

Research Impact Case Study Template

Title of the case study Understanding the impact of technology in education on student progression and learning outcomes

Details of staff conducting the underpinning research (names, job titles) Dr Ann Marcus-Quinn, School of English, Irish and Communication, University of Limerick (UL) and Research Affiliate, Economic and Social Research Institute (ESRI)

Underpinning research linked to UN Sustainable Development Goals

Identify [UN Sustainable Development Goals](#) (SDGs) to which the impact is deemed to support.
Note: not all case studies can be linked to SDG goals and some case studies can be linked to multiple SDGs.

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|--|--|
| <input type="checkbox"/> Not relevant | <input type="checkbox"/> Goal 1 No Poverty |
| <input type="checkbox"/> Goal 2 Zero Hunger | <input type="checkbox"/> Goal 3 Good Health and Well-being |
| <input checked="" type="checkbox"/> Goal 4 Quality Education | <input type="checkbox"/> Goal 5 Gender Equality |
| <input type="checkbox"/> Goal 6 Clean Water and Sanitation | <input type="checkbox"/> Goal 7 Affordable and Clean Energy |
| <input type="checkbox"/> Goal 8 Decent Work and Economic Growth | <input type="checkbox"/> Goal 9 Industry, Innovation, and Infrastructure |
| <input type="checkbox"/> Goal 10 Reduced Inequalities | <input type="checkbox"/> Goal 11 Sustainable Cities and Communities |
| <input type="checkbox"/> Goal 12 Responsible Production and Consumption | <input type="checkbox"/> Goal 13 Climate Action |
| <input type="checkbox"/> Goal 14 Life Below Water | <input type="checkbox"/> Goal 15 Life on Land |
| <input type="checkbox"/> Goal 16 Peace, Justice, and Strong Institutions | <input type="checkbox"/> Goal 17 Partnerships for the Goal |

Summary of the impact

Integrating technology into classrooms is a significant challenge facing education. The rapid move to online teaching perpetuated by the global pandemic brings into sharp focus the inequity of digital access, the impact of technology on students' ability to learn and the lack of policy, guidance and quality pertaining to digital pedagogy. The digital divide continues to disadvantage students and the potential impact on their progression is grave^[1].

Research undertaken by Dr Ann Marcus Quinn at UL has identified factors impacting student progression as well as highlighting the need for a national, evidence-based, blended learning policy. The impact of this research has been to inform technology adoption policy in Irish education.

^[1]The Irish Times, 19th Jan 2021, [Digital Divide: How Covid-19 is deepening inequality in education by Peter McGuire.](https://www.irishtimes.com/news/education/digital-divide-how-covid-19-is-deepening-inequality-in-education-1.4450418)
<https://www.irishtimes.com/news/education/digital-divide-how-covid-19-is-deepening-inequality-in-education-1.4450418>

Countries where the impact occurred: Ireland

Beneficiaries: Second-level schools, including stakeholders: students, teachers, administration, parents and carers; policy-makers of second-level education

Description of the impact

The research has impact in two main areas:

- Equality of opportunity
- Student health and wellbeing.

Impact equality of opportunity, on student learning, and quality of experience

Teaching in a national context is important to our educational experience and cultural heritage. It is vital that there are quality resources tailored to the needs of a country’s learners. Part of this research explored digital resources for post-primary students and the resources’ localisation¹. It found gaps in resourcing for important subjects. In particular, humanities lacked available localised content.

Ten years ago, the lack of curriculum-relevant digital resources was a common concern of post-primary teachers who were considering using digital technology in the classroom^{2, 3}. There is a greater lack in less-populated countries where the market size for bespoke curricular-relevant materials does not support a commercial market for teaching materials.

Since 2004, Dr Marcus-Quinn, School of English, Irish and Communication, UL and Economic and Social Research Institute (ESRI) Research Affiliate has collaborated with teaching professionals and researchers to focus on the design and development of digital learning resources at third-level (Ref 7) and post-primary (Ref 8). The research led to the development of best-practice pedagogical principles and open-source educational resources. It ensured accessibility, content quality, and supported learning outcomes.

For example, working with Barbara Geraghty UL’s School of Modern Languages and Applied Linguistics, Dr Marcus-Quinn created resources for all undergraduate students of Japanese. Implementation of these principles and resources in the classroom led to improvements in acquiring Japanese syllabary (Hiragana); students grasped Hiragana twice as quickly as those using paper-based materials (Ref 9). The co-collaborators also considered accessibility guidelines at every stage of design and development, creating a resource accessible to all learners. As a result, in 2007⁴, the Hiragana resource was awarded the European Commissions’ European Language Label. Its template has been used since to create additional resources.

Finally, in 2014, Dr Marcus-Quinn collaborated with Dr Tríona Hourigan, a post-primary teacher with postdoctoral experience. They were appointed as Ireland’s management committee members on the EU COST Action eRead. This policy/practice collaboration enabled learnings to be shared across different educational sectors. Furthermore, as editors of leading handbooks on digital learning and

² Conway, P., Murphy, R., Rath, A., Hall, K., (2009) Learning to Teach, Report commissioned by The Teaching Council [Online] Available at <https://www.teachingcouncil.ie/en/publications/research/documents/learning-to-teach-and-its-implications-for-the-continuum-of-teacher-education.pdf> [Accessed 12 March 2021]

³ Marcus-Quinn, A., (2013) *Digital repositories and their associated services: from capacity building to sustainability*. In: Emerging Issues III in Higher Education: from capacity building to sustainability, O’Farrell C. and Farrell, A., (eds) EDIN.

⁴ European Languages Initiative [Online] https://ec.europa.eu/education/policies/multilingualism/european-language-initiatives_en

open education (Ref 10), the collaborators curated international research in online learning, the most challenging area for education in our time. The collaboration grew when Professor Selina McCoy, Economic and Social Research Institute became involved. It went on to generate a series of reports, including a European Commission examination of complexity in the digital learning movement and the continued digital divide (Ref 1-4).

Impact on student health and wellbeing, student engagement, and student progression

In 2019, Dr Marcus-Quinn was chosen as the discipline expert on a report commissioned into the tablet-only policy of Ratoath College by the Louth Meath Education and Training Board. The report (Source 1) found the school’s digital school policy was negatively impacting students, both psychologically and physically. In the classroom, the tablets distracted the students. Physically, the extended screen time negatively impacted their health and wellbeing. The technology contributed to bad posture, headaches, and back-pain. In addition, parents found student progress contentious. Parents with multiple children in a school could compare tablet-only versus traditional learning experiences, and they reported better progress for children in the non-technology environment.

In 2020, the report led Ratoath College to reverse its tablet-only policy. The move was described as a landmark one, likely to influence “how other secondary schools incorporate technology in the classroom”⁵.

To date, this research directly impacts distinct groups of students and informs individual school policy. However, currently, Covid-19 has led to mass school closures throughout the world and a rapid global move to wholly online learning. The entire student population experiences complete and immersive digital learning. Yet, there is little policy, framework, or guidance for schools to deliver this immersion.

Both before and throughout this move to online learning, the research partners have been active public commentators ⁶. In particular, they have been country experts whose findings informed best approaches to the Irish digital divide. During school closures, on RTÉ news, Dr Marcus-Quinn advised teachers how best to incorporate digital materials into their teaching for the first time.⁷ Furthermore, the research partnership highlighted the universality of television as an equitable medium and the importance of investment in public education broadcasting⁸.

The challenges of digital education, as evidenced in this body of research, is a very real and lived experience for students across all sectors and countries. It tackles a national framework for digital education. It also moves swiftly to enhance the Irish reputation for educational excellence with a reputation for equity of all students in all modes of learning. It has never been timelier.

⁵ The Irish Times. February 2020. iPads in school experiment gets fail mark as kids go shopping and gaming. <https://www.irishtimes.com/news/education/ipads-in-school-experiment-gets-fail-mark-as-kids-go-shopping-and-gaming-1.4187316>

⁶ The Irish Times, 19th Jan 2021, Digital Divide: How Covid-19 is deepening inequality in education by Peter McGuire. <https://www.irishtimes.com/news/education/digital-divide-how-covid-19-is-deepening-inequality-in-education-1.4450418>

⁷ RTE (2020), How second-level schools are rising to the challenge of remote learning [online] <https://www.rte.ie/news/coronavirus/2020/0318/1123815-coronavirus-education/>

⁸ The Irish Times, 06 October 2020 Here's a solution to remote learning if schools shut: the humble TV [online] <https://www.irishtimes.com/news/education/here-s-a-solution-to-remote-learning-if-schools-shut-the-humble-tv-1.4366383>

Evidence of impact

1. Dune, C., Marcus-Quinn, A., O’Dálaigh, C. (2020). An Independent Review of Tablet Devices at Ratoath College. Report commissioned by the Louth Meath Education and Training Board
2. Alan Cantwell, General Secretary, Irish Educational Publishers Association (IEPA), Alan Cantwell.
3. Mr Michael Cregan, President, National Association of Principals and Principal Laurel Hill Secondary School FCJ.
4. Sylwia Sitka, Programme Manager, EU Directorate-General Education,
5. Professor Selina McCoy, Economic and Social Research Institute and Irish national expert at the European Commission *Independent Experts in Education and Training*.
6. Independent Senator Gerard Craughwell

Research description

In 2010, Apple released the iPad. Many early adopters rushed to embed the device into their lives. The surge included an uptake of digital technology by schools around the world, including in Ireland. This research investigated the challenges of this digital deployment in Ireland. It revealed the deployment’s significant challenges and the pressing need for decision-making informed by evidence to meet those challenges.

The research results are relevant to education at all levels (primary, secondary, and higher level) and across all disciplines. The most significant result is that decision-making must be informed, guided, and tailored to a student population’s demographics. In addition, the evidence should inform investment programmes across education. It also supports enhanced student outcomes and progress, and the opportunity for scalability across disciplines, educational levels, and countries.

Here are three further important research findings:

Digital policy must consider equity of access to quality education: Covid-19 reveals the issue is now about equality. Covid-19 majorly impacted the inequity of access to quality education around the world. It is urgent to provide national policy and clear guidance to educators. It is vital to be aware of community demographics and limitations in digital infrastructure, limitations that disadvantage students across all stages of their educational experience.

Ireland is an Open-Education exemplar: Ireland has expertise in educational pedagogy, digital communication, and policy development. The size and connectivity of our educational system provides a unique environment to capture longitudinal data, such as tracking students’ progress. It is timely that there is research in Ireland that informs the deployment of virtual learning environments and reveals barriers to progress.

Framework for digital learning: The recent pivot to virtual learning provides a wealth of data and expertise that can inform national guidelines. Such guidance is necessary to support educators’ decisions about deploying technology without compromising the quality of pedagogy.

Research outputs

1. Marcus-Quinn, A., Hourigan, T and McCoy, S. (2020) “How Should Second-Level Schools Respond in An Era of Digital Learning” in The Education Yearbook, Education Matters. <https://educationmatters.ie/downloads/EMYB-20192020.pdf>

2. Marcus-Quinn, A and Hourigan, T. (2020) "The materiality of support materials (informal books) in the classroom" in Schilhab, T., Walker S., (eds) An anthology on the Materiality of Reading. Aarhus University Press.
3. Marcus-Quinn, A., Hourigan, T and McCoy, S. (2019) "The Digital Learning Movement: How Should Irish Schools Respond?" in Economic and Social Review, Dublin: ESRI <https://www.esr.ie/article/view/1332>
4. Marcus-Quinn, A and Hourigan, T. (2019) Open Education and Post-Primary Education, ResearchED, Dublin, October 5th. Available online <https://epale.ec.europa.eu/en/content/researched-dublin-2019>
5. Marcus-Quinn, A and Hourigan, T. (2019) Exploring the Possibilities afforded by Open Education at Second Level in Ireland. OER19, Galway, Ireland
6. Marcus-Quinn, A. (2016) "The potential of high quality Open Educational Resources (OERs) for the teaching of English poetry." The Journal of Poetry Therapy. Vol. 29 No. 1
7. Marcus-Quinn, A; Geraghty, B (2010) 'Design and development of a digital learning resource to deliver online content to teach Japanese syllabaries' In: Donnelly, R., and Harvey J., (eds). Critical Design and Effective Tools for E-Learning in Higher Education: Theory into Practice. Hershey, Pennsylvania: IGI Publishing
8. ¹ Marcus-Quinn, A., McGarr, O. (2013) 'Digital divide in post-primary schools' In: Internet in the humanities: an insight from Ireland. Dublin: ResearchPublishing.net. <https://files.eric.ed.gov/fulltext/ED576217.pdf>
9. ¹ Geraghty, B & Marcus-Quinn, A., 2009, 'An evaluation of independent learning of the Japanese hiragana system using an interactive CD', *ReCALL*, vol. 21, no. 2, pp227-240.
10. Marcus-Quinn, A., and Hourigan T., (2016) "Handbook for ICT in K12 Schools." Springer. New York. <https://link.springer.com/book/10.1007/978-3-319-33808-8>