A CROSS-SECTIONAL STUDY TO DESCRIBE ACADEMICS' CONFIDENCE, ATTITUDES, AND EXPERIENCE OF ONLINE DISTANCE LEARNING IN HIGHER EDUCATION

Roger Harrison, University of Manchester
Ian Hutt, University of Manchester
Catherine Thomas-Varcoe, Mirabel Consulting
Gary Motteram, University of Manchester
Kathryn Else, University of Manchester
Barbara Rawlings, Educational Consultant
Isla Gemmell, University of Manchester

ABSTRACT

Previous research, mainly from North America and Asia, has highlighted how many academics in Higher Education Institutions (HEIs) are concerned about the academic integrity of online distance learning (ODL) compared with face-to-face-teaching and its impact on their work and the student learning experience. Far less is known about this topic for HEIs in the UK, which historically has been slow to adopt technology-enhanced learning overall. The aim of the current study was to determine the attitudes to and experiences of ODL amongst academics in a UK HEI from their own perspective, their students, and that of external stakeholders. The study was based in a long-established HEI in the north of England, UK. Data were collected using an anonymous, self-completion electronic questionnaire which was distributed to academics across the institution. The survey was completed by 531 academics from four of the different faculties. Most of the responders were confident using standard learning management systems for their online teaching, but few were using tools such as social media and web conferencing to engage with students. At least a third of responders expressed positive attitudes to ODL, both from their own and their students' perspectives, and they believed ODL was necessary to maintain student numbers in the future. Those not already doing so also expressed an interest in starting to teach on an ODL. However, not all academics supported ODL, and additional concerns extended to the perceptions of employers, professional organisations, and other countries towards this type of education. The attitudes and experiences of academics in a UK HEI towards ODL varied across a range of teaching-related topics. The results confirm that some academics are confident using online technology for teaching purposes

and that they identify with benefits for their students' learning experience. A large proportion wanted to increase their involvement with ODL, and some believed that their faculty needed to increase the ODL provision to maintain the current number of registered students. There was a suggestion that an important number of employers, professional organisations, and even some countries did not believe qualifications awarded through ODL were at least equivalent to those from face-to-face teaching. Consequently, if the HEI is seeking to increase its ODL provision, then there could be benefits from showcasing examples of good practice to academics from within and outside of the HEI. This needs to coincide with demonstrating the effectiveness of ODL, as compared with face-to-face provision from the student, academic, and faculty perspective. Furthermore, this needs to be communicated to students' prospective future employers.

Keywords: online learning, attitudes, faculty, academics, experiences, views, perceptions, elearning, distance learning, technology, education, quality, standards, teaching, education.

BACKGROUND

The aim of the current study was to provide a broad insight into the attitudes and experiences of academics in higher education institutions (HEIs) to online distance learning (ODL). Much of the research on this topic has been conducted in North America or Asia, and relatively little is known about it from a UK perspective. Consequently, this research is intended to support UK institutional policies relating to ODL, be it for expansion or not, and acts as a benchmark to determine future changes over time. The research is specific to ODL but recognises that it is impossible to fully distinguish between the experience of ODL from instances where at least some, but not all, education is provided online (JISC Digital Media).

Millions of people have access to ODL around the world and considerable growth in ODL is predicted for at least the next ten years (Shuck, 2016). The global annual revenue for the ODL industry is estimated to be in excess of $107 billion (McCue, 2014). Consequently, it is reasonable to expect the higher education sector to be responding to changes in students' demands by expanding the provision of ODL. Certainly there has been an increase in online provision but the predicted "avalanche" (Barber, Donnelly, Rizvi, & Puttnam, 2013) has been quite patchy to say the least (Ng'ambi, Brown, Bozalek, Gachago, & Wood, 2016; Tapscott & Williams, 2010). The reasons for this have been investigated from different perspectives, including the adoption of what was new technology by academics working in HEIs. Some re-emerging themes include the varying levels of resistance (Bain & McNaught, 2006; Lloyd, Byrne, & Mccoy, 2012; Watty, McKay, & Ngo, 2016) often associated with the impact on their workload (Meyer, 2010; Shea, 2007), the loss of face-to-face student interaction (De Gagne & Walters, 2010), the need to acquire new skills (Almerich, Orellana, Suárez-Rodríguez, & Díaz-García, 2016; Kregor, Breslin, & Fountain, 2012), and concerns about reliable technical support (Buchanan, Sainter, & Saunders, 2013). However, the biggest concern about providing ODL in HEI has been related to the impact on students (Bolliger & Wasilik, 2009; Brown, 2012; Conceicao, 2006; Kim, Kim, Lee, Spector, & DeMeester, 2013). Numerous empirical studies, some specific to student groups or aspects of a course, have been cited as evidence that ODL is at least equivalent in learning outcomes compared with face-to-face approaches to education (Al-Shorbaji, R, J, Majeed, & Wheeler, 2015; Means, Toyama, Murphy, Bakia, & Jones, 2009; Yu, 2011). Yet these and other studies have been questioned based on principles associated with academic rigour and long-held beliefs about the measurement of phenomenon (Gower, 2012) as it applies to education (Howsen & Lille, 2008; Nelson & Kennedy, 2009).

The current study was carried out to develop a broad overview of academics' attitudes and experiences to ODL across an HEI in the north of England, UK. The information will help to inform institutional and faculty policies on topics, including training and support, and help to better understand opportunities and likely barriers to expanding

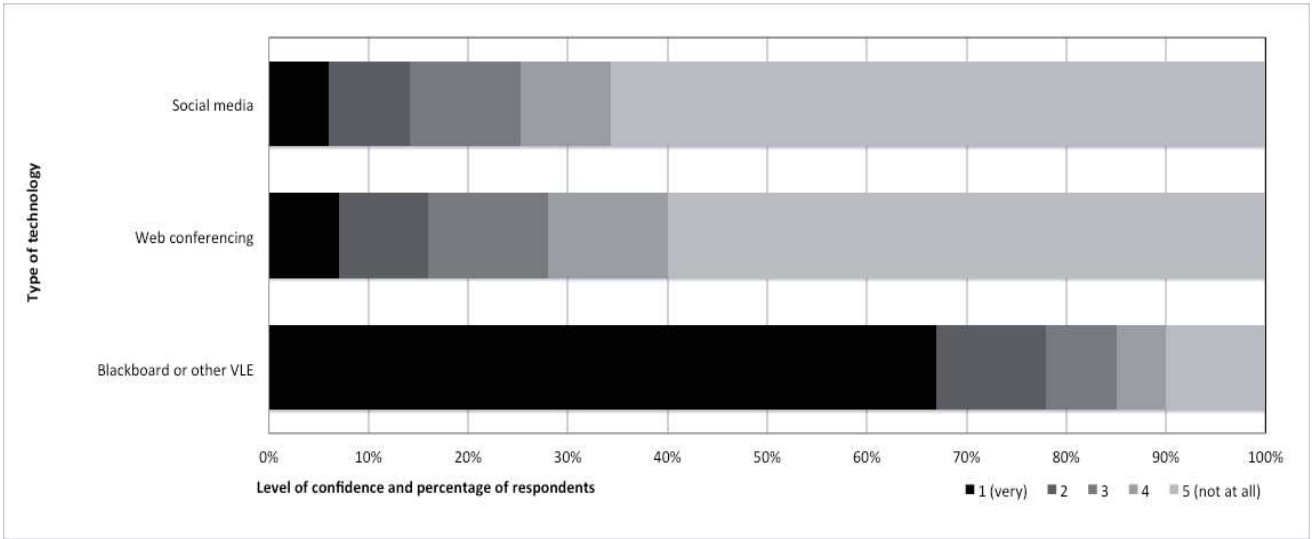


Figure 1. Confidence with different technologies

(or not) the provision of ODL in the future—this included the perception of how key stakeholders regarded qualifications from ODL compared with face-to-face HEIs. The specific objectives were to measure academics:

1. confidence using online educational technologies in their teaching;
2. attitudes towards ODL from their own teaching perspective;
3. beliefs about their students' attitudes to ODL; and
4. beliefs about the attitude of employers, professional organisations, and different countries to qualifications gained from ODL.

CONTEXT

The study was carried out at a long-established university in the northwest of England, UK, which recruits around 40,000 students into one of a thousand or so degree programs. The majority of students are registered in face-to-face courses, but the university has some established and emerging online programs and uses an industry-wide learning management system to host its online teaching and resources.

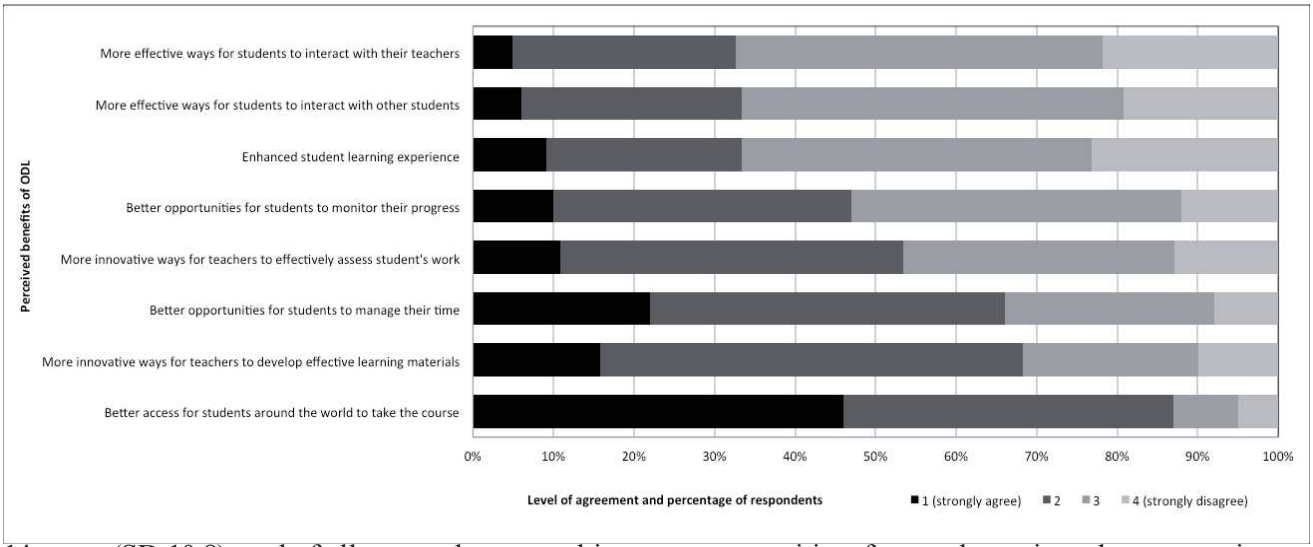
METHODS

Data were collected using an online, self-completion survey that was distributed to academics working at the HEI. The questions in the survey were developed from key themes emerging from previously published evidence (Buchanan, Sainter, &Saunders, 2013; HEFCE, 2009; Panda & Mishra, 2007; Reed, 2014) and in consultation with internal and external stakeholders. The survey was completed using Select Survey (SelectSurvey.Net version4) and the majority of questions were answered using a ordinal Likert scale (e.g., "strongly agree," "agree," "disagree," "strongly disagree") as recommended in similar investigations (Allen & Seaman, 2007; Fields, 2002; Porter & Graham, 2015; Reed, 2014). A link to the survey was embedded in an email with an information letter and sent to academics at the HEI. It was promoted using staff newsletters and online distribution lists. The survey data were downloaded into the statistical analysis package STATA, version 12 (Stata.com), and analysed by an independent statistician. The university's Research Ethics Committee stated that a full ethical review was not required based on the methodology and content of the survey (letter dated 15th April, 2014).

RESULTS

Data for the survey were collected from June to July 2014, over which time 531 participants completed the online survey from an estimated 4,575 academic staff. The respondents were more likely to be men than women (54% vs. 46%) and a smaller proportion were in the youngest or oldest age groups (10% aged 20–29 years, 21% aged 30–39 years, 32% aged 40–49 years, 27% aged 50–59 years, and 10% aged at least 60 years old). The average (median) time spent in a teaching role was

Figure 2. Benefits of ODL compared with high-quality face-to-face courses



14 years (SD 10.8), and of all respondents, teaching was estimated to account for an average (median) of 40% (SD 26.8) of their total work. The percentage that had taught an ODL courses at the undergraduate level was 12% and 20% at postgraduate level. Just over a third (36%) of respondents had learned on an online course themselves.

Confidence and use of online technology for any teaching.

Academics were asked to rate their level of confidence for each of three different learning technologies that can be used to provide ODL (Figure 1). The majority of respondents (74%) were confident or very confident using the HEI's learning management system, Blackboard. When asked about confidence using web conferencing (e.g., through Fuze or Adobe Connect) one third (31%) responded that they were confident or very confident with this and a similar proportion (31%) were for using social media (e.g., Facebook, Twitter) in their teaching. When further asked about how often they used these technologies in their teaching, Blackboard was used frequently by 78% of respondents. This is compared with only 16% of respondents frequently using web-conferencing as part of their teaching and 14% using social media.

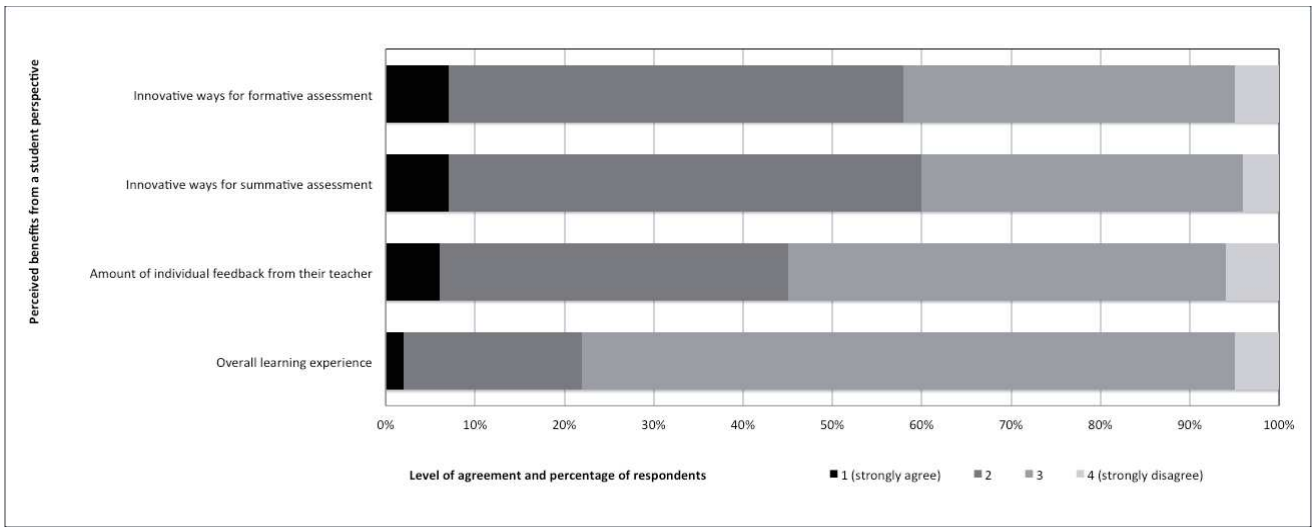
Attitudes to online distance learning

The respondents were given eight statements to consider the advantages of a high-quality ODL course as compared to a high-quality face-to-face course (Figure 2). The majority of respondents (87%) agreed that ODL courses provide greater opportunities for students in other countries to study their courses as compared with face-to-face courses. Almost two-thirds of respondents agreed that ODL offers more innovative ways for teachers to develop effective learning materials (68%) and better opportunities for students to manage their time (66%). Around half (54%) agreed that this approach to teaching provides more innovative ways to effectively assess students' work and to help students monitor their own progress (48%). Similarly, a third (33%) agreed it provides more effective ways for students to interact with other students and for each student to interact with their teachers. A third (33%) agreed that ODL offers an enhanced learning experience.

Academics were asked a second set of statements about what they thought their students would expect from ODL as compared to face-to-face teaching (Figure 3). Around 60% considered students to expect ODL to provide more innovative ways for summative and formative assessment. Less than half (45%) thought students would expect the amount of individual feedback to be better when compared with face-to-face courses, and a fifth (22%) that it would provide a better overall learning experience.

Respondents were asked three questions about how they thought qualifications from ODL would be perceived elsewhere. A third agreed that employers (34%) and professional organisations (37%) would give the same recognition to a qualification gained from ODL compared with face-to-face courses.

Figure 3. Perceived benefits of ODL for students compared with high-quality face-to-face courses



A similar percentage (32%) also thought that the same recognition would be granted for students in different countries.

Looking to the future

When asked to think about the future, 28% of academics responding to the survey agreed that their faculty needed to increase the recruitment of ODL students into undergraduate courses to at least maintain the overall number of students. For postgraduate degrees, 51% of respondents agreed that the number of places available for ODL students needed to increase to at least maintain the overall number of students in their faculty.

Respondents not teaching in any ODL courses were asked about their intended involvement in ODL in the future. Half (50%) of those responding to this question wanted to become involved in ODL courses in the future. Of these, a third (34%) wanted to start teaching on an online course, 13% wanted to create at least one online course unit, and 3% wanted to develop a complete online course.

DISCUSSION

This study presents the results of a self-completion survey of academics in higher education, in the north of England, to determine their attitudes and experiences regarding ODL. Responders represented a full-range of age-groups working at the HEI in academic roles across different faculties. A larger proportion of men completed the survey than women, possibly representing differences in the overall ratio of men to women on academic contracts. Of the 531 responders, many were generally confident using the HEI's online virtual learning platform to support their teaching. However, few used tools such as social media and web conferencing to engage with students, despite feeling confident with these. Some HEIs openly encourage these and similar online tools to be used in teaching (E-Learning Unit, n.d.), and the use of online social media is ubiquitous in many parts of the world (Chaffey, 2016). Therefore, the results suggest that academics need to be shown how social media can enhance their students' learning and how best to incorporate it in their routine work. (Al-rahmi & Othman, 2013; Brady, Holcomb, & Smith, 2010; Junco, Elavsky, & Heiberger, 2013; Rouis, Limayem, & Salehi-Sangari, 2011).

The biggest endorsement for ODL is its opportunities for increasing access to education for people around the world, especially those unable or unwilling to relocate. This was reflected amongst the majority of academics taking part in the current survey who agreed with this affordance. More than half the academics perceived advantages in terms of more opportunities for innovation in teaching, for students to manage their time, for assessment, and for students to monitor their own progress. However, it was clear that many did not think students would consider ODL to offer benefits in terms of the overall learning experience. Of course, the question was not asked of students themselves, and the focus of the current study was to consider how academics thought their students would experience different types of teaching. Previous evidence suggests that

student satisfaction is higher for distance learning students (Sun, Tsai, Finger, Chen, & Yeh, 2008), and more local research has shown high satisfaction with some aspects of ODL (Harrison, Gemmell, & Reed, 2014). Nevertheless, the student voice in all of this is exceptionally important but challenging to interpret; students studying online are perhaps more likely to view it more positively than students studying face-to-face as that will have been a key determinant in where and how they studied.

Looking towards the future, about a third of academics believed their faculty needed to increase provision for ODL to at least maintain the current number of undergraduate students, and around half of academics indicated this for postgraduate students as well. Much of the educational press continues to report on the global expansion of ODL, which is seen to offer unprecedented choice for students (Barber, Donnelly, Rizvi, & Puttnam, 2013; Hu & Yu, 2016), but this often presumes that ODL is ultimately superior to face-to-face education across all courses. Such a proposition is unrealistic, and the idea that ODL will in the future replace all educational provision at an HEI is untenable, at least in the short and medium term. At the same time, history provides evidence that HEIs as a whole have been notorious for resisting change (Setser & Morris, 2015) and supporting an established "culture of conservatism… which needs to change" (European Commission, 2014, p.11). One of the reasons for this has been a lack of attention by senior managers to the real or perceived impact on academics' workload overall (Gregory & Lodge, 2015). Therefore it is important to consider academics' workload and how this will be managed alongside their competing demands on time while ensuring that there is a fully resourced infrastructure to support academics with this role (King & Boyatt, 2015).

One of the aims of HEIs is to prepare graduates for suitable employment and help meet demand from employers around the world. From a ODL perspective, this survey provided an opportunity to gather academics' insight into how qualifications obtained by ODL were perceived by employers, professional bodies, and countries overall, compared to face-to-face learning. The results highlight concerns about this topic as the majority of academics did not think that employers, professional organisations, or different countries would regard ODL qualifications as equivalent to face-to-face education. Earlier research confirms differences in perception by important stakeholders (Adams, 2016; Columbaro & Monaghan, 2009), and while the current research is based on academics' views and not those of the stakeholders themselves, it highlights an important consideration when helping to prepare students for their careers.

The current study relied on a self-completion questionnaire, and this is a well-established method to gain general insight on different topics (Sue & Ritter, 2012). One of the strengths of the current study is that the themes and question-constructs were informed by previous empirical investigations on this and related topics (Buchanan, Sainter, & Saunders, 2013; HEFCE, 2009; Panda & Mishra, 2007; Reed, 2014). The number of academics replying to the current survey was small in relative terms (531 out of 4,575 academics working at the HEI), but they still provided new and important data for this preliminary investigation. This was the first attempt at seeking feedback from academics in relation to ODL at this specific HEI. The data have been used from this study to generate more formal hypotheses to be tested and to inform hypothesis generating and not formal hypothesis testing. The aim was to describe absolute events from which more formal hypotheses could be formed and tested a priori to reduce the likelihood of Type 1 error from multiple hypothesis tests. Furthermore, a cautious approach is needed if making generalisations to other HEIs in the UK and abroad, but examining the differences between them is an interesting area for future investigation.

CONCLUSION

The attitudes and experiences of academics in a UK HEI towards ODL varied across a range of teaching-related topics. The results confirm that some academics are confident using online technology for teaching purposes, and that they see benefits for their students' learning experience. A large proportion wanted to increase their involvement with ODL, and some believed that their faculty needed to increase ODL provision to maintain the current number of registered students. There was a suggestion that an important number of employers, professional organisations, and even some countries did not believe qualifications awarded through ODL were at least equivalent to

those from face-to-face teaching. Consequently, if the HEI is seeking to increase its ODL provision, then there could be benefits from showcasing examples of good practice to academics from within and outside of the HEI. This needs to coincide with demonstrating the effectiveness of ODL when compared with face-to-face provision from the student, academic, and faculty perspective. Furthermore, this needs to be communicated to students' prospective future employers.

REFERENCES

Adams, J. (2016). Teaching Certificates Earned Online and Hiring Practices of High School Principals. Journal of Educational Issues, 2(1), 73–90.

Al-rahmi, W. M., & Othman, M. S. (2013). Evaluating student's satisfaction of using social media through collaborative learning in higher education. International Journal of Advances in Engineering & Technology, 6(4), 1541–1551.

Al-Shorbaji, N., Atun, R., Josip, C., Majeed, A., & Wheeler, E. (2015). eLearning for undergraduate health professional education. A systematic review informing a radical transformation of health workforce development. London, UK: Imperial College London, World Health Organization. Retrieved from http://whoeducationguidelines.org/sites/default/files/uploads/eLearning-healthprof-report.pdf

Allen, I., & Seaman, C. (2007). Likert Scales and Data Analyses. Quality Progress, 7(4), 54–65. doi:10.1111/j.1365-2929.2004.02012.x

Almerich, G., Orellana, N., Suárez-Rodríguez, J., & Díaz-García, I. (2016). Teachers' information and communication technology competences: A structural approach. Computers & Education, 100, 110–125. doi:10.1016/j.compedu.2016.05.002

Bain, J. D., & McNaught, C. (2006). How academics use technology in teaching and learning: Understanding the relationship between beliefs and practice. Journal of Computer Assisted Learning, 22(2), 99–113. doi:10.1111/j.1365-2729.2006.00163.x

Barber, M., Donnelly, K., Rizvi, S., & Puttnam, D. (2013). An avalanche is coming: Higher education and the revolution ahead. London, UK: Institute for Public Policy Research.

Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. Distance Education, 30(1), 103–116. doi:10.1080/01587910902845949

Brady, K. P., Holcomb, L. B., & Smith, B. V. (2010). The use of alternative social networking sites in higher educational settings: A case study of the e-learning benefits of Ning in Education. Journal of Interactive Online Learning, 9(2), 151–170.

Brown, S. A. (2012). Seeing Web 2.0 in context: A study of academic perceptions. The Internet and Higher Education, 15(1), 50–57. doi:10.1016/j.iheduc.2011.04.003

Buchanan, T., Sainter, P., & Saunders, G. (2013). Factors affecting faculty use of learning technologies: Implications for models of technology adoption. Journal of Computing in Higher Education, 25(1), 1–11. doi:10.1007/s12528-013-9066-6

Chaffey, D. (2016). Global social media research summary 2016. Smart Insights: Social Media Marketing. Retrieved from http://c.ymcdn.com/sites/www.productstewardship.us/resource/resmgr/Phone_Books/Global_Social_Media_Statisti.pdf

Columbaro, N. L., & Monaghan, C. H. (2009). Employer perceptions of online degrees: A literature review. Online Journal of Distance Learning Administration, 12(1), 1–10. Retrieved from http://www.westga.edu/~distance/ojdla/spring121/columbaro121.html

Conceicao, S. C. O. (2006). Faculty lived experiences in the online environment. Adult Education Quarterly, 57(1), 26–45. doi:10.1177/1059601106292247

De Gagne, J. C., & Walters, K. J. (2010). The lived experience of online educators: Hermeneutic phenomenology. MERLOT Journal of Online Learning and Teaching, 6(2), 357–366.

E-Learning Unit. (n.d.). Using Social Media. Retrieved from http://www.elearning.capd.qmul.ac.uk/enhancing-your-teaching/using-social-media/

European Commission. (2014). Report to the European Commission on new modes of learning and teaching in higher education. Luxembourg: Publications Office of the European Union. doi:10.2766/81897

Fields, D. (2002). Taking the Measure of Work: A Guide to Validated Scales for Organizational Research and Diagnosis. Thousand Oaks, CA: SAGE Publications, Inc. doi:10.4135/9781452231143

Gower, B. (2012). Scientific Method: A Historical and Philosophical Introduction. Hoboken, NJ: Taylor & Francis.

Gregory, M. S.-J., & Lodge, J. M. (2015). Academic workload: The silent barrier to the implementation of technology-enhanced learning strategies in higher education. Distance Education, 36(2), 210–230. doi:10.1080/01587919.2015.1055056

Harrison, R., Gemmell, I., & Reed, K. (2014). Student satisfaction with a web-based dissertation course: Findings from an international distance learning master's programme in public health. International Review of Research in Open and Distance Learning, 15(1), 182–202. doi:10.19173/irrodl.v15i1.1665

HEFCE. (2009). Enhancing learning and teaching through the use of technology: A revised approach to HEFCE's strategy for e-learning. Bristol, UK: Higher Education Funding Council for England. Retrieved from http://dera.ioe.ac.uk/140/1/09_12.pdf

Howsen, R., & Lille, S. (2008). A comparison of course delivery methods: An exercise in experimental economics. Journal of Economics and Finance Education, 7(1), 21–28.

Hu, Z., & Yu, J. (2016). Is online learning the future of education? Retrieved from https://www.weforum.org/agenda/2016/09/is-online-learning-the-future-of-education/

JISC Digital Media. (n.d.). Introduction to e-learning. Retrieved

from http://www.jiscdigitalmedia.ac.uk/guide/introduction-to-elearning

Junco, R., Elavsky, C. M., & Heiberger, G. (2013). Putting twitter to the test: Assessing outcomes for student collaboration, engagement and success. British Journal of Educational Technology, 44(2), 273–287. doi:10.1111/j.1467-8535.2012.01284.x

Kim, C., Kim, M. K., Lee, C., Spector, J. M., & DeMeester, K. (2013). Teacher beliefs and technology integration. Teaching and Teacher Education, 29, 76–85. doi:10.1016/j.tate.2012.08.005

King, E., & Boyatt, R. (2015). Exploring factors that influence adoption of e-learning within higher education. British Journal of Educational Technology, 46(6), 1272–1280. doi:10.1111/bjet.12195

Kregor, G., Breslin, M., & Fountain, W. (2012). Experience and beliefs of technology users at an Australian university: Keys to maximising e-learning potential. Australasian Journal of Educational Technology, 28(8), 1382–1404. doi:10.14742/ajet.777

Lloyd, S. A., Byrne, M. M., & Mccoy, T. S. (2012). Faculty-Perceived Barriers of Online Education. MERLOT Journal of Online Learning and Teaching, 8(1).

McCue, T. (2014). Online learning industry poised for $107 billion in 2015. Retrieved from http://www.forbes.com/sites/tjmccue/2014/08/27/online-learning-industry-poised-for-107-billion-in-2015/#35d32b5d66bc

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of Evidence-Based Practices in Online Learning. Structure, 15(20), 94. Retrieved from http://repository.alt.ac.uk/629/

Meyer, K. (2010). The Role of Disruptive Technology in the Future of Higher Education. EDUCAUSE Review. Retrieved from http://er.educause.edu/articles/2010/3/the-role-of-disruptive-technology-in-the-future-of-higher-educationNelson, J. P., & Kennedy, P. E. (2009). The use (and abuse) of meta-analysis in environmental and natural resource economics: An assessment. Environmental and Resource Economics, 42(3), 345–377. doi:10.1007/s10640-008-9253-5

Ng'ambi, D., Brown, C., Bozalek, V., Gachago, D., & Wood, D. (2016). Technology enhanced teaching and learning in South African higher education: A rearview of a 20 year journey. British Journal of Educational Technology, 47(5), 843–858. doi:10.1111/bjet.12485

Panda, S., & Mishra, S. (2007). E□learning in a mega open university: Faculty attitude, barriers and motivators. Educational Media International, 44(4), 323–338. doi:10.1080/09523980701680854

Porter, W. W., & Graham, C. R. (2015). Institutional drivers and barriers to faculty adoption of blended learning in higher education. British Journal of Educational Technology, 47(4), 748–762. doi:10.1111/bjet.12269

Reed, P. (2014). Staff experience and attitudes towards technology-enhanced learning initiatives in one Faculty of Health and Life Sciences. Research in Learning Technology, 22. doi:10.3402/rlt.v22.22770

Rouis, S., Limayem, M., & Salehi-Sangari, E. (2011). Impact of Facebook usage on students' academic achievement: Role of self-regulation and trust. Electronic Journal of Research in Educational Psychology, 9(3), 961–994.

Setser, B., & Morris, H. (2015). Building a culture of innovation in higher education: Design & practice for leaders. Washington, DC: EDUCAUSE. Retrieved from https://library.educause.edu/~/media/files/library/2015/4/ngt1502-pdf.pdf

Shea, P. (2007). Bridges and Barriers to Teaching Online College Courses: A Study of Experienced Online Faculty in Thirty-Six Colleges. Journal of Asynchronous Learning Networks, 11(2), 73–128.

Shuck, E. (2016). Education in 2025: Education technology innovation survey. San Jose, CA: Polycom, Inc. Retrieved from http://publicsectorview.com/wp-content/uploads/2016/09/educaion-in-2025-wp-25155.pdf

Sue, V. M., & Ritter, L. A. (2012). Conducting online surveys. Thousand Oaks, CA: SAGE Publications. Retrieved from https://books.google.co.uk/books?id=4_3aX2A2S98C

Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. Computers & Education, 50(4), 1183–1202. doi:10.1016/j.compedu.2006.11.007

Tapscott, D., & Williams, A. D. (2010). Innovating the 21st-century university: It's time! EDUCAUSE Review, 45(1), 16–29. Retrieved from http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume45/Innovatingthe21stCenturyUniver/195370

Watty, K., McKay, J., & Ngo, L. (2016). Innovators or inhibitors? Accounting faculty resistance to new educational technologies in higher education. Journal of Accounting Education, 36, 1–15. doi:10.1016/j.jaccedu.2016.03.003

Yu, R. (2011). eLearning's benefits are obvious: Why don't they like it? Learning Solutions Magazine. Retrieved from http://www.learningsolutionsmag.com/articles/674/elearnings-benefits-are-obvious-why-dont-they-like-it