



Title	Aligning Professional Identity with Institutional Culture: The Role of Educators' Digital Fluency in Harnessing the Potential of Online and Technology Enhanced Learning
Authors(s)	Watts, Niall, Galvin, Conor
Publication date	2020-05-13
Publication information	Watts, Niall, and Conor Galvin. "Aligning Professional Identity with Institutional Culture: The Role of Educators' Digital Fluency in Harnessing the Potential of Online and Technology Enhanced Learning." Dublin City University, May 13, 2020. https://doi.org/10.5281/zenodo.3804014 .
Conference details	The 28th ICDE World Conference on Online Learning, Dublin, Ireland, 3-7 November 2019
Publisher	Dublin City University
Item record/more information	http://hdl.handle.net/10197/11560
Publisher's version (DOI)	10.5281/zenodo.3804014

Downloaded 2026-05-02 00:26:40

The UCD community has made this article openly available. Please share how this access benefits you. Your story matters! (@ucd_oa)



© Some rights reserved. For more information

Aligning Professional Identity with Institutional Culture: The Role of Educators' Digital Fluency in Harnessing the Potential of Online and Technology Enhanced Learning

Abstract

Globally, higher education is facing the challenges of a growing and diverse student body and the potential of digital technologies to transform their learning. How digitally fluent educators work to harness technology enhanced learning (TEL) is a defining factor in this.

This paper presents an analysis of the power and possibilities of digital fluency. It draws on innovation theory (relating to diffusion of innovations and to acceptance and use of technology), and also on understandings of institutional culture – conceptualised as communities and landscapes of professional practice. It is set against recent doctoral work, comprising a thematic analysis of semi-structured interviews with key, digitally fluent academics in Ireland and of a national (Ireland) policy document; the Digital Roadmap. This analysis led to some rather unexpected conclusions about educators' professional identity and institutional cultures whose alignment (or lack thereof) can profoundly influence practice in online and technology-enhanced learning.

Essentially, this research suggests that enthusiasm, educational qualifications, and prior experience of digital technologies are major influences in the development of digital fluency and related professional identity, but that there has been little consistency or predictability in how this happens. Major similarities emerged among participants around how fluency was pursued, but marked variations emerged between those whose career focused on TEL and those who mainly used TEL as part of their instructional practices. Similarly, the research identified differing practices at institutional level regarding the prioritising and fostering of this digital fluency and related professional identity. It also identified very mixed levels of understanding relating to institutional and national policy in the area. The paper presents a discussion of both individual and institutional aspects of identity development under headings relating to career focus; the interrelations of formal and informal learning; the institutional promotion of cultures of development; and reward systems and structures. In this way the paper foregrounds the importance of meaningful alignment of professional identity and institutional culture in harnessing the potential of online learning in higher education. By examining in particular the factors that influence the development of digital fluency among academics and the role of sustainable, supportive institutional cultures in this, it contributes to understandings of the ongoing transformation of online learning both globally and globally, suggesting some measures for better facilitating and fostering that alignment.

This paper aligns with the conference sub-themes of New Skills for Living and Working in New Times and Global Challenges and Glocal Solutions

Key Words: digital fluency, digital roadmap, professional identity, institutional culture

Introduction

Internationally, higher education is facing the challenge of massification, of increasing student numbers from increasingly diverse backgrounds (Kubler & Sayers, 2010). Information and communication technologies (ICTs) have an important role to play in education by contributing to access, equity, the quality of learning and teaching and to teachers' professional development. However, the development of online and blended learning depends on the correct mix of policies, technologies and capacities being in place (UNESCO, 2014). Thus, the European Union (EU) through its *Joint Research Centre Institute for Prospective Technological Studies* is strongly supportive of the idea that digital competence is necessary for lifelong learning (Ala-Mutka, 2011). The *2019 Horizon Report* (Higher Education Edition) considers the improvement of digital fluency to be a challenge that higher education institutions can address through faculty development and

hiring practices (Educause Horizon, 2019).

In Ireland, the *National Forum for the Enhancement of Teaching and Learning* (Forum) is addressing this challenge. The Forum aims to build on expertise within higher education to support and develop best practice in teaching and learning (NFETLHE, 2014). Following consultation, the Forum produced a report with recommendations, known as the *Principles and First Insights from the Sectoral Consultation on Building Digital Capacity in Irish Higher Education (Digital Roadmap – Phase 1)*. However, there is little research to show how experienced educators gain their experience with digital technologies, how they apply their strategies or the extent to which they reflect on their practice (Baran, Correia, & Thompson, 2013) or on how institutions can facilitate that practice (Porter & Graham, 2016; Reid, 2014). This paper aims to address that gap.

Digitally proficient practices can be described as digital fluency, further defined and discussed below. We draw on the work of the Digital Roadmap (Phase 1) in examining the role of educators' digital fluency in harnessing the potential of technology-enhanced learning (TEL).

Theoretical and Conceptual Framework

Why digital fluency? Choice of terminology

This paper uses the term digital fluency rather than the more widely used terms of digital literacy and digital competence or the Digital Roadmap's term, digital capacity (Ala-Mutka, 2011; Lankshear & Knobel, 2008; NFETLHE, 2014). In the words of R. L. Wang, Wiesemes, and Gibbons (2012, p. 577) "We maintain that digital fluency could become a vital concept to explore technology-enhanced learning". Fluency represents a greater level of expertise than literacy or competence, similar to fluency in a foreign language (Resnick, 2012). Rather than there being a digital divide, individuals have a position on the digital spectrum, a continuum from low levels of skills and knowledge towards fluency (Lenhart & Horrigan, 2003). Q. E. Wang, Myers, and Sundaram (2013) define digital fluency as "the ability to reformulate knowledge and produce information to express oneself creatively and appropriately in a digital environment", while Hsi (2007) defines digital fluency more broadly as "competencies, new representational practises, design sensibilities, ownership, and strategic expertise that a learner gains or demonstrates by using digital tools to gather, design, evaluate, critique, synthesise, and develop digital media artefacts, communication messages, or other electronic expressions" rather than a technological fluency which is data, information, or knowledge-centred perspective. More concisely, Briggs and Makice (2012) define digital fluency, as knowing when to use a tool (or not) and why it should be used, whereas literacy is knowing what tool to use and how to use it. These definitions of digital fluency are consistent with higher order thinking as in Bloom's Taxonomy. It is at Bloom's higher levels of thinking that the potential of technology-enhanced learning (TEL) for deep learning as defined by Ramsden (2003) can be realised. Such potential is consistent with the values of higher education (Garrison & Vaughan, 2008).

Landscapes of Practice in Higher Education

Institutions of higher education can be seen as consisting of multiple communities of practice such as disciplinary, research, administrative, technological and pedagogical communities. Together these communities can be considered as forming a landscape of practice, where no single practice can represent the whole landscape. Educators have differing amounts of knowledgeability or levels of competence and engagement in these communities (Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2015). Where practices meet, there is a potential for misunderstanding and conflict but also for collaboration and innovation, for engagement and self-reflection; thus, creating rich opportunities for learning (Wenger-Trayner et al., 2015). Institutional culture can create an environment which supports such engagement. To benefit from this opportunity practices needs to be consistent with the professional identity of the educators.

Professional Identity

Professional identity includes elements of technical and interpersonal skills, good reasoning and

judgement, critical self-evaluation and a commitment to self-development as well as the embodiment of the attitudes, beliefs and standards of the profession (Trede, Macklin, & Bridges, 2012). Professional identity varies among academics as it may focus on either a disciplinary or a teaching identity (Slowey, Kozina, & Tan, 2014). It may also be influenced by their institutional identity and employment status (Cheng, 2014). Some academics draw on internal values untroubled by institutional culture while others may wish to change that culture (Skelton, 2012).

The professional identity of educators and its relationship to the practices of higher education influences the extent and manner in which educators develop their digital fluency and engage with TEL.

Research Methods

The higher education workplace provides the context for this research which takes an explanatory case study approach through an in-depth investigation of real educators in the context of their practice (Simons, 2009). Such an approach can explain how and why things happened or the reasons for people saying what they did, focusing on an issue rather than the case (Bassegy, 1999; Yin, 2015).

The cases were eight digitally fluent faculty members drawn from a range of disciplines and institutions of higher education in Ireland. Five of the participants were male and three were female. They were selected by intensity sampling (Simons, 2009), using a combination of frequent speakers at educational technology conferences and recommendations from speakers at those conferences. To capture the authentic voice of the participants, the researcher chose semi-structured interviews as a research method (Simons, 2009). Prior to the interviews the researcher obtained exemption from full ethical review and conducted a pilot interview to test his protocol. He also selected a "critical friend", who could bring another perspective to the research (Costa & Kallick, 1993).

As a practising educational technologist in an Irish university, the researcher was aware that participants might see him as an "insider" and that this could influence their approach to the interviews (Visser, 2001). The interviews were audio-recorded, and the recordings transcribed. The participants were given pseudonyms in the transcripts and any potentially identifying information removed.

The researcher conducted a thematic analysis of the digital roadmap and the interview transcripts. This is an inductive approach where the themes are derived from a detailed labelling or coding of the text (Miles, Huberman, & Saldana, 2014). The researcher coded the interview transcripts using NVivo. The coding process went through many cycles to combine the codes into categories and to derive themes from those categories. These themes helped to address the research question by capturing the essence of the documents (Braun & Clarke, 2006). The outputs of that thematic analysis inform the research findings.

Findings

Professional identity and institutional culture were identified as the two overarching themes in the analysis of the interview transcripts. The digitally fluent educators' approach to developing their own expertise, teaching their students, sharing their experiences with colleagues and engagement with policy are all aspects of their professionalism identified in the interviews. The participants' approach to these aspects sometimes differed but was always guided by their own sense of professional identity. These differences were particularly noticeable in their approach to practice sharing with colleagues and their attitudes to policy.

Developing their own Expertise

In this study, enthusiasm, educational qualifications and prior experience of digital technologies

were found to be major influences in developing digital fluency. This corresponds to the work of Q. E. Wang et al. (2013); R. L. Wang et al. (2012). All the participants were intrinsically motivated to develop their digital fluency and claimed to be largely self-taught, developing their fluency through trial and error in experimenting with technologies. This is frequently how the digitally fluent develop (Resnick, 2001; Resnick & Rosenbaum, 2013). However, most of the participants had also pursued formal qualifications at masters or doctoral level in areas related to TEL and all had attended in-house courses and workshops. These courses and events helped many of them to further develop their digital fluency and professional identity by making professional connections, which often developed into personal learning networks (Dabbagh & Kitsantas, 2012; Hsi, 2007; Veletsianos, 2012). The participants gave experimentation and informal contact as their preferred means of learning, as do similar respondents in Hannon (2008). This suggests that, in terms of the *Unified Theory of Acceptance and Use of Technology (UTAUT)*, they had high performance and low effort expectancy with low requirements for facilitating conditions and social influence (Venkatesh, Morris, Davis, & Davis, 2003).

Applying Expertise in Teaching Practice

All the research participants used technology because they wanted to teach well. Their activities ranged from providing formative feedback, collaboration with students in other institutions, making classes more engaging, allowing students to participate remotely, creating and evaluating multimedia artefacts, flipping the classroom and developing digital identities.

Sharing Experience with Colleagues

The digitally fluent educators were all willing to help their colleagues when requested. However, they would only do so in a manner consistent with their professional identity. While enthusiastic about their own use of digital technologies, the participants were clear that they were not “cheerleaders” for technology and did not consider themselves to be better teachers than their colleagues. Such an approach would be inconsistent with both their and their colleagues’ professional identity. The extent to which they would help colleagues varied among participants.

Some participants went beyond responding to requests for help and gave practical, informal, demonstrations of how they and their students benefited from the use of TEL. In their own words, they provided a “shop window” or “showcase” for their colleagues. Their focus was on why they used the technology rather than how they used it. This approach corresponds with definitions of digital fluency (Briggs & Makice, 2012; Hsi, 2007; Q. E. Wang et al., 2013; R. L. Wang et al., 2012). Other participants felt it inappropriate to share their experiences unless asked.

Engagement with Policy

The interviewees’ views on institutional and national TEL policies ranged from no knowledge, through scepticism to enthusiasm. However, policy scepticism did not reduce any participants’ enthusiasm for TEL. Those with a background in TEL were generally more aware of policies and more likely to participate in policy development. According to the participants, policy tended to focus on areas such as data protection and Bring Your Own Device (BYOD) rather than teaching practice. Concerns were expressed that BYOD could change the role of faculty, giving them responsibilities for technology management, inconsistent with their professional identity. Some of the sceptics had serious visionary ideas about future policies in areas ranging from social media to BYOD, from openness to commercialisation and from the recognition of continuing professional development and to funding for TEL projects. Long-established practices, institutional culture and a lack of resources can all make it difficult to realise such visions.

Most of the interviewees were familiar with the work of the Forum in developing policies to increase the digital capacity of Irish higher education. However, they considered that it would take time before any long-term results were evident. This is to be expected as such innovations in process tend to take a long time to emerge (Markides, 2006). While some participants were actively involved in Forum projects and were enthusiastic about its work; others were more sceptical, suggesting that the Forum should do more to reward teaching practice and provide funds for large-scale projects. A concern was that policies were over-promising what technology could deliver, often by focusing too much on tools rather than their role in teaching, learning and assessment.

Institutional and national policies on TEL may influence institutional culture, which in turn may influence professional identity. Changes in professional identity may then influence institutional culture.

Institutional Culture

Institutional culture was identified as one of the overarching themes in the analysis of the interview transcripts. It affected the ability of educators to harness the potential of their digital fluency for the development of TEL. As noted by Knight, Tait, and Yorke (2006), to be successful professional development in higher education must be aligned with the “rules, tools and division of labour”. The influence of institutional culture could be seen in areas as diverse as supporting usage, managing workload, and awards and rewards. Differences between participants were particularly noticeable in the latter.

Supporting Usage

Most of the institutions in the study had specialist centres for teaching and learning, employing educational technologists to advise faculty on TEL. While professional development including support for doctoral and masters studies was available, support for TEL tended to focus on guiding participants in the use of the institutional Virtual Learning Environment (VLE). According to the participants, this could lead to an institutional, expert-led focus on tools and technologies rather than on teaching and learning. While VLEs can be useful tools for managing TEL, the participants sometimes found them difficult to use and lacking desirable features (Benson, Anderson, & Ooms, 2011; Blin & Munro, 2008). However, they were able to overcome any such difficulties using their digital fluency. This led them to suggest that faculty should be enabled and encouraged to develop their own fluency, giving them the skills and confidence to go “off-piste” and experiment with tools and technologies as they saw fit; rather than only providing guidance on the use of the VLE.

Managing Workload

Participants considered that their workload was increasing; adding to time pressure and reducing the amount of time available for the development of TEL. Most of them considered its development to be time-consuming, a view shared by many researchers (Baran et al., 2013; Vaughan, 2007). Additionally, as institutions employ increasing numbers of lecturers on short-term or casual contracts; such lecturers are unlikely to invest their own time in the development of TEL whether or not they have the expertise to do so.

Awards and Rewards

Interestingly, many of the research participants did not seem to be driven by the prospect of career advancement in the use of TEL, a finding shared by researchers (Fischer & Köhler, 2011; Porter & Graham, 2016). However, participants from the Institutes of Technology differed from their colleagues in the university sector in their attitudes towards funding and recognition for the development of teaching practice; with participants in the Institutes of Technology tending to be supportive while their university-based colleagues were often unconvinced of their value. These attitudes would seem to be related to differences in institutional culture, where less value or a lower social influence (Venkatesh et al., 2003) is placed on teaching in universities. The participants seem to have incorporated this aspect of institutional culture into their professional identity.

For the research participants digital fluency and the use of digital technologies in their practice had become part of their professional identity. For those participants who had built their career around TEL, it was an essential part of their identity while others had a stronger disciplinary identity and had developed an interest in TEL to improve their teaching and professional practice.

Discussion

The findings have shown two distinct professional identities among the digitally fluent educators, with differing amounts of knowledgeability or levels of competence and engagement in the educational technology community of practice (Wenger-Trayner et al., 2015). This typology is based on drivers for practice as seen in Benson et al. (2011). While there is some blurring at the

boundaries, most participants fit clearly into one of these identities which can be described as *TEL Career* and *TEL Practitioner*.

Members of the *TEL Career* group are all active researchers or consultants in TEL who can be considered as innovators (Rogers, 2003). While their academic backgrounds and their approach to TEL vary, the members of this group have all developed their careers and professional identity around its use. In several cases this arose from a transformative experience early in their careers. They make considerable use of theory in their praxis, taking a “researcher attitude” to their practice. They are all active researchers in TEL and are likely to be aware of and engaged in policy development, though they may be critical of these policies. As such, TEL can be considered to be their practice. In terms of the work of Skelton (2012) on teaching identities in higher education, they can be seen as “blended professionals”, who value both research and teaching as learning processes and thus believe strongly in their own professional development in both areas. This group can be considered as being at the core of the educational technology community of practice.

Members of the *TEL Practitioner* group have developed their digital fluency with a view to enhancing their professional practice in their own discipline, as such, they can be considered as early adopters (Rogers, 2003). They tend to take a more applied approach than the members of the *TEL Career* group. Their research largely focuses on their own disciplinary interests rather than on TEL and they tend to have less engagement with policy initiatives. Where they had a transformative experience regarding TEL, it came later in their career, while they were already lecturing. They expressed a pragmatic approach to the use of TEL that was not fundamental to their professional identity. In terms of the teaching identities discussed by Skelton (2012), they can be described as “researchers who teach” or “teaching specialists”. Their relationship with the educational technology community can be considered as more peripheral than that of the *TEL Career* group as they have a lower degree of knowledgeability. Interestingly, they mentioned students considerably more frequently seemingly having a greater interest in student expectations. As early adopters, the practice of members of this group is more considered and with less tacit knowledge. This may help them to relate to their less digitally-proficient colleagues. Therefore, understanding their professional development, may help us to understand how those colleagues could also develop their own fluency (Porter & Graham, 2016; Rolfe, 2012). The *TEL Practitioners* were found to be more pro-active in helping their colleagues by discussing the benefits TEL brought to their own practice and offering informal demonstrations. However, like those in the *TEL Career* group, they would only work with their less digitally fluent colleagues in a manner consistent with both their professional identity and beliefs (Cheng, 2014; Rogers, 2003; Slowey et al., 2014).

Educators both shape and are shaped by their working context which can either enable or constrain them in their professional roles (O'Byrne, 2014). Institutional culture and professional identity seem to combine in the participants' attitudes towards recognition for teaching and institutional funding for teaching and learning initiatives. The importance of professional identity and institutional culture needs to be considered in any programmes to increase digital fluency in higher education.

Conclusion

Practice is influenced by professional identity and institutional culture with different communities of practice forming the higher education landscape. Educators' reasons for developing their digital fluency vary. However, independent of their professional identity or institutional affiliation, all the participants benefited from institutional support for higher degrees and expressed a preference for tinkering and informal learning over institutional courses. While cautious of being seen as zealots, they believed that their informal interventions were helpful to their less digitally-proficient colleagues. While the scope of this study is limited, its findings suggest that, in order to harness the potential of TEL, institutions of higher education should allow faculty sufficient time for experimentation and informal learning, while continuing to support masters and doctoral study in TEL-related topics. Where institutional courses are offered, they should not only guide faculty in the use of the VLE and institutional systems, but, also, give them the skills and knowledge

necessary to make decisions about the best use of TEL in their professional practice. In other words, enable them to become digitally fluent. This should also help to change any focus of TEL on tools and technology to pedagogy and practice. Moving from the local to the global, these findings correspond with the 2019 Horizon Report recommendations of increasing digital fluency through faculty development and hiring practices (Educause Horizon, 2019). They also reinforce the need for the alignment of technology, capacity and policy in order to develop TEL, as advised by UNESCO (2014).

The Digital Roadmap from the Forum aimed to create policy to develop institutional digital capacity. It stressed the importance of consultation with educators among a wide range of stakeholders. The findings from this study suggest that any stakeholder analysis for policy development, would benefit from the inclusion of TEL Practitioners; as their identity seems to be similar to that of their colleagues at a lower point on the digital spectrum. As there are many professional identities and communities of practice in higher education, one roadmap is unlikely to meet the requirements of faculty in all institutions. By drawing more widely on the experience and knowledge of faculty, an “atlas” (Devine, 2015) of many roadmaps can be created allowing for multiple routes towards digital fluency. Such an alignment of policy with practice should ultimately help to develop a sustainable approach to TEL which has the potential to transform teaching and learning in higher education.

Acknowledgements

The research discussed in this paper draws on the principal author’s PhD research which was conducted in the UCD School of Education under the supervision of Dr Conor Galvin.

References

- Ala-Mutka, K. (2011). *Mapping Digital Competence: Towards a Conceptual Understanding* (JRC 67075). I. f. P. T. S. Joint Research Centre, European Union. Luxembourg.
- Baran, E., Correia, A.-P., & Thompson, A. D. (2013). Tracing Successful Online Teaching in Higher Education: Voices of Exemplary Online Teachers. *Teachers College Record*, 115.
- Bassey, M. (1999). *Doing qualitative research in educational settings*. Milton Keynes, UK: Open University Press.
- Benson, V., Anderson, D., & Ooms, A. (2011). Educators’ perceptions, attitudes and practices: blended learning in business and management education. *Research in Learning Technology*, 19(2), 143-154.
- Blin, F., & Munro, M. (2008). Why hasn’t technology disrupted academics’ teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education*, 50, 475-490.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Briggs, C., & Makice, K. (2012). *Digital Fluency: Building Success in the Digital Age*: Digital Fluency.
- Cheng, M. (2014). *Professionalizing Teaching Identity and Teaching 'Excellence' Schemes*. London: Bloomsbury.
- Costa, A., & Kallick, B. (1993). Through the Lens of a Critical Friend. *Educational Leadership*, 51(2), 49-51.
- Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *Internet and Higher Education*, 15, 3-8.
- Devine, J. (2015). *Strategic and Leadership Perspectives on Digital Capacity in Irish Higher Education*. N. F. f. t. E. o. T. a. L. i. H. Education. Dublin.
- Educause Horizon. (2019). *Educause Horizon Report : 2019 Higher Education Edition*. Educause. Louisville, CO. USA.

- Fischer, H., & Köhler, T. (2011). *Adopter Types of E-Learning Innovations in Higher Education. Empirical Findings*. Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications (EDMEDIA) 2011, Lisbon.
- Garrison, D. R., & Vaughan, N. D. (2008). *Blended Learning in Higher Education: Framework, Principles and Guidelines*. San Francisco: Jossey-Bass.
- Hannon, J. (2008). Doing staff development: Practices, dilemmas and technologies. *Australasian Journal of Educational Technology*, 24(1), 15-29.
- Hsi, S. (2007). Conceptualizing Learning from the Everyday Activities of Digital Kids. *International Journal of Science Education*, 29(12), 1509-1529.
- Knight, P., Tait, J., & Yorke, M. (2006). The professional learning of teachers in higher education. *Studies in Higher Education*, 31(3), 319-339.
- Kubler, J., & Sayers, N. (2010). *Higher Education Futures: Key Themes and Implications for Leadership and Management*. L. F. f. H. Education. London.
- Lankshear, C., & Knobel, M. (2008). *Digital literacies: Concepts, policies and practices* (C. Lankshear & M. Knobel Eds.). New York: Peter Lang.
- Markides, C. (2006). Disruptive Innovation: In Need of Better Theory. *Journal of Product Innovation Management*, 23(1), 19-25.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis - a Methods Sourcebook* (3rd ed.). 1000 Oaks, California: Sage.
- NFETLHE. (2014). *Principles and First Insights from the Sectoral Consultation on Building Digital Capacity in Irish Higher Education - Digital Roadmap Phase 1*. National Forum for the Enhancement of Teaching and Learning in Higher Education. Dublin.
- O'Byrne, C. (2014). *Structure and Agency in an Irish Institute of Technology*. London: Bloomsbury.
- Porter, W. W., & Graham, C., R. (2016). Institutional drivers and barriers to faculty adoption of blended learning in higher education. *British Journal of Educational Technology*, 47(4), 748-762.
- Ramsden, P. (2003). *Learning to Teach in Higher Education* (Second Edition ed.). London: Routledge.
- Reid, P. (2014). Categories for barriers to adoption of instructional technologies. *Education and Information Technologies*, 19, 383-407.
- Resnick, M. (2001). Revolutionizing Learning in the Digital Age. In M. Resnick (Ed.), *The Internet and the University: 2001 Forum (2002 EDUCAUSE)* (pp. 45-64). Cambridge, Ma: Educause.
- Resnick, M. (2012). Reviving Papert's Dream. *Educational Technology*, 52(4), 42-46.
- Resnick, M., & Rosenbaum, E. (2013). Designing for Tinkerability. In M. Honey & D. Kanter (Eds.), *Design, Make, Play: Growing the Next Generation of STEM Innovators* (pp. 163-181). New York: Routledge.
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th edition ed.). New York: Free Press of Glencoe.
- Rolfe, V. (2012). Open educational resources: staff attitudes and awareness. *Research in Learning Technology*, 20(1), 7-19.
- Simons, H. (2009). *Case Study Research in Practice*. London: SAGE Publications Ltd.
- Skelton, A. (2012). Teacher identities in a research-led institution: In the ascendancy or on the retreat? *British Educational Research Journal*, 38(1), 23-39.
- Slowey, M., Kozina, E., & Tan, E. (2014). *Voices of Academics in Irish Higher Education - Perspectives on Professional Development*. AISHE. Dublin.
- Trede, F., Macklin, R., & Bridges, D. (2012). Professional identity development: a review of the higher education literature. *Studies in Higher Education*, 37(3), 365-384.
- UNESCO. (2014). Education for the 21st Century. Retrieved from <https://en.unesco.org/themes/education-21st-century>
- Vaughan, N. D. (2007). Perspectives on Blended Learning in Higher Education. *International Journal on E-Learning*, 6(1), 81-94.
- Veletsianos, G. (2012). Higher education scholars' participation and practices on Twitter. *Journal of Computer Assisted Learning*, 28(4), 336-349.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478.
- Visser, G. (2001). On the politics of time and place in a transforming South African research environment: new challenges for research students. *South African Geographical Journal*, 83(3), 233-239.
- Wang, Q. E., Myers, M. D., & Sundaram, D. (2013). Digital Natives and Digital Immigrants -

Towards a Model of Digital Fluency. *Business & Information Systems Engineering*, 5(6), 409-419.

Wang, R. L., Wiesemes, R., & Gibbons, C. (2012). Developing digital fluency through ubiquitous mobile devices: Findings from a small-scale study. *Computers & Education*, 58(1), 570-578.

Wenger-Trayner, E., Fenton-O'Creevy, M., Hutchinson, S., Kubiak, C., & Wenger-Trayner, B. (2015). *Learning in Landscapes of Practice: Boundaries, Identity and Knowledgeability in Practice-based Learning*. Abingdon, Oxon: Routledge.

Yin, R. K. (2015). *Qualitative Research from Start to Finish* (Second Edition. ed.). New York: Guilford Press.