Pitsia, V., Karakolidis, A., & Shiel, G. (2019, June). High achievement in mathematics and science: A multilevel analysis of TIMSS 2015 data for Ireland. Paper presented at the 8th International Association for the Evaluation of Educational Achievement (IEA) International Research Conference (IRC-2019), Copenhagen, Denmark.

- Scully, D. (2019, January). *The Learning Portfolio in Higher Education: A Game of Snakes and Ladders?* Paper presented at the Middle East and Africa Association of Test Publishers (MEA-ATP) Conference, Abu Dhabi, United Arab Emirates.
- Scully, D. & Kuan, L. (2019, January). Providing useful and effective diagnostic feedback.
  Paper presented at the Middle East and Africa Association of Test Publishers (MEA-ATP) Conference, Abu Dhabi, United Arab Emirates.
- Scully, D. & Lehane, P. (2019, September). Considering emotional intelligence in certification and licensure testing. Paper presented at the European Association of Test Publishers (E-ATP) Conference, Madrid, Spain.

#### Other outputs by members of CARPE

Peer-Reviewed Journal Articles

- Karakolidis, A., Pitsia, V., & Emvalotis, A. (2019). The case of high motivation and low achievement in science: What is the role of students' epistemic beliefs? *International Journal of Science Education*. <u>https://doi.org/10.1080/09500693.2019.1612121</u>
- Kent, G., & Pitsia, V. (2018). Gender differences in cognitive development and school readiness: Findings from a randomised controlled trial of children from communities of socio-economic disadvantage in Ireland. *Children's Research Digest*, 5(3). ISSN 209–728X
- Lehane, P. & Senior, J. (2019). Collaborative teaching: Exploring the impact of co-teaching practices on the numeracy attainment of students with and without special educational needs. European Journal of Special Needs Education. <u>https://doi.org/10.1080/08856257.2019.1652439</u>

#### Conference Presentations

- Kent, G., & Pitsia, V. (2018, December). Gender differences in cognitive development and school readiness: Findings from a randomised controlled trial of children from communities of socio-economic disadvantage in Ireland. Paper presented at the Annual conference of the Children's Research Network 2018, Dublin, Ireland.
- Kent, G., Pitsia, V., & Colton, G. (2018, November). Preparing for the transition to primary school; predictors of school readiness behaviours of five-year-old children from areas of socio-economic disadvantage. Paper presented at the 48th Annual Conference of the Psychological Society of Ireland, Wexford, Ireland.
- Pitsia, V., Karakolidis, A., Sofianopoulou, C. & Emvalotis, A. (2018, October). *Risk factors for early school leaving in Greece.* Paper presented at the ESA/RN27 Mid-term Conference 2018, Catania, Italy.
- Pitsia, V., & Kent, G. (2018, November). Variations in perceptions of five-year-old children's school readiness among parents and teachers. Paper presented at the 11th annual International Conference of Education, Research and Innovation (pp. 8426-8435). <u>https://doi.org/10.21125/iceri.2018.0535</u>

### **CARPE Events**

### **CARPE Public Lecture 2018**

On Monday, 22nd October 2018, CARPE hosted its third annual public lecture. This year's topic was the assessment and measurement of non-cognitive factors affecting performance in education and workplace, and we were pleased to host two accomplished scholars - Mark Morgan (Cregan Professor Emeritus, DCU) and Lisa Abrams (Associate Professor, Virginia Commonwealth University) - to jointly deliver the lecture.



Professors Mark Morgan (DCU) and Lisa Abrams (VCU)

Drawing on his deep knowledge of education and social psychology, Mark provided the audience with an overview of non-cognitive factors (NCFs), explaining that this term refers to a very broad mix of attributes and skills, including motivation, self-regulation, self-efficacy, emotional intelligence and various personality characteristics such as openness, conscientiousness and extraversion. He explained how, despite the fact that NCFs have been shown to be important predictors of educational achievement, they typically receive much less attention than intellectual factors such as IQ and cognitive ability. Providing compelling examples of their importance in various professional domains (e.g. teaching, nursing and business), Mark argued that the development of children's and young people's NCFs deserves much more attention - particularly in the context of educational disadvantage.



Dr Elaine McDonald responding to issues raised by Mark and Lisa

Following on from this, Lisa drew attention to the various challenges and complexities associated with the measurement of NCFs. These include the fact that NCFs are typically non-observable, context-dependent, and inter-related in complex ways. She highlighted the limitations of the classic self-report questionnaire, and discussed some emerging opportunities for measurement including diary methods, performance tasks, situational judgement tests (SJTs) and software analytics (e.g. eye-tracking and reaction time data). The audience offered some thoughtful comments and questions, such as whether NCFs should be understood from an individualistic or a relational lens, and the fact that, they are likely to become more important in the coming years as the influence of artificial intelligence increases. President Brian MacCraith also highlighted the centrality of non-cognitive factors in DCU's graduate attributes, and commented on some of the challenges associated with fostering their development.



(L-R) Prof. Lisa Abrams (VCU), Prof. Mark Morgan (DCU), Garrett Sherry (Prometric) and Prof. Michael O'Leary (CARPE)

### The team at CARPE are extremely

grateful to Billy Kelly (Vice President for Academic Affairs) who delivered the opening address, to both Mark and Lisa for all their work in preparing this engaging lecture, to Elaine MacDonald (Head of the School of Policy & Practice) who provided an insightful response to some of the issues raised by the speakers, to Paul Murphy, who captured the photographs and video on the day, and of course, and to all those who attended the event.

### **IERI Academy**

In November 2018, CARPE hosted the IEA-ETS Research Institute (IERI) for a three-day academy on the use of Item Response Theory (IRT) and population modelling in large-scale assessments. IERI is a collaborative effort between the Research & Development Division at ETS (Educational Testing Service) and the IEA (International Association for the Evaluation of Educational Achievement). Their aim is to improve the science of large-scale assessments.



Delegates at the IERI Academy

The academy was designed and taught by Eugenio Gonzales and Peter van Rijn from the Educational Testing Service (ETS), both of whom have substantial experience in working with large-scale assessments such as TIMSS, PIRLS and PISA. The CARPE team, along with more than 20 delegates from around the globe including those from Norway, Abu Dhabi and Portugal, attended the academy along with Irish representatives from the Educational Research Centre (ERC). The course covered a range of topics in assessment designs, and the use of IRT and population modelling in large-scale assessments.

### **Visiting Scholar Seminar**

**Prof. John Gardner** (Senior Deputy Principal, University of Stirling, United Kingdom) is an Adjunct Professor within the School of Policy and Practice at DCU, and works primarily within CARPE as part of this role. He is also a member of the CARPE Advisory Board.

In February 2019, Prof. Gardner shared his extensive expertise on assessing the quality of research publications using the UK's Research Excellence Framework in 2014 (REF2014) with members of both CARPE and the IoE. It was extremely useful in helping the researchers in attendance to ground their future professional judgements on published research using systematic criteria.



Prof. John Gardner

## Tell it Straight 2019 and ResearchFest 2019

The *Tell It Straight* competition challenges research students to communicate their research, and its potential impact, to a non-specialist audience in a concise, dynamic and innovative way. Now in its seventh year at DCU, this year's competition received a record number of entries, which eventually became a shortlist of 16 finalists. The 2019 final, held in the U Student Centre on March 27th, was opened by Prof. Brian MacCraith, DCU President, and chaired by Prof. Joseph Stokes, Dean of Graduate Studies.



Paula Lehane with two of the judges receiving her prize from Prof. Stokes

One of CARPE's PhD students, Paula Lehane, presented an overview of her research in the Year 1 Oral Presentation category. Her 5-minute presentation was titled 'What can digital assessments tell us about testtakers?' was awarded first place in her category and received a prize of €400. Paula was also selected as a finalist for *ResearchFest* in May 2019, the science communication competition of *InspireFest*, an annual, two-day festival organised by Silicon Republic that explores the future of science, technology and creativity. It is attended by more than 3,000 people from over 40 countries, and acclaimed as the "Best Event for Bright Minds in Europe". While Paula was not successful in this competition, where she had to speak to an audience for three minutes on the potential value of her work for society, she says that it was a wonderful opportunity to meet other PhD students from a range of different institutions and disciplines.

### Report Launch on Standardised Testing: Survey of Irish Primary Teachers

CARPE were delighted to have Dr. Anne Looney, Executive Dean of the Institute of Education (DCU) and John Doyle, General Secretary of the INTO (Irish National Teachers' Organisation) formally launch "Standardised Testing English Reading and Mathematics in the Irish Primary School: A survey of Irish Primary Teachers" on Monday, 20th May 2019. A range of stakeholders within Irish education including the National Council of Curriculum and Assessment, the Department of Education and Skills and the Educational Research Centre were in attendance along with colleagues form the INTO and the Institute of Education.



*Prof. Michael O'Leary (CARPE) launching the report on Standardised Testing in English reading and Mathematics* 

This work was a collaborative effort between CARPE and the Irish National Teachers' Organisation (INTO) and sought to gather information on the attitudes and practices of Irish primary teachers with respect to standardised testing. Prof. Michael O'Leary of CARPE opened the launch, in which he noted that while the stakes attached to standardised testing in Irish

primary education remain relatively low in comparison to other countries, recent policy changes have increased the focus on these instruments. In the wake of these changes, this research became particularly relevant and prompted this collaborative research project between CARPE and the INTO which was first discussed in late 2016. He briefly summarised some of the issues addressed in the research included teachers' understanding of standardised tests, how standardised tests are used formatively and diagnostically and the experiences of schools in reporting on the results of standardised tests. Data on teachers' professional development needs with respect to standardised testing were also gathered.



Report authors including Michael O' Leary (CARPE) Zita Lysaght (IoE) and Deirbhle Nic Craith (INTO)

Dr. Deirbhile NicCraith, the Education Research Officer of the INTO and a co-author of the report, then discussed how the INTO and CARPE worked together to devise and distribute the survey. She also discussed how in the summer of 2018, the CARPE team, in consultation with a steering committee comprised of INTO members, conducted extensive analyses of the large quantities of quantitative and qualitative data that came from over 1500 respondents (31% of INTO members).

Dr. Zita Lysaght, another co-author, then shared some of the key findings arising from the report. While this research suggests that teachers believe that standardised tests bring value over and above other assessments and ultimately provide essential information for teachers unintended negative consequences can also result from their use such as pupil and teacher anxiety. Furthermore, many of the teachers who responded to the study expressed very strong views on the form and content of current tests as well as on how and when they were administered, and the results communicated. Prof. O'Leary gave an overview of some of the policy recommendations that were based on the research which include, among others, the need to update the standardised tests more regularly and the need for a programme of professional development focused on improving teachers' assessment literacy.

In her closing comments, Dr. Looney highlighted the importance of teacher voice in research and how the report on standardised testing gives teachers an important opportunity to communicate their thoughts and opinions on a 'hot topic issue' that they must contend with every day. She commended the report for its commitment to offering specific, evidence-based recommendations for policy-makers. In his address, John Boyle also discussed how the report highlights the need for greater clarity from policy on the use of standardised assessments in primary schools and that this report should be used to inform such policy.



Dr. Anne Looney and John Boyle discussing the report

### International Educational Assessment Network (IAEN) Conference

The International Educational Assessment Network (IEAN) was established at the end of May, 2018. The small nations/states in this network include: Scotland, Ireland, Wales, Iceland, Denmark, Switzerland, Slovenia, New Zealand, Ontario (Canada), Norway, and Singapore. The purpose of this network is to discuss the 'wicked assessment problems' that each of these counties face in relation to policy, research and practice and to formulate solutions that are appropriate for their small and/or geographically dispersed populations.



Michael presenting some of CARPE's work on technology-based assessments to delegates oat the IEAN conference in September 2019

In September 2019, DCU's Institute of Education (IoE) hosted a three-day conference for the members involved in this network. The conference included information sessions, workshops and roundtable discussions on key issues. CARPE facilitated an information and discussion session on the current and future use of technology-based assessments in education. Michael gave an overview of the work that CARPE does in relation to assessments within the education, licensing and certification industries before discussing the contents of the centre's 2018 'state-of-the-art in digital assessment' paper published in the *European Journal of Education*. Vasiliki then outlined the latest use of technology in large-scale assessments to assess 'hard-to-measure' skills. Anastasios discussed his PhD work on the use of animations in situational judgement tests and Paula summarised Ireland's current efforts in developing a computer-based exam for post-primary pupils. The session concluded with a lively discussion about the trials, tribulations and triumphs experienced by different countries when using technology-based assessments.

CARPE was delighted to be given this opportunity to present and discuss their work to the representatives of the IAEN at this conference. It was a valuable experience for all involved and generated some very interesting discussions that may inform the future work of the centre.

### **CARPE Research Experience Programme**

Following on from the success of the CARPE Research Experience Programme (REP) in the summers of 2017 and 2018, students from the Measurement, Evaluation, Statistics and Assessment (MESA) doctoral programme at Boston College were invited to apply for a place on the 2019 REP. The REP is a two-month internship based at CARPE, during which the intern works closely with the CARPE team on projects relevant to assessment and/or measurement in education and the workplace. The funding for the project is shared between Boston and CARPE. Following interviews, Olivia Szendey was the successful candidate for the 2019 REP. During her short time in Dublin, Olivia contributed substantially to the work of CARPE and the Erasmus+ STEM project. Before returning to BC, she wrote the following account of her REP experience:

I spent the months of June and July 2019 at Dublin City University working as an intern at the Centre for Assessment Research Policy and Professional Practice (CARPE). The main task I was given to do related to an Erasmus+ funded grant entitled, The Assessment of Transversal Skills in STEM (ATS-STEM). Specifically, I was asked to develop an extensive literature review of digital approaches to formative assessment of transversal skills in STEM contexts. My review highlighted the following digital architectures: Content Management Systems, Learning Management Systems, E-Portfolios, Data Dashboards, Intelligent Tutoring Systems, Games, Computer Adaptive Testing, E-items, and Classroom Response Systems. After completing a first draft of my paper, I received feedback from partners in various European countries. Having incorporated their comments and ideas into the paper, a final draft was submitted the end of July. Ultimately, this work is intended to provide guidance for the development and implementation of a digital tool and associated architecture that can be used by high school teachers to support their use of formative assessment in STEM. Based on my work, other partners in the project will be able to make an informed decision regarding a specific software to develop or adapt. I look forward to seeing how the project develops and how my work will influence this significant European initiative.

My second task was to develop outputs related to trending topics in the assessment field. This assignment was for the benefit of CARPE's funder, Prometric – a company focused on the credentialing and licensure industry and based in Baltimore, MD. By combing through recent journal articles and conference proceedings, I developed a list of current trends. I expanded on two topics from this initial list: 1) Personalized Assessment and 2) Automatic Item Generation. In 4-6 pages I presented a summary of each of these trends, explaining current research regarding the topic, directions for further exploration, and the importance of the topic to Prometric.

I had an incredible experience working in CARPE. This was my first time working in a dedicated research center and it has certainly left me with high expectations for similar work in the future! The office environment was always friendly, personable, and I always felt supported. It was a real pleasure being able to engage with doctoral students and faculty at DCU, as well as with partners from the Erasmus project. Through active participation at meetings, I gained valuable insights into how a research center like CARPE functions. The Director, Prof. Michael O'Leary as well as the staff and research associates at CARPE were extremely welcoming and encouraged me in both my professional and personal endeavours. It was a bonus that I shared an office with Katherine Reynolds (MESA Year 5) who was also working on the ATS-STEM project.



Olivia enjoying her day trips in Ireland!

While in Ireland, I was determined to explore as much of the country as possible. I enjoyed the following daytrips from Dublin: Bray, Greystones, and Howth (taking in the beautiful east coast cliffs), Malahide (to enjoy a castle and coastal town), Dalkey and Killiney (where I was able to catch super views over Dublin) and Wicklow National Park (to enjoy some hiking). I also spent several weekends traveling to other cities. I went to Belfast to check out the scenery of Northern Ireland (Giants Causeway is truly amazing!), as well as understand the history of the city. I can recommend the famous black taxi tour. A visit to

the Titanic Museum was another highlight. I travelled to Galway and took day trips to Cliffs of Moher and to Innismore, the largest of the Aran Islands. Finally, I went to Cork to visit the southern coast of Ireland and visit nearby Kinsale and Cobh. I had an incredible time exploring Ireland and I certainly need to come back as there is still so much more I want to do and see. I was taken aback by the green beauty of the Emerald Isle and I am so grateful for the time I had to explore.

Overall, this internship experience was unbeatable. My accommodation on DCU's campus was very comfortable and close by the office where I worked. Throughout the two months I felt I improved as a writer and as a researcher. I know that all the hands-on experience and feedback I received on my work will be incredibly helpful to me as I progress through the MESA program. I want to thank everyone at Boston College and at CARPE for the financial support that made such an unforgettable learning and cultural experience possible.

The application process for the 2020 REP will commence in the Spring . All at CARPE are looking forward to continuing what has so far proven to be a very worthwhile initiative.

# **CARPE Professional Development**

In July 2019, the team at CARPE participated in an intensive, week-long professional development course delivered by Prof. Larry Ludlow and Prof. Laura O'Dwyer from the Department of Measurement, Evaluation Statistics and Assessment (MESA) at Boston College. Michael first became acquainted with Larry and Laura whilst completing his PhD in Educational Measurement at BC. Both Larry and Laura also act as international research advisors for CARPE. This is the second year they have delivered professional development courses to the team at CARPE.

In July 2018, Larry and Laura covered Classical Test Theory and introduced Rasch modelling to the group. This year, Laura discussed multilevel modelling approaches (such as those used in international large scale assessments) with the group while Larry further enriched the CARPE's knowledge of Rasch modelling procedures using real data. Since completing the course, the CARPE team have met regularly to consolidate their knowledge of the material and also to apply it to recent projects, including a collaborative initiative with the IoE's Anti-Bullying Centre. This project involves the development of a Rasch scale to measure workplace bullying (see page 30).



CARPE staff and students with Larry Ludlow and Dr. Angela Mazzone of the Anti-Bullying Centre during the professional development week in July 2019

Other members of CARPE also engaged in professional development at different points throughout the year. Darina completed the Professional Skills for Research Leaders (PRSL) certificate with DCU Learning and Development in March 2019.

# **CARPE Contributions to the IoE**

### (i) Research Consultancy Hours

CARPE welcomes all requests for research design and/or data analysis support from IoE staff and students. As of summer 2018, a set of formal guidelines have been put in place to ensure this support can be provided in an adequate and timely manner. Specifically, proforma has been put in place on CARPE's website (dcu.ie/carpe), whereby all requests for support can be made to the Director. Once the nature and extent of the support required has been identified, a member of the CARPE research team is officially appointed to the job. This researcher can spend up to a maximum of two consultation hours per project during the normal working day, but additional consultations that take place outside of working hours are also possible. This service has been well received, and the CARPE team have already received many requests through these channels.

### (ii) SPSS Workshops

CARPE are pleased to be able to offer a series of workshops on using SPSS to analyse data from questionnaires. These workshops are aimed at those who are new to SPSS, and cover topics such as data entry and cleaning, and descriptive/inferential statistical techniques. The workshops are led by Vasiliki Pitsia with the assistance of other CARPE staff and typically take the form of three two-hour sessions, held regularly throughout the academic year. Two such series were held over the past year, and feedback from workshop attendees has been overwhelmingly positive.

### (iii) Teaching and Supervision

All members of the CARPE team are actively involved in teaching and/or supervision at both undergraduate and postgraduate level within the Institute of Education.

Michael taught a summative assessment module to 420 fourth year B.Eds in the Autumn of 2018. The module, designed as a follow-on from the formative assessment module delivered in Year 1, covered the following topics: Standardised Testing of Achievement; Grading and Report Card Writing; Communicating Assessment Information to Pupils, Parents and Others; Ethical and Legal Issues in Assessment; Planning for Assessment on School Placement

Darina designed and delivered a module on Assessment and Feedback to students on the 2<sup>nd</sup> Year students completing the B.Sc. in Education and Training programme. Along with Anastasios and Vasiliki she facilitates SPSS workshops for staff throughout the academic year. Darina is also a PhD supervisor for Anastasios and Paula.

Paula contributes to the B.Ed programme helping the School of STEM Education, Innovation and Global Studies to deliver workshops for 1<sup>st</sup> and 4<sup>th</sup> Year students on the use of digital tools (e.g. Scratch, Minecraft) in primary schools. Paula is also a Writing Tutor within the

DCU Writing Centre – an initiative set up to offer free writing help to any student, undergraduate or postgraduate, regardless of course, degree or level. As part of her work with the Writing Centre, Paula works with students on a one-to-one basis as well as providing online and group writing support. She also facilitates academic writing workshops and creates resources on this topic.

Both Anastasios and Vasiliki have been involved in facilitating SPSS Workshops for staff. They have also contributed to the *Write to Read* research project, co-ordinated by Dr Eithne Kennedy and Prof. Gerry Shiel.

## **CARPE External Engagement**

Michael acted as peer reviewer for *Assessment in Education: Principles. Policy and Practice* and *Irish Educational Studies.* He made a presentation to the NCCA's Schools' Forum on the topic of the role of assessment in primary education in February 2019 (with Zita) and to members of the Inspectorate on the results of the survey on standardised testing in June 2019 (both in collaboration with Zita). He also attended a meeting with members of the Department of Education and Science (DES) and State Examinations' Commission (SEC) during the preparation and presentation of Paula's report on computer based assessment.

Darina has acted as a peer reviewer for *Irish Educational Studies*. Darina (along with Michael and Zita) was also one of a panel of advisors to the National Council for Curriculum and Assessment (NCCA) regarding the role of assessment in the revised primary school curriculum. She was also a member of steering group for the "Let's Talk About Assessment" conference, jointly hosted by Quality & Qualifications Ireland (QQI) and the National Forum for the Enhancement of Teaching and Learning in Higher Education in November 2018.

Vasiliki lectures on research methodology and statistical techniques, as part of the University of Patras and National and Kapodistrian University of Athens online MSc programme 'STEM in Education'. She also delivers hands-on statistics workshops to academic staff. Vasiliki is a co-investigator in a research project funded by the Children's Research Network Prevention and Early Intervention Research Initiative. In addition, she is a short-term consultant at the World Bank Group and member of the PISA research team in Greece. Vasiliki has acted as a peer-reviewer for the European Journal of Educational Research.

Anastasios has acted as a reviewer for SAGE Open Journal, the European Journal of Educational Research, and the AERA 2020 annual meeting. Anastasios was also a member of the organising committee for the first Irish Postgraduate Research Conference.

Paula delivers guest lectures on the topics of co-teaching, assessment and individualised planning to practising teachers on the Postgraduate Diploma in Special Educational Needs in UCD (University College Dublin). She is also a module co-ordinator for UCD's recently

established online 'modular masters' programme. She is also a research supervisor for students completing their Professional Masters in Education (PME; post-primary) qualification in UCD.

# **Appendix 1**

Attached are a small selection of some of the newspaper articles/ media coverage that discussed the key findings of the joint CARPE/ INTO report on primary school teachers' perceptions of standardised testing.



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Some pupils extremely anxious over standardised tests, agree three in four teachers

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- PREVIOUS

Back to Educate Together Ireland Home

21/05/2019 - 13:24:00

Three out of four primary teachers agree that some primary school pupils felt extremely anxious about standardised tests.

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+ More

The claims are part of a new study, which also found differing opinions on whether the tests were a valid way of measuring achievement.

A report by the Institute of Education at DCU and the primary teachers union, INTO, got the opinions of 1,500 primary school teachers about standardised tests such as the Drumcondra test.

ADVERTISEMENT

Schools are required to facilitate the maths and reading tests in second, fourth and sixth class.

The research was undertaken by Professor Michael O'Leary from DCU's Institute of Education who said the tests act as a benchmarker.

"The big advantage of standardised assessments is that they allow schools and teachers to benchmark performance in an individual class and in an individual school against national standards," said Prof. O'Leary.

A number of teachers reported pupils feeling anxious about the tests, which retired principal Frank Shortt says it might be because some parents are taking them seriously.

"Maybe different schools need to just talk to parents at the start of the school year...and say exactly what this is for," said Mr Shortt.

### ADVERTISEMENT

"It's not put on some national database."

It also recommends changing the timing of the tests from the Summer to Autumn as a way of alleviating pressure.

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# **Primary tests** causing 'stress and anxiety'

Pressure to perform in standardised test can lead to pupils being 'taught to the test'

#### CARL O'BRIEN Education Editor

Standardised tests in primary schools are causing stress and anxiety and resulting in many pupils being "taught to the test", a new study has found. Standardised testing in Irish primary schools has be-come increasingly prominent over the past decade or so. All schools are now

All schools are now required to administer stand-ardised reading and maths tests, such as the Drumcondra tests, such as the Drumcondra Test, in second, fourth and sixth classes and to report the findings to parents and the Department of Education. However, the first large-scale study which sought the views of more than 1,500 teachers indicates that, while the test are a valuable

while the tests are a valuable tool for assessment, they are also linked to unintended

negative consequences. Some teachers were aware of questionable test preparaing to the test" and grinds – and reported anxiety among pupils and pressure to perform.

perform. Most teachers said they felt pressure from within them-selves or from parents to improve their pupils' standard-ised test scores. Three out of every four

teachers agreed that some pupils in their classes were extremely anxious about tak-

ing standardised tests and about half felt that parents took the results of standardised tests too seriously.

While many agreed that standardised test results should be reported to parents, some expressed uncertainty about whether or not parents understood the meaning of test scores.

Validitydisputed A notable finding was the diversity of opinion expressed about different aspects of standardised testing. Some felt the tests were a valid way of measuring achievement in maths and English reading, while others did not.

The appropriateness and value of standardised testing in disadvantaged schools and for pupils with special needs was called into question by some teachers. Prof Michael O'Leary, direc-

tor of the centre for assessment research policy and practice at <u>DCU's</u> institute of education, said it was clear standardised testing had an increased status in the primary system." Many teach-ers have real concerns about its impact," he said. The research makes policy

recommendations, including changing the timing of the testing from summer to the autumn to alleviate the pressure felt by teachers and pupils.



Three out of four primary teachers agree that some primary school pupils felt extremely anxious about standardised tests.

The claims are part of a new study, which also found differing opinions on whether the tests were a valid way of measuring achievement.

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### ADVERTISMENT

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Met Eireann – Storm Hannah A Met Eireann status yellow wind warning has been issued for Kildare for Friday 26 April, forecasting high winds on from 23:00 to Saturday 27 April 2019 09:00 with storm force winds possible along parts of the coast.

Kildare County Council's Severe Weather Assessment Team met to consider any impacts of the expected high winds. Response teams including Roads, Water, Fire, Civil Defence were put on standby. Motorists are urged to exercise caution on a... See More



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"It's not put on some national database."

It also recommends changing the timing of the tests from the Summer to Autumn as a way of alleviating pressure.





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### Listen Back: Wednesday's Edition Of Kildare Today With Clem Ryan.





Listen back to hour one of Kildare Today with Clem Ryan, joined by Prometic Chair in Assessment at DCU, Prof. Michael O'Leary, Kildare Returning Officer, Eithne Coughlan, and candidate statements from the Clane Electoral Area.

Lisa back to hour two of Kildare Today with Clem Ryan, joined by Straffan mother, Dierdre Kiernans & Ardclough mother & disability activist, Aishling McNiffe, CSO Statistician, Jim Dalton, candidate statements from the Kildare Electoral Area and Crime Time with Garda Dave Prendergast.



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