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## REVIEW ARTICLE

### Exploring 30 years of research in learning technology: an analysis of the RLT journal

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This paper presents the findings from a research project to analyse 30 years of the *Research in Learning Technology* journal (1993 to 2022). The analysis explores the content of the articles in terms of key topics and their relationship with sector events and policies, discussing key terms such as virtual learning environment, massive open online courses (MOOCs) and virtual reality (VR). It also considers how the terminology used to describe the field has changed over time, starting with a focus on the computer and expanding to include a range of common terms such as e-learning, technology enhanced learning (TEL) and digital. Between 1993 and 2015, issues of the journal were accompanied by editorials. This analysis considers how the role of the editorials helped to shape and establish the journal and influence the field of learning technology to take a more research and theory-based approach. Finally, an analysis of the locations of the authors who have published in the journal has demonstrated a shift from a predominantly UK-based journal to one with more international reach.

**Keywords:** learning technology; research; journal; content analysis; international

#### Introduction

In 2023, the Association for Learning Technology (ALT) celebrated its 30th birthday, which included 30 years of publishing research articles through its journal *Research in Learning Technology (RLT)*, formerly known as *ALT-J*. The journal launched in 1993 with seven original research articles and has grown over the past 30 years to publish over 700 articles on a wide range of topics.

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To celebrate significant milestones in their history, other journals – such as the *British Journal of Educational Technology* (Bond et al., 2019) and the *Journal of Education and Information Technologies* (Ozyurt & Ayaz, 2022) – have carried out bibliometric and content analyses to understand the evolution of a particular field and to identify authorship trends and collaborations. This milestone has therefore provided a good opportunity to review how the field of learning technology has changed over the past 30 years through the lens of *RLT*.

This paper focusses on the following four research questions:

1. How have the topics in *RLT* changed over the past 30 years in relation to key sector events and policies?
2. How has the language used to describe learning technology evolved over the past 30 years?
3. What was the role of the editorials in shaping *RLT*?
4. How has the location of authors changed over the past 30 years?

### Overview of the journal

The journal launched in 1993, with the title *ALT-J, Association for Learning Technology Journal*. It operated in the traditional format of volumes and discrete issues with two issues per year from 1993 to 1995, then three issues per year until 2012, often including one special issue on a particular theme (Table 1). Alongside traditional research articles and editorials to accompany each issue, the journal included reviews, typically literature or book reviews, and discussion articles in which a conversation was developed to talk back to a previously published paper. This led to some rich discussions between authors: for instance, a critique of Gilly Salmon’s five-stage model and subsequent responses (Lisewski & Joyce, 2003; Tompsett & Alsop, 2003) changing the nature of the dialogue between authors and readers.

Table 1. List of special issues from 1999 to 2021, excluding ALT-C proceedings.

Year	Title/theme	Volume (Issue)
1999	Focus on BT Community Programme	7 (3)
2000	Focus on further education	8 (3)
2004	Computer-Assisted Assessment (CAA)	12 (3)
2005	Reflecting on the current status and focus of e-learning research	13 (3)
2006	Disability, technology and e-learning: challenging conceptions	14 (1)
2008	Learning and teaching in immersive virtual worlds	16 (3)
2009	Mobile and contextual learning	17 (3)
2010	Learning technology and organisations: transformational impact?	18 (3)
2011	Theory in learning technology	19 (3)
2012	Digital inclusion and learning	20 (4)
2013	Scholarship and literacies in a digital age	21
2013	The art and science of learning design	21 (Supplement 1)
2018	Playful learning (proceedings from Playful Learning conference)	26
2018	Mobile Mixed Reality	26
2020–2021	Mobile Mixed Reality	28 & 29

In 2011, the journal's name changed to *Research in Learning Technology* in order to reflect a 'growing recognition of the importance of research in informing learning technology practice and the development of policy' (Sharpe, 2011, p. 1). The journal also published four sets of conference proceedings from ALT's annual conference, ALT-C (2011–2014); however, papers from the conference had been included in previous issues as a small collection, for example, Jacobs (1995). Figure 1 shows the covers of the physical journal copies, reflecting the name change and a change in publishers.

In 2012, two significant events occurred. First, the journal became fully open access (Bell et al., 2012), having previously taken steps to become more open starting in 2007. This move embodied a strategic vision to embrace principles of openness even though there were costs to the membership body for doing so. Second, there was a move away from separate issues to rolling volumes (Volume 20 onwards). The journal continued to publish special issues in the form of themed collections, but not with the regularity of previous years (Table 1). Editorials were published to accompany the rolling volumes up to and including 2015. After that, editorials only accompanied a themed collection.

In terms of the supporting personnel for the journal, various models existed over the 30 years. In 1993, a chief editor was supported by two associate editors, whilst by 2023, the editorial team had grown to include an editor-in-chief, supported by six editors with additional administrative support from ALT and the publishing/hosting platform. In some of the intermediary period, editors had specialist roles, such as reviews editor. The editorial team have also been supported by an editorial board. In the early years, the editorial board predominantly represented the UK and higher education, but over time, this has evolved and, whilst still predominantly higher education, now includes representation from UK, Ireland, Canada, Norway, South Africa, Australia and New Zealand.

## **Method**

### ***Data collection***

Data were collected initially via Scopus, which held information from 2011 to 2022. Data from 1993 to 2010 were added manually from the *RLT* archives (Association for Learning Technology, 2024). Book reviews were excluded from the data. To enable comparative analysis, the articles were grouped into temporal categories aligned to calendar decades, and percentages were used to enable comparison between the decades (Table 2). Calendar decades were chosen to support a historical perspective, aligning journal trends with broader cultural developments over time. Compartmentalising findings by decade rather than by year offered a 'bird's eye view' of enduring trends and their synchronicity (Sato, 2015, p. 143). To account for the variation in the total number of articles per decade, percentages have been used for the analysis.

The data were tagged (Table 3) according to the four types of article described by the *RLT* archives:

- Research articles – focussed on original research.
- Editorial – written by the editorial team to introduce an issue of the journal.
- Discussion – predominantly published in the 2000s, these articles were discussions in relation to a previous research article.
- Review – typically literature reviews.



Figure 1. The changing covers of ALT-J to Research in Learning Technology (from 1993 to 2013).

Table 2. Total articles per decade.

Decade	Years included	Total articles
1990s	1993–1999	163
2000s	2000–2009	230
2010s	2010–2019	308
2020s	2020–2022	84
<b>Total</b>	<b>1993–2022</b>	<b>785</b>

Table 3. Article types per decade.

Article type	1990s	2000s	2010s	2020s	Total
Research	142	181	276	81	680
Editorial	19	30	23	1	73
Discussion	0	19	1	0	20
Review	2	0	8	2	12

Table 4. Sector classification by decade for research articles (n=680).

Sector	1990s	2000s	2010s	2020s	Total
Early Years	2	0	2	1	5
Schools (primary and secondary)	4	2	26	11	43
Further Education	5	11	17	0	33
Higher Education	96	133	177	60	466
Other, N/A	35	35	54	9	133

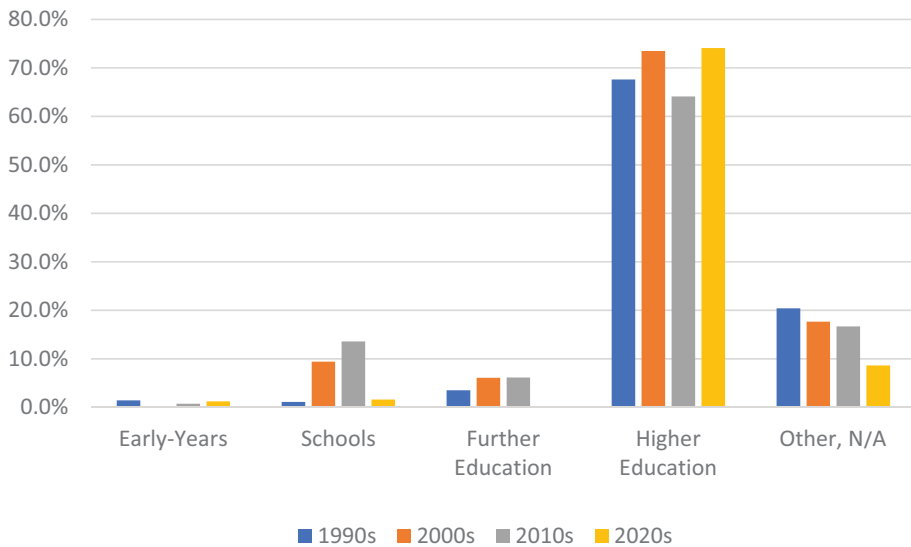


Figure 2. Sector classification by decade for research articles (n=680).

Research articles were tagged according to the education sector the article covered (e.g. Higher Education, Further Education) (Table 4 and Figure 2). The education sector was largely derived from the abstract and the title, but when it was not provided in the abstract or title, it was determined through the article itself. Research articles predominantly covered Higher Education, with 69% of all articles focussing on this sector. Those classified as 'Other, N/A' considered other types of learners (e.g. vocational, adult, or those on Massive Open Online Courses (MOOCs)), or focussed on aspects of education, theory or technologies not specific to any one sector, such as gamification or personalised learning.

### ***Data analysis***

For the content analysis, a corpus of titles and abstracts of 680 research articles (1993 to 2022) were selected. A corpus linguistics approach (Kennedy, 1998) was used to analyse the corpus using the AntConc concordancer tool (Anthony, 2023). Word lists were created based on frequency and excluded common English words as well as common words related to research articles (e.g. research, paper, study and article). The top 10 words per decade are provided in Table 5. Follow-up analysis was carried out by considering key words in context (KWIC), collocated words and the dispersion of keywords throughout the corpus.

The editorial analysis reviewed articles classified as editorials from 1993 to 2015, excluding later special issues. Thematic analysis (Braun & Clarke, 2021) was used and involved reading, coding and then identifying themes to inform the discussion of the role of the editorial. These included: 'relationship to practice', 'wider context in which journal operates', 'relationship to ALT or the ALT conference', 'need for scholarship/quality in research'.

Using the 680 research articles (1993 to 2022), the author analysis took the institutional affiliation of the author as signifying author location. Where the article had more than one author, the first author was used for this purpose. After establishing author location, findings were largely summarised as 'UK' and 'outside the UK', underlining the extent to which *RLT* has been UK-centric since its inception. Author location findings relating to the entire lifespan of the journal were presented with more detail, as 'UK'; six named author locations/countries with more than 10 published articles between 1993 and 2022; and 'all others'. The author data were also broken down into calendar decades to show changes in author location over time, reflecting increased internationalisation in journal publications (Figure 3).

### **Findings**

#### ***How have the topics in RLT changed over the past 30 years in relation to key sector events and policies?***

This section considers the relationship between the journal's most discussed topics and key sector events and policies. It highlights and explores popular topics in each calendar decade, outlining how different authors approached them.

Table 5. Top 10 words by frequency for each decade.

Rank	1990s	2000s	2010s	2020s
1	Learning	Learning	Learning	Learning
2	Students	Students	Students	Students
3	Computer	Education	Technology	Online
4	Based	Online	Online	Technology
5	Teaching	Development	Education	Digital
6	Technology	Technology	Student	Data
7	Student	Based	Teaching	Education
8	Information	Student	Design	Student
9	Course	Teaching	Based	Educational
10	Development	Design	Digital	Teaching

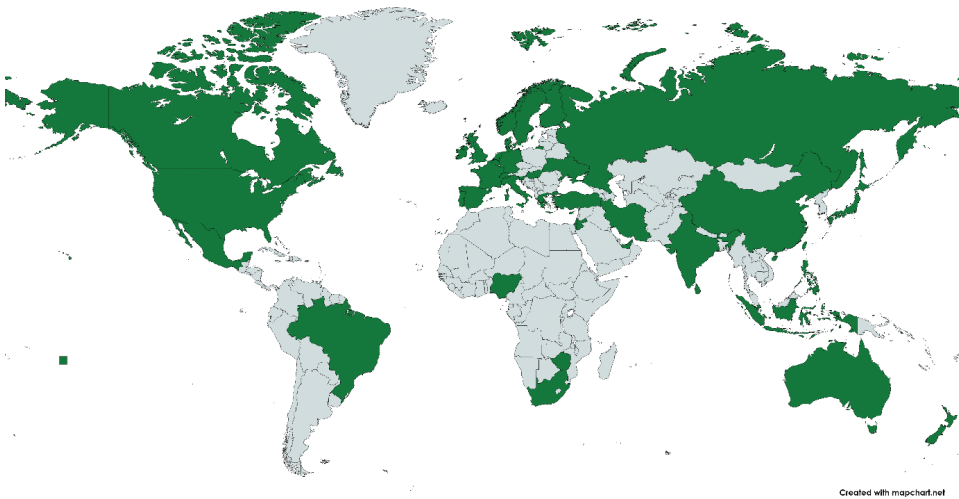


Figure 3. World map showing countries in green giving the location of first authors published in *RLT* (1993–2022).

### 1990s – Learning environment

‘Learning environment’ is the most discussed topic in *RLT*’s 30 years of publication, consistently appearing in research abstracts published from 1993 to 2022. The first issue refers to *FLUENT*, an immersive foreign-language learning environment that embodied the developing concept of educational hypermedia (Hamburger, 1993). Abstracts focused on online environments for learning, using a variety of terms such as ‘Multimedia Learning Environment (MLE)’ (Smith & Jagodzinski, 1995) and ‘Computer-Based Learning Environment (CBLE)’ (Groat & Musson, 1995). Uses of ‘learning environment’ peaked following the release of *WebCT* (1996), *Blackboard* (1997), *Desire2Learn* (1999) and *Moodle* (2002), with abstracts of the 2000s reflecting the emergence of a new umbrella term. ‘Virtual learning environment’/‘VLE’ first appeared in 2003 and 2004, respectively (Lisewski, 2004; Whitelock et al., 2003). By the 2000s, combined instances of ‘virtual learning environment’ and ‘VLE’ made it the third most discussed topic after ‘learning environment’ and ‘accessibility’, a ranking it maintained in the 2010s.

### **1990s – Virtual reality / VR**

‘Virtual reality’ / ‘VR’ appeared in one of the journal’s earliest articles, which praised the technology’s ability to offer users ‘risk free’ ‘surrogate tacto-audio-visual experiences’ (Barker, 1993). VR was envisioned as a technology that would offer disabled users greater accessibility to learning contexts they would not ordinarily experience. Though many contemporary VR systems were prohibitively expensive, the author expressed hope that ‘low-cost, less functional systems could be and must be developed’ (Barker, 1993, p. 24). This impetus should have been strengthened by the passing of the Web Content Accessibility Guidelines 1.0 (1999). Yet, following the release of *Second Life* (2003), ‘virtual reality’ was usurped by ‘virtual world/s’ in 2000s abstracts. It did not reappear in *RLT* until 2018, when a special issue dedicated to Mobile Mixed Reality (MMR) was released. This issue featured accounts of how MMR techniques could be used to produce media including educational material relating to a town’s history (Sinfield, 2018), a recovery position demonstration with avatars (Watson & Livingstone, 2018) and a collection of immersive medical scenarios (Cochrane et al., 2018). From 2020 to 2022, ‘virtual reality’ ranked as the second most frequent topic mentioned in research abstracts, most often in case studies hoping to familiarise learners with practical tasks or scenarios with the aim of enhancing their knowledge retention over time (Agbonifo et al., 2020; Czerkawski & Berti, 2021; Essmiller et al., 2020; Pande et al., 2021).

### **2000s – Accessibility**

‘Accessibility’ appeared in *RLT* in the late 1990s, the same year that the Teaching and Higher Education Act 1998 introduced UK tuition fees. Brown (1998) argued that institutions must lean into learner-focused ‘ways of delivering and supporting teaching and learning’ (p. 30). Increased investment in and access to the online world was presented as a key means of responding to the challenges of larger and more diverse student populations, increased institutional competition, falling resources and scattered attendance (Brown, 1998). ‘Accessibility’ became a better-known concept following the release of the Web Content Accessibility Guidelines (1999) and Special Educational Needs and Disability Act (2001). By the 2000s, it was the second most discussed topic in the journal, with articles acknowledging the benefits and challenges of developing courseware that is accessible, flexible and informative to an expanding and diverse cohort of learners (Pearson & Koppi, 2002). In 2006, a special issue on disability, technology and e-learning explored the development of institutional accessibility frameworks (Phipps & Kelly, 2006) and how accessibility markers could be drawn from and applied to distance-learning programmes (Burgstahler, 2006), standard authoring tools (Green et al., 2006) and multimedia (Sloan et al., 2006). Perhaps surprisingly – given the passing of the Equality Act (2010) and Public Sector Bodies Accessibility Regulations (2018) – ‘accessibility’ was less often mentioned in subsequent decades.

### **2000s – Mobile learning**

‘Mobile learning’ was introduced in the journal in 2007, months after the release of the first Apple iPhone. Jones and Issroff (2007) investigated how mobile devices were increasingly being used to support ‘informal learning’ – despite useability limitations

including ‘small screen sizes’ and issues ‘entering data into the device’ (p. 248). In a special issue on mobile and contextual learning, the topic was explored in relation to the wider virtual context in learning (Cornelius & Marston, 2009), professional development (Aubusson et al., 2009), situated learning scenarios (Pfeiffer et al., 2009) and undergraduate support (Jones et al., 2009).

### **2010s – Social media**

Though the first social networking and media sites were released in the 2000s – including Myspace (2003), Facebook (2004), Bebo (2005) and Twitter (2006) – the terms ‘social media’ and ‘social networking’ did not appear in *RLT* abstracts until mid-2011, shortly after the release of Instagram (2010) and Google+ (2011). Of these, ‘social media’ was most mentioned. It was initially considered alongside VLEs and virtual worlds as a means of supporting student engagement and retention through peer mentoring (Smailes & Gannon-Leary, 2011). Subsequent articles focused on how it could be used to create and support academic and professional communities of practice (Bennett & Folley, 2014; Cochrane & Narayan, 2013; Jones & Shields, 2018; Lewis & Rush, 2013; Salmon et al., 2015), enhance access to Open Educational Resources (OER) (Atenas & Havemann, 2014), develop personal learning environments (PLEs) (Reed, 2013) and act as a student response system in large lectures (Liu, 2018).

### **2010s – Massive open online course / MOOC**

The *New York Times* described 2012 as ‘the year of the MOOC’ – ‘an evolving form [that] knits together education, entertainment (think gaming) and social networking’ (Pappano, 2012). Abstracts from this time agree: ‘Massive Open Online Course’ / ‘MOOC’ is one of most discussed topics of the 2010s, beaten only by ‘learning environment’ and ‘social media’ (and sharing third place with ‘virtual learning environment’). The topic first appeared in the journal in 2013 when an ‘E-learning and Digital Cultures Coursera MOOC’ was examined as ‘a tangible setting for theorising some of the practices of digital literacy differently’ (Knox & Bayne, 2013, ‘Abstract’). It reappeared every remaining year of the decade, with discussions of MOOCs peaking in 2016 – *RLT*’s own ‘year of the MOOC’. Three articles focused on learner engagement with MOOCs that year, with emphases on community-building and social networking (Bell et al., 2016), reaching disadvantaged learners through the professional development of primary school teachers (Laurillard, 2016) and analytical approaches to evaluating participation (O’Riordan et al., 2016).

### **2020–2022 – Augmented reality / AR**

Abstracts published from 2020 to 2022 challenged the topical dominance of ‘learning environment’, knocking it from its top spot for the first time in the journal’s history. The most discussed topic was ‘augmented reality’/‘AR’ – first mentioned in the 2010s – followed by ‘virtual reality’/‘VR’. In 2012, the growing value of AR was attributed to ‘the social and cultural changes wrought by the increased digitalisation of our lives’ (Munnerley et al., 2012). Its popularity in the journal coincided with a period of particularly acute reliance on digital methods for experiential learning – the COVID-19 pandemic (2020). Abstracts focused on the potential of Mobile Augmented Reality

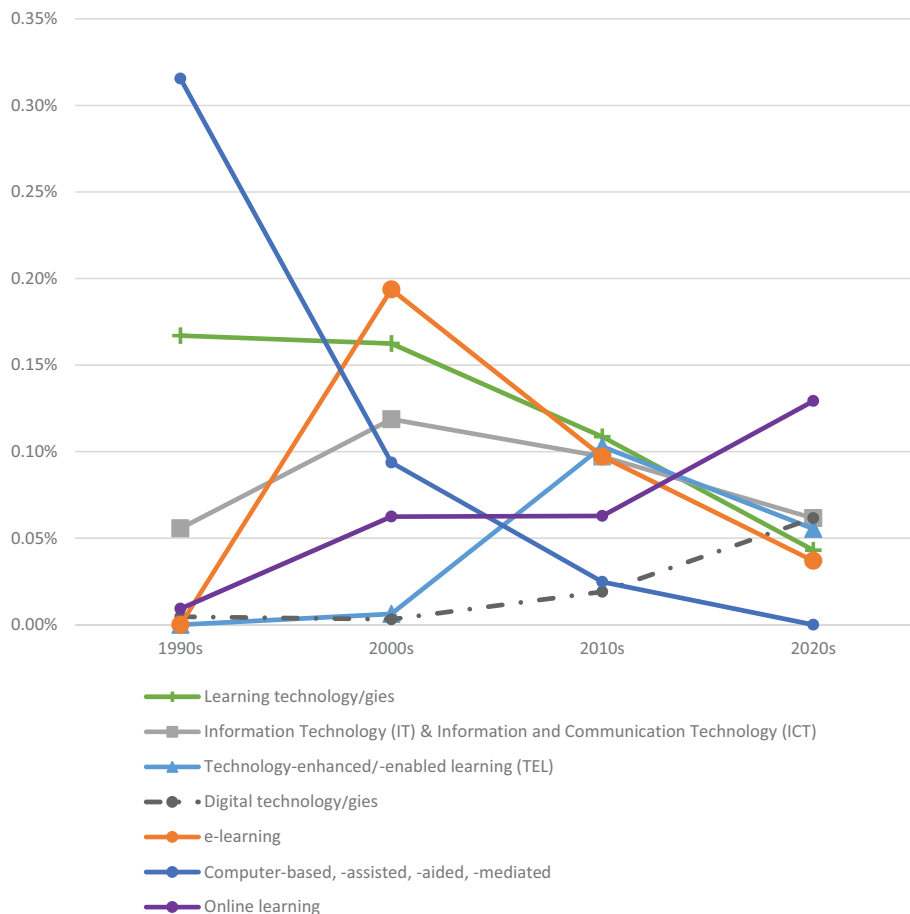


Figure 4. Graph showing how the percentage of words relating to terminology changes in each decade. Note: percentages are small due to the large number of words across the corpus.

(MAR) (Celik et al., 2020), cost-effective strategies for using AR (Rogers, 2020), learning design approaches to its integration (Czerkawski & Berti, 2021), and AR’s value in early childhood (Pan et al., 2021), biochemistry (Reeves et al., 2021) and medical (Jones et al., 2022) learning contexts.

***How has the language used to describe learning technology evolved over the past 30 years?***

Whilst ALT has favoured the term ‘learning technology’ in the name of the association and the journal, the field has always utilised a range of terms, with different terms coming to prominence in different decades (Figure 1). This section considers how the language of the field has developed over the past 30 years as seen through the journal.

The 1990s was dominated by a focus on the computer, with the word ‘computer’ ranked 3rd in this decade (Table 5 and Figure 4). There were a range of phrases used to describe the role of the computer as a way through which activity occurs: for example, computer-aided, -assisted, -based, -mediated. Activities noted include learning,

instruction, communication and assessment, for example computer-aided learning, with several initialisms and acronyms arising, for example CAL could mean computer-aided or -assisted learning. Several articles focused on the in-house development of specific computer programs or computer-based tutorials to support student learning (Cornelius & Heywood, 1998; Leathard & Dewhurst, 1995; Orsini-Jones & Jones, 1996; White, 1995) with some comparing the use of computer-based materials to traditional approaches, such as lectures and paper-based materials (Dale et al., 1999; Johnson et al., 1997; Richards, 1994).

Moving into the 2000s, the use of computer-related terminology declined in favour of the term 'e-learning' and an increase in terms such as 'Information Technology (IT)', 'Information and Communications Technology (ICT)' and similar variations (Figure 1). The term 'e-learning' first appears in 2003 and could be connected to JISC's e-Learning Programme that ran from 2003 to 2006 (Beetham, 2005; JISC 2004) and focussed on pedagogy, frameworks and tools, innovation and distributed e-learning. 'E-learning' as a term is much less specific than the use of 'computer' in the previous decade and refers to a broader set of areas, such as research (Beetham, 2005) and strategy (Russell, 2009; Salmon, 2005; Sharpe et al., 2006), alongside reference to e-learning materials, tools and environments. There was still consideration as to the role of e-learning vs. traditional teaching (De Freitas & Roberts, 2003). 'Networked learning' also makes an appearance in this decade as an alternative to e-learning (Jones, 2004) and is linked to the notion of communities of practice (Lave & Wenger, 1991). This aligns with the launch of the biennial Networked Learning Conference in 1998 (Aalborg University, n.d.); however, despite the conference still running in 2024, the term falls out of favour in the journal with minimal references in the subsequent decades.

'Learning Technology' was prominent in the first two decades of the journal but started to decline in the 2010s. It was, however, the most used term in the 2010s, alongside both 'e-learning' and the use of 'technology enhanced/enabled learning (TEL)', which had risen in popularity. As with 'e-learning', 'TEL' was typically used as an overarching term to relate to a range of broad areas including policy and strategy (Flavin & Quintero, 2018; Varga-Atkins, 2016). 'Blended learning' appears as the fourth most used term in the 2020s (0.07%); however, this is somewhat attributed to frequent reference within two articles. It does not appear much in the decades before or after, but with the Office for Students (OfS) review on Blended Learning (OfS, 2022), it might be expected that this term will appear more in future articles.

By the 2020s, most terms have declined in use, enabling 'online learning' to emerge as the most used term so far this decade, primarily in relation to MOOCs (Makhno et al., 2022; Shi & Lin, 2021) and the COVID-19 pandemic (Lawrence & Fakuade, 2021; Zafitsara & Velo, 2022). There has also been a steady rise in the use of 'digital technologies' supported by the increase in the use of the term 'digital' from 10th to 5th place in the top 10-word list (Table 5).

### ***What was the role of the editorials in shaping RLT?***

Over 22 years (1993–2015), editorials did more than introduce a collection of papers. They provided a focus for the development of the journal and helped to influence the practice in the emergent area of learning technology, as opposed to later when the focus was more about advancing knowledge and scholarship.

The journal's initial aim was that 'academics can be a force ...to promote it [learning technology] by showing what it can achieve' (Jacobs, 1993a, p. 3). There was evidence of technologically deterministic perspectives in early editorials with a focus on trying to prove that educational technology improves learning (Jacobs & Heath, 1995, p. 4) whilst being aware of the challenges of convincing senior management of the 'undoubted potential of educational technology' (Jacobs & Heath, 1995, p. 4).

The early editors understood that learning was central to purpose: 'good practice assumes that users of learning technology are able to concentrate on learning without (necessarily) thinking about the technology' (Jacobs, 1993a, p. 2). However, they repeatedly refer to their enthusiasm to bring about changes in their institution and the battles that they were facing to do this. For example, their calls to action included the need to establish centres for educational technology, to develop learning technology with improved usability and to take control of the direction of the way that learning technology develops through being involved in its development (Jacobs, 1996).

Over its 30 years, *RLT* has navigated the tension between reporting on practice and adding to knowledge about use of learning technology. From the early years of *RLT*, editorials were significant in shaping the values of what constitutes good quality in the field of learning technology. Jacobs (1996) argues that 'A paper which does no more than describe what a development team has done, with no real analysis, nor showing any evidence of rigorous methodology in its judgements (if they are there at all) does not advance our cause' (p. 3). This call for greater criticality and use of analysis informed by theory is evident in many of the subsequent editorials, for example, the importance of methodological and theoretical engaged research (Conole, 2006), a focus on developing interdisciplinary research (Sharpe, 2009) and a special issue dedicated to theory in learning technology (Jones & Czerniewicz, 2011).

The influence of the external environment on the field has been worthy of note in the editorials including limited budgets (Jacobs, 1995), the closure of BECTA (Sharpe, 2010), the pressures of the Research Assessment Exercise (which was replaced by the Research Excellence Framework in 2014) (Conole, 2007; Jacobs, 1997) and limitations of infrastructure (Jacobs, 1998).

Conversely, some editorials looked more inwards and reflected on the relationship between the journal and ALT or focussed on structural features of the journal, such as changes in the editorial team (Jacobs, 1998), moving to open access (Bell et al., 2012) and the change of name (Sharpe, 2011).

Although much has changed in the world of learning technology research, many of the concerns of editors and of practitioners have remained constant. Jacobs (1993b) discussed the challenges of plagiarism brought about by use of electronic sources, and this has clear echoes with the challenges that we are facing with the advent of artificial intelligence tools of the early 2020s. Similarly, Jacobs (1994) focussed on the importance of the teacher's role to the learning process, a topic that is still also alive in the age of artificial intelligence.

### ***How has the location of authors changed over the past 30 years?***

From its first year of publication, 1993, through 1999, 115 (81%) of its published research articles had an author or first author based in the UK. Conversely, 27 came from outside the UK. The disparity may be explained by *RLT* being a UK-based journal, albeit one with international aspirations, appropriately given the potential of

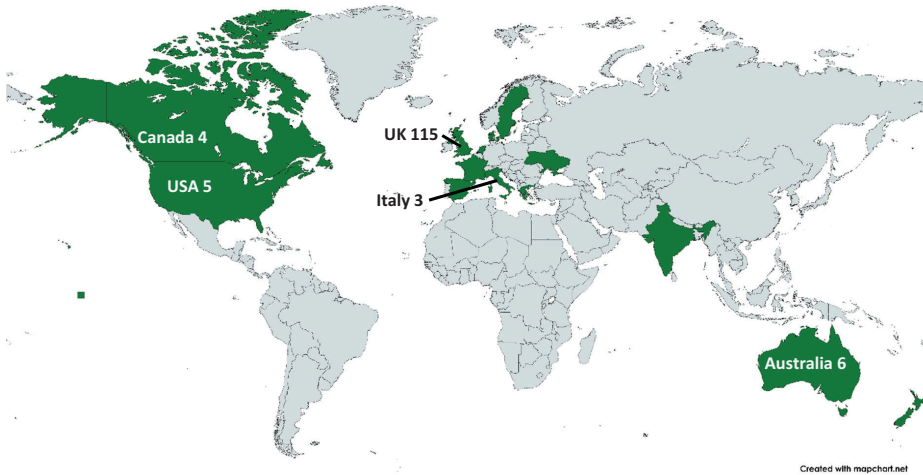


Figure 5. World map showing countries in green giving the location of first authors published in *RLT*. Where the number of articles is above one, the total figure is provided (1993–1999).

Table 6. 136 research papers with first authors from outside of the UK, 2010–2019.

Country	No. articles	Country	No. articles
Australia	40	New Zealand	22
Belgium	1	Nigeria	1
Brazil	1	Norway	1
Canada	7	Palestine	1
Cyprus	1	Portugal	1
Finland	5	Russian Federation	2
Germany	7	Slovenia	1
Greece	1	South Africa	1
Hong Kong	1	Spain	5
Hungary	1	Sri Lanka	1
India	1	Switzerland	1
Iran	2	Taiwan	1
Ireland	1	The Netherlands	2
Israel	2	Turkey	1
Italy	6	United Arab Emirates	3
Mexico	1	USA	14

TEL to transcend national borders. In its early years, however, the journal was building presence and profile whilst having a UK hub (Figure 5).

In the first full decade of the journal’s publication (2000–2009), 133 (73%) research articles were published from the UK, 48 from outside of UK. The nearest approximation of numbers occurs from 2010 to 2019, when 140 (51%) research articles came from the UK, 136 from outside the UK (Table 6, Figure 6) and one article without an author location. The figures from 2020 to 2022 show 25 articles (31%) from the UK and 56 from outside the UK. The overall movement is therefore encouraging, yet having the UK and effectively the rest of the world as the two reporting categories already

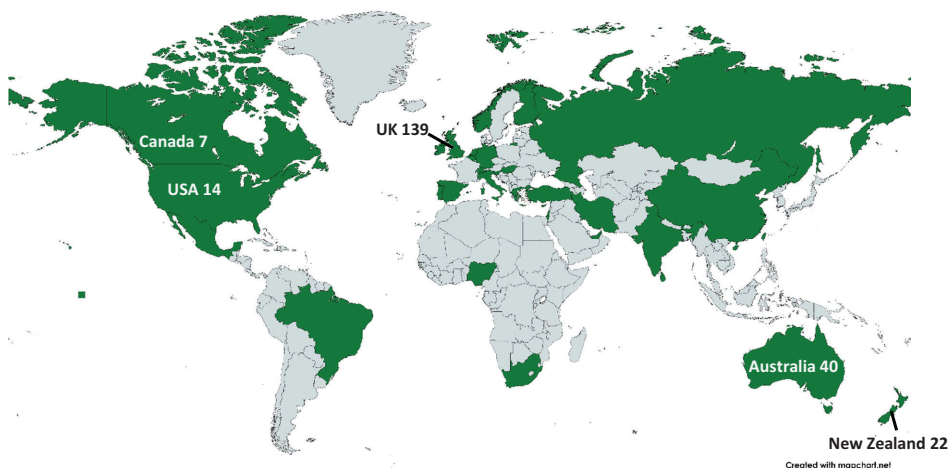


Figure 6. World map showing countries in green giving the location of first authors published in *RLT*, based on data from Table 6 (2010–2019).

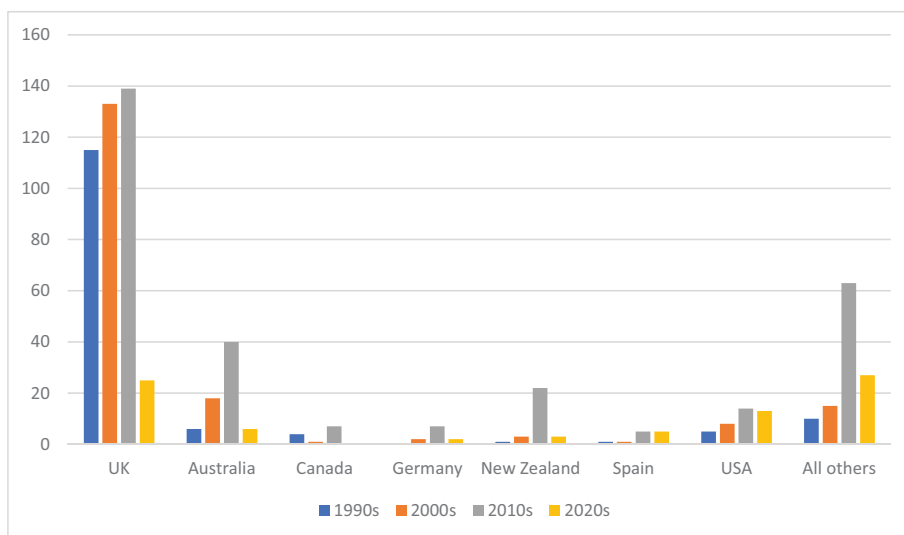


Figure 7. Location of published research articles based on first author location over time.

exposes an imbalance. Further diversification over the next generation will underline *RLT*'s value as an international journal.

Reverting to the period 1993–1999, a total of 13 countries (other than the UK) contributed articles. From 2000 to 2009, the figure is 14, rising notably to 32 in 2010–2019 and 23 from 2020 to 2022, suggesting growing internationalisation and reach (Figures 4 and 5). *RLT* is clearly becoming more international as a journal, albeit from a low base in the 1990s.

The countries featuring in more than 10 articles since the journal's inception are, in alphabetical order, Australia, Canada, Germany, New Zealand, Spain and the USA, all seen as affluent nations and indicating the limited parameters of the journal's

engagement with internationalisation to date (Figure 7). To further broaden the geographical spread of published papers and increase diversity in authorship, *RLT* will need to improve and increase its commitment to internationalisation in practice, with a focus on some of the gaps identified in Figure 3.

## **Conclusion**

This analysis of the *RLT* journal provides a comprehensive overview of the key themes in learning technology since 1993, how terminology has changed over time, the role of the editorials in shaping the journal and how the journal has become more international through its authors.

Key sector events and policies undoubtedly had an impact on the topics that were most often submitted to the journal and how these were approached. Whilst some of the topics discussed have been prominent throughout the decades, others have peaked and declined. ‘Accessibility’ appeared prominent in the 2000s; however, the decline in the 2010s onwards, despite the passing of key accessibility legislation in 2018, may have been a result of accessibility being subsumed into broader topics, such as equality, diversity and inclusion. Likewise, the decline of ‘Mobile learning’ could reflect the now ubiquitous nature of mobile devices. The analysis has also shown that topics typically associated with innovation in the 2020s had their roots much further back, for example virtual and augmented reality. It is notable that the COVID-19 pandemic did not feature highly in the analysis of the data from the 2020s, with only five articles specifically referencing this worldwide event. Future research may want to look at the impact of the pandemic on the articles appearing later in the 2020s.

The journal has also captured the changing terminology of the field since 1993, but it is clear that no one term has emerged triumphant with a range of terms still in use today. It is therefore important for authors to ensure that they clearly define the terms used and to reflect on the use of potentially outdated terms, for example computer-assisted, which still appear in recent articles.

Whilst editorials are no longer a regular feature of the journal, the analysis shows that they served a range of functions to support the journal in its early stages, including shaping the focus of the journal, the relationship of the journal with ALT and more broadly the role of research in the field. As the journal has become more established and with the move to continuous publication, this function has not been necessary, but editorials continue to support special issues in the form of themed collections. However, the editorials did serve a curatorial purpose, so in their absence, it raises the question as to who is doing this function and where it now resides in an era of continuous publication. Does the role exist within the editorial team or has the role been passed to the journal’s readers to make a sense of the articles published? Articles such as this one and another publication related to the 30 years (Brunton et al., 2023) provide curation over the longer term, but there is a need for something more frequent?

In terms of authors, the journal has a strong history of being predominantly a UK-focussed journal; however, the data show that the reach of the journal is becoming more international. It is suggested that the Editorial Board continues to focus on how to reach a more international set of authors with a particular focus on the Global South.

In conclusion, this research has reviewed a range of topics related to the journal and helped to inform future direction for the journal in terms of expanding the international reach. Additional areas for research could include further author analysis,

for example, to identify influential authors, and revisiting this analysis after another significant milestone, for example 50 years.

## References

- Aalborg University. (n.d.). *Previous networked learning conferences*. Retrieved from <https://www.networkedlearning.aau.dk/previous-networked-learning-conferences-and-events>
- Agbonifo, O. C., Sarumi, O. A., & Akinola, Y. M. (2020). A chemistry laboratory platform enhanced with virtual reality for students' adaptive learning. *Research in Learning Technology*, 28, 2419. <https://doi.org/10.25304/rlt.v28.2419>
- Anthony, L. (2023). *AntConc (Version 4.2.4)* [Computer Software]. Waseda University. Retrieved from <https://www.laurenceanthony.net/software>
- Association for Learning Technology. (2024). *Archives*. Research in Learning Technology. Retrieved from <https://journal.alt.ac.uk/index.php/rlt/issue/archive>
- Atenas, J., & Havemann, L. (2014). Questions of quality in repositories of open educational resources: A literature review. *Research in Learning Technology*, 22, 20889. <https://doi.org/10.3402/rlt.v22.20889>
- Aubusson, P., Schuck, S., & Burden, K. (2009). Mobile learning for teacher professional learning: Benefits, obstacles and issues. *Research in Learning Technology*, 17(3), 233–247. <https://doi.org/10.3402/rlt.v17i3.10879>
- Barker, P. (1993). Virtual reality: Theoretical basis, practical applications. *Research in Learning Technology*, 1(1), 15–25. <https://doi.org/10.3402/rlt.v1i1.9463>
- Beetham, H. (2005). e-Learning research: Emerging issues? *Research in Learning Technology*, 13(1), 81–89. <https://doi.org/10.3402/rlt.v13i1.10976>
- Bell F., Mackness, J., & Funes, M. (2016). Participant association and emergent curriculum in a MOOC: Can the community be the curriculum? *Research in Learning Technology*, 24, 29927. <https://doi.org/10.3402/rlt.v24.29927>
- Bell, F., Schmoller, S., & Sharpe, R. (2012). Editorial: Going for gold: Research in Learning Technology makes the switch to a fully Open Access publishing model. *Research in Learning Technology*, 20, 17163. <https://doi.org/10.3402/rlt.v20i0.17163>
- Bennett, L., & Folley, S. (2014). A tale of two doctoral students: Social media tools and hybridised identities. *Research in Learning Technology*, 22, 23791. <https://doi.org/10.3402/rlt.v22.23791>
- Brunton, J., et al. (2023). Research in Learning Technology: Making friends and influencing people. *Research in Learning Technology*, 31, 3212. <https://doi.org/10.25304/rlt.v31.3212>
- Bond, M., Zawacki-Richter, O., & Nichols, M. (2019). Revisiting five decades of educational technology research: A content and authorship analysis of the British Journal of Educational Technology. *British Journal of Educational Technology*, 50(1), 12–63. <https://doi.org/10.1111/bjet.12730>
- Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. Sage.
- Brown, S. (1998). Reinventing the university. *Research in Learning Technology*, 6(3), 30–37. <https://doi.org/10.3402/rlt.v6i3.11165>
- Burgstahler, S. (2006). The development of accessibility indicators for distance learning programs. *Research in Learning Technology*, 14(1), 79–102. <https://doi.org/10.3402/rlt.v14i1.10935>
- Celik, C., Guven, G., & Kozcu Cakir, N. (2020). Integration of mobile augmented reality (MAR) applications into biology laboratory: Anatomic structure of the heart. *Research in Learning Technology*, 28, 2355. <https://doi.org/10.25304/rlt.v28.2355>
- Cochrane, T., & Narayan, V. (2013). Redesigning professional development: Reconceptualising teaching using social learning technologies. *Research in Learning Technology*, 21, 19226. <https://doi.org/10.3402/rlt.v21i0.19226>

- Cochrane, T. D., et al. (2018). Authentic interprofessional health education scenarios using mobile VR. *Research in Learning Technology*, 26, 2130. <https://doi.org/10.25304/rlt.v26.2130>
- Conole, G. (2006). Understanding and making practice explicit. *Research in Learning Technology*, 14(3), 10958. <https://doi.org/10.3402/rlt.v14i3.10958>
- Conole, G. (2007). What constitutes good research in e-learning—Are there lessons we can draw from the Research Assessment Exercise? *Research in Learning Technology*, 15(3), 183–188. <https://doi.org/10.3402/rlt.v15i3.10929>
- Cornelius, S., & Heywood, I. (1998). An interactive learning environment in geographical information systems. *Research in Learning Technology*, 6(2), 33–48. <https://doi.org/10.3402/rlt.v6i2.11005>
- Cornelius, S., & Marston, P. (2009). Towards an understanding of the virtual context in mobile learning. *Research in Learning Technology*, 17(3), 161–172. <https://doi.org/10.3402/rlt.v17i3.10874>
- Czerkawski, B., & Berti, M. (2021). Learning experience design for augmented reality. *Research in Learning Technology*, 29, 2429. <https://doi.org/10.25304/rlt.v29.2429>
- Dale, V. M., Sullivan, M., & Irvine, D. R. (1999). Computer-assisted learning as an alternative to didactic lectures: A study of teaching the physics of diagnostic imaging. *Research in Learning Technology*, 7(3), 75–86. <https://doi.org/10.3402/rlt.v7i3.11563>
- De Freitas, S., & Roberts, G. P. (2003). Does distance e-learning work? A comparison between distance and face-to-face learners using e-learning materials. *Research in Learning Technology*, 11(3), 69–87. <https://doi.org/10.3402/rlt.v11i3.11286>
- Essmiller, K., et al. (2020). Exploring mixed reality based on self-efficacy and motivation of users. *Research in Learning Technology*, 28, 2331. <https://doi.org/10.25304/rlt.v28.2331>
- Flavin, M., & Quintero, V. (2018). UK higher education institutions' technology-enhanced learning strategies from the perspective of disruptive innovation. *Research in Learning Technology*, 26, 1987. <https://doi.org/10.25304/rlt.v26.1987>
- Green, S., et al. (2006). Accessibility and adaptability of learning objects: Responding to metadata, learning patterns and profiles of needs and preferences. *Research in Learning Technology*, 14(1), 117–129. <https://doi.org/10.3402/rlt.v14i1.10938>
- Groat, A., & Musson, T. (1995). Learning styles: Individualizing computer-based learning environments. *Research in Learning Technology*, 3(2), 53–62. <https://doi.org/10.3402/rlt.v3i2.9610>
- Hamburger, H. (1993). Finely integrated media for language learning. *Research in Learning Technology*, 1(1), 60–64. <https://doi.org/10.3402/rlt.v1i1.9473>
- Jacobs, G. (1993a). Standards. *Research in Learning Technology*, 1(1), 2–3. <https://doi.org/10.3402/rlt.v1i1.9461>
- Jacobs, G. (1993b). Technology and plagiarism. *Research in Learning Technology*, 1(2), 2–4. <https://doi.org/10.3402/rlt.v1i2.9476>
- Jacobs, G. (1994). Editorial. *Research in Learning Technology*, 2(2), 2–3. <https://doi.org/10.3402/rlt.v2i2.9577>
- Jacobs, G. (1995). Editorial. *Research in Learning Technology*, 3(1). <https://doi.org/10.3402/rlt.v3i1.9585>
- Jacobs, G. (1996). Is there a way? *Research in Learning Technology*, 4(3), 2–3. <https://doi.org/10.3402/rlt.v4i3.9973>
- Jacobs, G. (1997). Editorial Research recognition. *Research in Learning Technology*, 5(3), 2–4. <https://doi.org/10.3402/rlt.v5i3.10566>
- Jacobs, G. (1998). Time for a change. *Research in Learning Technology*, 6(2), 11002. <https://doi.org/10.3402/rlt.v6i2.11002>
- Jacobs, G., & Heath, S. (1995). Enabling active learning. *Research in Learning Technology*, 3(1), 3–4. <https://doi.org/10.1080/0968776950030101>
- JISC. (2004). *e-Learning programme*. Projects. Retrieved from [https://web.archive.org/web/20040928084353/http://www.jisc.ac.uk/index.cfm?name=programme\\_elearning](https://web.archive.org/web/20040928084353/http://www.jisc.ac.uk/index.cfm?name=programme_elearning)

- Johnson, M. I., Dewhurst, D. G., & William, A. D. (1997). Computer-based interactive tutorial versus traditional lecture for teaching introductory aspects of pain. *Research in Learning Technology*, 5(3), 22–31. <https://doi.org/10.3402/rlt.v5i3.10568>
- Jones, A., & Issroff, K. (2007). Motivation and mobile devices: Exploring the role of appropriation and coping strategies. *Research in Learning Technology*, 15(3), 247–258. <https://doi.org/10.3402/rlt.v15i3.10934>
- Jones, C. (2004). Networks and learning: Communities, practices and the metaphor of networks. *Research in Learning Technology*, 12(1), 81–93. <https://doi.org/10.3402/rlt.v12i1.11227>
- Jones, C., & Czerniewicz, L. (2011). Theory in learning technology. *Research in Learning Technology*, 19(3), 17107. <https://doi.org/10.3402/rlt.v19i3.17107>
- Jones, G., Edwards, G., & Reid, A. (2009). How can mobile SMS communication support and enhance a first year undergraduate learning environment? *Research in Learning Technology*, 17(3), 201–218. <https://doi.org/10.3402/rlt.v17i3.10877>
- Jones, R., & Shields, E. (2018). Using games to disrupt the conference Twittersphere. *Research in Learning Technology*, 26, 2036. <https://doi.org/10.25304/rlt.v26.2036>
- Jones, C., et al. (2022). Providing dementia education with augmented reality: A health sciences and medicine feasibility pilot study. *Research in Learning Technology*, 30, 2668. <https://doi.org/10.25304/rlt.v30.2668>
- Kennedy, G. (1998) *An introduction to corpus linguistics* (1st ed.). Routledge. <https://doi.org/10.4324/9781315843674>
- Knox, J., & Bayne, S. (2013). Multimodal profusion in the literacies of the Massive Open Online Course. *Research in Learning Technology*, 21, 21422. <https://doi.org/10.3402/rlt.v21.21422>
- Laurillard, D. (2016). The educational problem that MOOCs could solve: Professional development for teachers of disadvantaged students. *Research in Learning Technology*, 24, 29369. <https://doi.org/10.3402/rlt.v24.29369>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Lawrence, K. C., & Fakuade, O. V. (2021). Parental involvement, learning participation and online learning commitment of adolescent learners during the COVID-19 lockdown. *Research in Learning Technology*, 29, 2544. <https://doi.org/10.25304/rlt.v29.2544>
- Leathard, H. L., & Dewhurst, D. G. (1995). Comparison of the cost-effectiveness of a computer-assisted learning program with a tutored demonstration to teach intestinal motility to medical students. *Research in Learning Technology*, 3(1), 118–125. <https://doi.org/10.3402/rlt.v3i1.9603>
- Lewis, B., & Rush, D. (2013). Experience of developing Twitter-based communities of practice in higher education. *Research in Learning Technology*, 21, 18598. <https://doi.org/10.3402/rlt.v21i0.18598>
- Lisewski, B. (2004). Implementing a learning technology strategy: Top-down strategy meets bottom-up culture. *Research in Learning Technology*, 12(2), 11250. <https://doi.org/10.3402/rlt.v12i2.11250>
- Lisewski, B., & Joyce, P. (2003). Examining the five-stage e-moderating model: Designed and emergent practice in the learning technology profession. *Research in Learning Technology*, 11(1), 55–66. <https://doi.org/10.3402/rlt.v11i1.11267>
- Liu, C. (2018). Social media as a student response system: New evidence on learning impact. *Research in Learning Technology*, 26, 2043. <https://doi.org/10.25304/rlt.v26.2043>
- Makhno, K., Kireeva N., & Shurygin V. (2022). The impact of online learning technology on self-regulation and student success. *Research in Learning Technology*, 30, 2802. <https://doi.org/10.25304/rlt.v30.2802>
- Munnerley, D., et al. (2012). Confronting an augmented reality. *Research in Learning Technology*, 20, 39–48. <https://doi.org/10.3402/rlt.v20i0.19189>
- O’Riordan, T., Millard, D. E., & Schulz, J. (2016). How should we measure online learning activity? *Research in Learning Technology*, 24, 30088. <https://doi.org/10.3402/rlt.v24.30088>

- Office for Students. (2002) *Blended learning review*. Retrieved from <https://www.officeforstudents.org.uk/media/dc1c3c84-269a-4c40-8f87-15bfae0fcced/blended-learning-review-panel-report.pdf>
- Orsini-Jones, M., & Jones, D. (1996). Hypermedia for language learning: The FREE model at Coventry University. *Research in Learning Technology*, 4(2), 28–39. <https://doi.org/10.3402/rlt.v4i2.9965>
- Ozyurt, O., & Ayaz, A. (2022). Twenty-five years of education and information technologies: Insights from a topic modeling based bibliometric analysis. *Education and Information Technologies*, 27, 11025–11054. <https://doi.org/10.1007/s10639-022-11071-y>
- Pan, Z., et al. (2021). Introducing augmented reality in early childhood literacy learning. *Research in Learning Technology*, 29, 2539. <https://doi.org/10.25304/rlt.v29.2539>
- Pande, P., et al. (2021). Long-term effectiveness of immersive VR simulations in undergraduate science learning: Lessons from a media-comparison study. *Research in Learning Technology*, 29, 2482. <https://doi.org/10.25304/rlt.v29.2482>
- Pappano, L. (2012, November 2). The year of the MOOC. *The New York Times*. Retrieved from <https://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html>
- Pearson, E. J., & Koppi, T. (2002). Inclusion and online learning opportunities: Designing for accessibility. *Research in Learning Technology*, 10(2), 17–28. <https://doi.org/10.3402/rlt.v10i2.11398>
- Pfeiffer, V. D., et al. (2009). Situated learning in the mobile age: Mobile devices on a field trip to the sea. *Research in Learning Technology*, 17(3), 187–199. <https://doi.org/10.3402/rlt.v17i3.10876>
- Phipps, L., & Kelly, B. (2006). Holistic approaches to e-learning accessibility. *Research in Learning Technology*, 14(1), 69–78. <https://doi.org/10.3402/rlt.v14i1.10939>
- Reed, P. (2013). Hashtags and retweets: Using Twitter to aid Community, Communication and Casual (informal) learning. *Research in Learning Technology*, 21, 19692. <https://doi.org/10.3402/rlt.v21i0.19692>
- Reeves, L., et al. (2021). Use of augmented reality (AR) to aid bioscience education and enrich student experience. *Research in Learning Technology*, 29, 2572. <https://doi.org/10.25304/rlt.v29.2572>
- Richards, S. (1994). Computer-based learning in psychology using interactive laboratories. *Research in Learning Technology*, 2(2), 18–26. <https://doi.org/10.3402/rlt.v2i2.9579>
- Rogers, S. L. (2020). Cheap, accessible, and virtual experiences as tools for immersive study: A proof of concept study. *Research in Learning Technology*, 28, 2416. <https://doi.org/10.25304/rlt.v28.2416>
- Russell, C. (2009). A systemic framework for managing e-learning adoption in campus universities: Individual strategies in context. *Research in Learning Technology*, 17(1), 3–19. <https://doi.org/10.1080/09687760802649871>
- Salmon, G. (2005). Flying not flapping: A strategic framework for e-learning and pedagogical innovation in higher education institutions. *Research in Learning Technology*, 13(3), 201–218. <https://doi.org/10.3402/rlt.v13i3.11218>
- Salmon, G., et al. (2015). The space for social media in structured online learning. *Research in Learning Technology*, 23. <https://doi.org/10.3402/rlt.v23.28507>
- Sato, M. (2015). Time, chronology, and periodization in history. In J. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (pp. 409–414). Elsevier. <https://doi.org/10.1016/B978-0-08-097086-8.62148-7>
- Sharpe, R. (2009). Engagement in learning and development. *Research in Learning Technology*, 17(1), 10770. <https://doi.org/10.3402/rlt.v17i1.10770>
- Sharpe, R. (2010). A snapshot of research in learning technology. *Research in Learning Technology*, 18(2), 85–87. <https://doi.org/10.1080/09687769.2010.499207>
- Sharpe R. (2011). Evidence and evaluation in learning technology research. *Research in Learning Technology*, 19(1), 17102. <https://doi.org/10.3402/rlt.v19i1.17102>

- Sharpe, R., Benfield, G., & Francis, R. (2006). Implementing a university e-learning strategy: Levers for change within academic schools. *Research in Learning Technology*, 14(2), 135–151. <https://doi.org/10.3402/rlt.v14i2.10952>
- Shi, Y., & Lin, X. (2021). Exploring the characteristics of adults' online learning activities: A case study of EdX online institute. *Research in Learning Technology*, 29, 2622. <https://doi.org/10.25304/rlt.v29.2622>
- Sinfield, D. L. (2018). The boundaries of education: Using mobile devices for connecting people to places. *Research in Learning Technology*, 26, 2121. <https://doi.org/10.25304/rlt.v26.2121>
- Sloan, D., Stratford, J., & Gregor, P. (2006). Using multimedia to enhance the accessibility of the learning environment for disabled students: Reflections from the Skills for Access project. *Research in Learning Technology*, 14(1), 39–54. <https://doi.org/10.3402/rlt.v14i1.10947>
- Smailes, J., & Gannon-Leary, P. (2011). Peer mentoring – Is a virtual form of support a viable alternative? *Research in Learning Technology*, 19(2), 129–142. <https://doi.org/10.3402/rlt.v19i2.10351>
- Smith, C., & Jagodzinski, P. (1995). The implementation of a multimedia learning environment for graduate civil engineers. *Research in Learning Technology*, 3(1), 29–39. <https://doi.org/10.3402/rlt.v3i1.9589>
- Tompsett, C., & Alsop, G. (2003). On reification: A reinterpretation of designed and emergent practice. *Research in Learning Technology*, 11(2), 61–63. <https://doi.org/10.3402/rlt.v11i2.11277>
- Varga-Atkins, T. (2016). A study of the role of a technology-enhanced learning implementation group in mediating an institutional VLE minimum standards policy. *Research in Learning Technology*, 24, 32815. <https://doi.org/10.3402/rlt.v24.32815>
- Watson, P., & Livingstone, D. (2018). Using mixed reality displays for observational learning of motor skills: A design research approach enhancing memory recall and usability. *Research in Learning Technology*, 26, 2129. <https://doi.org/10.25304/rlt.v26.2129>
- White, C. (1995). Microwave workshop for Windows. *Research in Learning Technology*, 3(1), 57–61. <https://doi.org/10.3402/rlt.v3i1.9593>
- Whitelock, D., et al. (2003). Analysing tutor feedback to students: First steps towards constructing an electronic monitoring system. *Research in Learning Technology*, 11(3), 31–42. <https://doi.org/10.3402/rlt.v11i3.11283>
- Zafitsara, J., & Velo, N. M. A. (2022). Impact of the COVID-19 pandemic on the 2020–2021 academic year at Fianarantsoa University: The use of Facebook as a mode to switch to online learning. *Research in Learning Technology*, 30. <https://doi.org/10.25304/rlt.v30.2673>