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Commonwealth Digital Education Leadership Training in Action: **An Evaluation**

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The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources and technologies.

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EXECUTIVE SUMMARY

The aim of C-DELTA was to develop participants' digital literacy, knowledge of digital education and ability to lead and implement digital education initiatives in their various contexts. To achieve this, and its overall goal of assisting people to become lifelong learners, the programme needed to be accessible and applicable to a diverse group of participants across the Commonwealth.

This report presents an evaluation of C-DELTA conducted in June and July 2019 that included a desktop review, and a review of and reflection on implementation programmes, participant platform data and experiences. The evaluation foregrounds a number of positive outcomes, including (i) the unique open licence (CC BY-SA) nature of the course, making it available for anyone to join free of cost, (ii) dispersion of the course materials beyond the source platform, (iii) implementation in seven countries through different partners with different degrees of impact, (iv) case studies of success stories from two countries, (v) measurable improvement in digital education skills and (vi) a measure to index countries with different levels of digital education skills. Recommendations include a range of suggestions for expansion, such as establishing a C-DELTA community of practice, offering the course as a MOOC, simplifying and translating assessment items and expanding interactive elements through OER adaption.

CONTENTS

INTRODUCTION

The Commonwealth of Learning (COL) Commonwealth Digital Education Leadership Training in Action: An Evaluation (C-DELTA) programme began in 2016 with the development of a concept document which in turn had evolved from a literature review and an advisory group workshop (Brown, Czerniewicz, Mayisela & Huang, 2016). This was followed in 2017 by the development of curriculum resources (seven modules), initially as print-based modules. The first three modules focus on creating awareness about digital footprints and digital identity (and are primarily aimed at learners); the latter four focus on creating and using digital resources with open licences and using open educational resources (OER), as well as developing personal learning networks and critical perspectives on global developments in digital technology and education (and are positioned more for teachers). The intention, as per the concept document, was to provide a holistic view of digital education leadership. Development of the online platform, including module content and pre- and post-test assessment, was undertaken in 2018. Subsequently, training of trainers workshop materials were developed to guide country facilitators in presenting workshops on C-DELTA for teachers. A pilot was run in May/June 2018 and was followed by implementation in seven countries throughout 2018 – 2019.

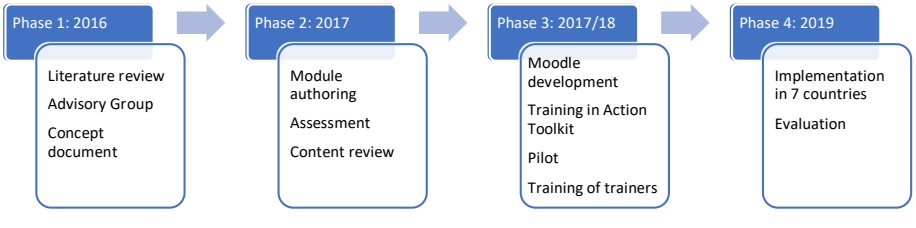

Figure 1: Visualisation of C-DELTA implementation 2016 – 2019

Scope of the Evaluation

This evaluation draws on a desktop review of programmes currently offered on digital education leadership. The researcher drew on reports, news articles, academic papers and/or presentations and focus group discussions with country leads at the technology-enabled learning (TEL) partners workshop held in September 2019 to analyse the country implementations. Platform data on registered participants and the pre- and post-test results were obtained up until June 2019. A survey of participant satisfaction and experiences with C-DELTA (which included qualitative and quantitative data) was conducted between 20 June and 26 July 2019.

Limitations of the Evaluation

Only four country implementation reports were available at the time of the evaluation as some of the implementations had only occurred recently. Some of the available reports were submitted shortly after training sessions and so did not include evidence of impact. The platform data used covered only up to the end of June 2019 and so did not include the more recent implementations, which means the number of C-DELTA participants reported on in the evaluation is accurate only up until that date. The survey was distributed widely, but due to differences in academic calendars globally it did not achieve a high response rate. Interviews were initially planned with participants, but despite the evaluators' flexibility in terms of accommodating various time zones and means of communication (including phone calls), these were hard to secure and the quality of the connection in some cases made recording and transcription difficult. They have therefore not been used in this evaluation.

METHODOLOGY

In the C-DELTA concept document, a design-based research (DBR) approach to the development and evaluation of C-DELTA was proposed. The overall C-DELTA approach and phases of implementation had previously been aligned with the DBR phases of exploration, implementation and evaluation (Figure 2).

In terms of the DBR framework (Figure 2), Phase 1 is documented by the concept document and literature reviews (Brown et al., 2016), and Phase 2 by the development of the curriculum materials.[1] This evaluation is positioned by Phase 3 of the DBR cycle as it is focused on research and evaluation of the C-DELTA programme (i.e. the intervention), the results of which will inform the final implementation and future developments of C-DELTA in Phase 4.

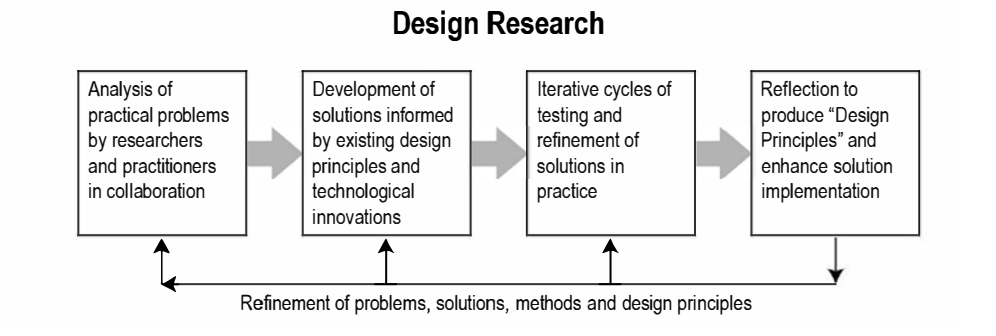

Figure 2: Overview of design-based research (DBR) framework (adapted from Herrington, Reeves & Oliver, 2010)

In examining the impact of C-DELTA we need to revisit COL's original objective: "that the C-DELTA programme will provide a framework for fostering digital learning and will develop leaders who demonstrate the effective use of ICT as well as advocating, influencing and building capacities amongst others" (Commonwealth of Learning, 2016). It is against this objective that the evaluation is positioned.

1 http://oasis.col.org/handle/11599/2809

Data collection comprised four components:

- Desktop review
- Country implementations
- Platform data
- Survey of participants

Desktop review: Using Chrome in incognito mode to disable browsing history and the Web cache, a search was conducted via Google.com and DuckDuckGo for the keywords "training programmes" and "digital education leadership." The evaluator logged out of her Google account and turned off the location settings, as she was aware that because she teaches and researches in this area, algorithms would be biased towards her previous search history and location settings. The search returns were reviewed until no new examples were evident.

Country implementations: Appendix 1 notes the variety of data sources drawn on from the country workshops and implementations. Of the eight countries involved, all had news articles, five had scholarly outputs in the form of presentations/papers or posters and seven were represented in the TEL partners focus group discussions. The TEL partners workshop was held on 7 – 8 September, before PCF9. Eight participants from seven different countries met as a sub-group to share and discuss the implementation of and experiences with C-DELTA.

Platform data: Deidentified data were downloaded on 20 June 2019 from the C-DELTA website and shared with the evaluator. The data included gender, age, organisation, country, role, pre- and post-test scores and certificate status.

Survey data: Based on the above data set, a link to an online survey (hosted on SurveyMonkey) was sent to those who had completed a pre-test — although they may not all have completed a post-test — on 20 June 2019; a reminder was sent out on 17 July and the survey closed on 26 July.

There are a number of established and validated survey instruments that explore satisfaction rates with learning management systems from a user perspective. Many of these have adapted DeLone and McLean's model, which originated in the field of information systems (Efiloğlu Kurt, 2019; Yakubu & Dasuki, 2018; Yu & Qian, 2018). The updated DeLone and McLean's model consists of six factors: information quality, system quality, service quality, use/intention to use, user satisfaction and net benefits (DeLone & McLean, 2003) (see Figure 3). Mtebe and Rachael (2018) have adapted this model specifically for an e-Learning context. The survey questions are presented in Appendix 2.

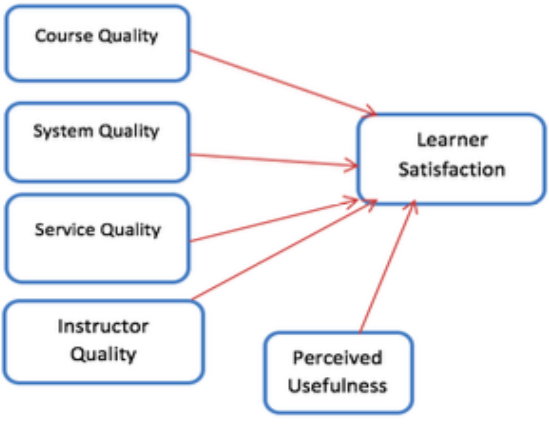

Figure 3: Diagrammatic representation of DeLone and McLean's model of learner satisfaction (2003)

In terms of the model (Figure 3), system quality (SQ) is primarily concerned with ease of use; course quality (CQ) is about the quality, richness and relevance of content; perceived usefulness (PU) focuses on different aspects of user satisfaction and service quality (SeQ) focuses on support for learners (and may be less relevant in the C-DELTA context). Instructor quality is not deemed relevant to C-DELTA, as the platform involves independent self-study and does not incorporate facilitation; however, questions relevant to course quality do relate to this. All of these influence learner satisfaction levels.

This approach maps well to the satisfaction with platform and impact of programme components of the evaluation.

Part 1: Satisfaction with C-DELTA online platform

- System quality (SQ)
- Service quality (SeQ)

Part 2: Impact of C-DELTA

- Course quality (CQ)
- Perceived usefulness (PU)

Overall

- Learners' satisfaction (LS)

The C-DELTA survey was adapted from questions that draw on the six stages model and is presented in Appendix 2.

RESULTS AND FINDINGS

Desktop Review: Digital Education Leadership Programmes

The expression "digital education leadership" is not commonly used. This is acknowledged by Arnold and Sangrā (2018), whose 2013 – 2017 literature review on leadership for TEL in higher education indicated that the expressions "digital education leadership" and "higher education" yielded no results.

While there are many programmes in digital leadership and many in education leadership, there are very few in digital education leadership. All three types of programmes are overwhelmingly offered as formal postgraduate qualifications. Some of these are offered by universities. For example:

- Australia: Queensland University of Technology: Master of Education (Leadership and Management)[2]
- USA: Lamar University: Master of Education in Educational Technology Leadership online[3]
- USA: Johns Hopkins University: Master of Science in Education: Digital Age Learning and Educational Technology[4]
- New Zealand: Waikato University: Master of Educational Leadership[5]
- New Zealand: Massey University: Postgraduate Diploma in Education (Digital Education)[6]

2 https://www.qut.edu.au/courses/master-of-education-leadership-and-management

3 https://degree.lamar.edu/programs/master-of-education-in-educational-technology-leadership.aspx

4 https://education.jhu.edu/academics/masters-programs/master-of-science-in-education/master-of-science-in-digital-age-learning-educational-technology/

5 https://www.waikato.ac.nz/study/qualifications/master-of-educational-leadership

6 https://www.massey.ac.nz/massey/learning/programme-course/programme.cfm?major_code=PELRN&prog_id=93057

Four university-level programmes were located that specifically referred to digital education leadership:

- USA: Temple University: Digital Education Leadership Certificate (Graduate)[7]
- USA: Seattle Pacific: Master of Education in Digital Education Leadership[8]
- UK: University of Leeds: Leadership and Digital Education MA[9]
- New Zealand: University of Auckland: Master of Educational Leadership[10]

The US programmes tended to focus on instructional design and successful strategies for educational technology in the classroom. However, the Leeds programme was focused at a more macro level and describes itself as providing insight into "educational policy issues of current global significance and their implications for the effective leadership of educational institutions" and the Auckland programme indicated it was aimed at "aspiring or current educational leaders who are passionate about leading improvements that serve diverse communities and learners" but was very much geared to the Aotearoa New Zealand context.

The next set of training programmes were marketed as free online courses and originated from a range of providers, including some with commercial affiliations. For example:

- EdX Microsoft Education courses (some with a specific leadership focus)[11]
- FutureLearn: Digital Skills for Teachers: Making Technology Work for You[12]
- Google Education: G Suite for Education[13]
- Online Learning Consortium: Professional Development schedule of courses[14]

Some were either aimed at assisting school leaders to navigate the challenges and opportunities of education transformation or focused on helping teachers to develop confidence in using digital tools in the classroom. Google Education

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7 https://www.temple.edu/academics/degree-programs/digital-education-leadership-certificate-graduate-ed-del-grad

8 https://spu.edu/academics/school-of-education/graduate-programs/masters-programs/digital-education

9 https://courses.leeds.ac.uk/i530/leadership-and-digital-education-ma

10 https://www.auckland.ac.nz/en/study/study-options/find-a-study-option/master-of-educational-leadership-medld.html

11 https://www.edx.org/school/microsoft-education

12 https://www.futurelearn.com/courses/digital-skills-for-teachers

13 https://edu.google.com/?modal_active=none

14 https://onlinelearningconsortium.org/

and the Online Learning Consortium offer resources and opportunities for organisations or individuals to formulate or join a programme.

Some countries offer teachers professional development in this area. For example:

- Australia: Victoria State Government: Digital Learning for Teachers[15]
- United Kingdom: Cambridge Assessment International Education: Cambridge International Certificate and Diploma in Educational Leadership[16]

Some organisations offer this type of training in brick-and-mortar environments across a range of cities (e.g. London, Dubai and Bangkok). For example:

- Principals' Training Center: TLI Certificate of International Teacher Leadership[17]

The only training programme that exists in a developing country context is the USIM: Digital Education Leadership Action Training in Malaysia.[18]

The Malaysian course was developed by one of the C-DELTA advisory group members following initial discussions in a Cape Town workshop and is particularly focused at the tertiary level. It offers a blend of face-to-face workshops and online resources, and focuses on online and distance learning and management.

All the training programmes reviewed involve costs to obtain certification, are mostly closed (and formal) qualifications (although some offer limited free resources online) and are usually country-specific.

The evaluator could find no programme comparable to C-DELTA that endeavoured to develop the digital education leadership capacity of global populations through a free, open, online programme of study.

Country Implementations

One of C-DELTA's key objectives was to be applicable to people in all education sectors in all countries of the Commonwealth. This objective was reflected in the attendance of 19 people from 12 different countries at the

15 https://www.education.vic.gov.au/school/teachers/teachingresources/digital/Pages/training.aspx

16 https://www.cambridgeinternational.org/support-and-training-for-schools/professional-development-qualifications/curriculum/educational-leadership/

17 https://www.theptc.org/teacher-leader-certificate

18 https://usimteaching.weebly.com/digital-education-leadership-action-training.html

Training in Action: Train the Trainers workshop held in Delhi in December 2018 and the seven implementations in a range of geographic locations.

The level of detail in the reports varies, as some reports were submitted within a month of the trainers' workshop and so captured only the immediate impact. However, approximately 246 teachers from 112 different schools or centres attended C-DELTA training workshops. The programme has since been adopted by schools, universities, colleges and centres, so it clearly has relevance in a wide range of sectors. Reception has been positive, but logistics — time, technology and language — have been reported as posing challenges for usability and implementation.

Table 1: Overview of country implementations of C-DELTA (up to June 2019)[19]

COUNTRY	DATES	WORKSHOP	OUTCOMES
Antigua and Barbuda	May 2018	30 teachers from 29 schools	• 165 teachers enrolled • 108 teachers completed pre-test
St Lucia	May–June 2018	26 participants from 22 secondary schools	• 169 students enrolled • 27 students completed pre-test
Sri Lanka	July 2018	41 teachers from 39 schools	• Permission was sought from the government for implementation in schools. This resulted in other teachers (163) and students (202) enrolling in the C-DELTA modules (up to January 2018). C-DELTA formed part of a larger research project at OUSL.
South Africa	January 2019	35 public and private school teachers, and members of education faculties	• Overall 9 schools, 1 NGO and 1 university implemented C-DELTA with teachers, students or interns. • 2 schools ran the programme across an entire student year cohort
Mauritius	April 2019	24 teachers from 22 centres that are part of the Mauritius Institute of Training and Development (MITD)	• 282 students and 48 teachers registered and undertook the pre-test. • C-DELTA courses were integrated in the country's MITD IT Programme.

19 Note that reports for Bangladesh, Uganda, Kenya and India were not avaible at the time of evaluation, hence there are no outcomes recorded for those countries in the table.

Bangladesh	January 2019	• 30 teachers from colleges • Also attended by government officials and representatives from Access 2 Information • 302 college students subsequently registered
Uganda	March 2019	• 60 teachers from various departments of College of Education and External Studies (CEES) at Makerere
Kenya	June 2019	• 25 teachers from Jaramogi Oginga Odinga University of Science and Technology (JOOUST) • C-DELTA will be offered as a non-credit course to students at JOOUST • Kaimosi Friends University College (KAFUCO) to adopt it as a non-credit course
India	June 2019	• 32 teachers from 8 universities in Odisha State in India • Odisha State Open University (OSOU) integrated information about C-DELTA in its student handbook as a non-credit course for all students.

Different countries have adopted different approaches to the implementation of C-DELTA. More in-depth and reflective feedback has been obtained as a result of the TEL partners workshop held in Edinburgh prior to PCF9 and the subsequent papers that have been presented about C-DELTA in Sri Lanka, Bangladesh, Uganda and New Zealand.

In Sri Lanka, the Faculty of Education at the Open University of Sri Lanka (OUSL) implemented an action research project with the aim of promoting the adoption of C-DELTA among secondary school teachers and students in Sri Lanka (Karunanayaka, Weerakoon, Nawaratne, Karunanayake & Careemdeen, 2019). A group of 41 participant teachers representing schools from the nine Provinces of Sri Lanka coordinated the implementation of C-DELTA in their schools. OUSL then worked with those teachers using an action research approach. They provided support and guidance to those who adopted the C-DELTA modules, including assistance with the design and development of learning activities to improve digital literacy among students. One of the outcomes was a blog where participants could share their experiences and capture their reflections and learnings (https://cdeltaousl.wordpress.com).

In Bangladesh, the Dhaka Ahsania Mission (DAM) elected 32 teachers from five districts to participate in C-DELTA workshops. Nineteen teachers completed the programme and went on to integrate C-DELTA into their classrooms and influenced another eight of their colleagues to participate in the programme. Overall, 302 students joined C-DELTA from Bangladesh. The Centre for International Education and Development (CINED) (a sub-section of the DAM) maintained regular contact with teachers beyond the workshop, offering their ongoing support and encouragement (Khan, 2019).

In Uganda, the College of Education and External Studies (CEES) at Makerere undertook C-DELTA workshops with 60 university teachers. The training was held towards the end of the academic year (Kabugo, personal communication, 6 September 2019), so there was little opportunity for the teachers to implement what they had learned in a real-life context. However, in an analysis of their experiences (Kabugo & Kakeeto, 2019), the teachers noted that C-DELTA helped them develop both capabilities in DEL and agency for their own learning.

In Mauritius, one of the institutions that implemented C-DELTA was the Mauritius Institute of Training and Development (MITD), and regular support and assistance were given to the teachers participating in the implementation process (Kuppan, 2019). Trainers were able to share their experiences and knowledge on a shared WhatsApp platform and also meet regularly to discuss issues related to the implementation of the C-DELTA course. One result of the programme was the installation of high-speed Internet access in centres, as initially unreliable Internet access had proved to be a barrier to the programme's successful implementation. MITD has also integrated C-DELTA into its IT programmes following a curriculum review.

Institutional adoption of C-DELTA is occurring in two countries: In Kenya, Kaimosi Friends University College (KAFUCO) and Jaramogi Oginga Odinga University of Science and Technology (JOOUST) will both adopt it as a non-credit course. In India, Odisha State Open University (OSOU) is also adopting C-DELTA as a non-credit course and, in addition, completion of the programme will be noted on students' academic transcripts.

C-DELTA is an openly licensed CC BY-SA resource. As mentioned earlier, it has been adapted by USIM in Malaysia in their Digital Education Leadership Action Training in Malaysia programme. Another two examples of adaption are found in New Zealand, where Brown and Lim (2019) have integrated particular activities from the C-DELTA modules into six weeks of pre-service teacher courses, and in St Lucia, where Fongkong-Munga and Royston (2019) have included C-DELTA content in their Master of Education course.

Some components and activities from C-DELTA have been included in an open textbook, *Digital Citizenship Toolkit*,[20] published by Ryerson University Pressbooks, and C-DELTA is also a resource in the Unbundled University FutureLearn MOOC.[21]

During the TEL partners meeting mentioned earlier, a C-DELTA focus group was constituted. Participants described seven countries' different approaches to C-DELTA implementation. Some of the new issues noted included how to

20 https://pressbooks.library.ryerson.ca/digcit/front-matter/introduction

21 https://www.futurelearn.com/courses/the-unbundled-university

recruit participants into the programme. Motivation was noted as an important factor. The C-DELTA facilitators felt their workshops were more successful when people volunteered to attend rather than being required to. In cases where people were nominated to attend, they were not necessarily interested in implementing the programme afterwards. Selection criteria were also important, as sometimes people were keen to participate but lacked the necessary infrastructure to implement C-DELTA in their respective schools. Regulations at certain institutions were also sometimes an impediment. Facilitators had ideas about integrating C-DELTA into existing programmes or institutions, and sometimes this required additional permissions from senior management, which took time. One example was cited where COL and an institutional head signed an agreement to overcome institutional barriers. This provided one specific strategy option for expediting integration. Many facilitators mentioned future opportunities for C-DELTA expansion.

In some countries, although training had occurred, teachers and champions were yet to complete C-DELTA themselves and implement it in their schools or courses. For example, Kenya's 30 champion teachers were aiming to complete C-DELTA themselves by the end of September and to be ready to begin the rollout to learners in their schools as soon as they finished. Mauritius was anticipating that by the end of September, primary school teachers who had been trained would have completed C-DELTA and be ready for its implementation in schools. In Uganda, lecturers were expected to be able to start integrating C-DELTA into their courses in September, the start of their academic year. Additional sessions for training teachers are planned in Bangladesh, where a second C-DELTA teacher training session is scheduled for January 2020. A larger-scale rollout had just started in India, where 20,000 students had been informed of C-DELTA availability and institutional endorsement by SMS, and Sri Lanka, which was planning to introduce C-DELTA training as a voluntary non-credit course for all at OUSL.

The focus group also noted some additional strategies to increase adoption of C-DELTA:

- Align the programme with teacher professional development points
- Offer a certificate for voluntary participation that could be added to a university transcript
- Offer it as partial credit towards a university programme
- Increase its visibility and status through more public ceremonies to award certificates

Platform Data Analysis

Between 7 April 2018 and 20 June 2019, a total of 3,155 people registered on the C-DELTA platform, and 2,273 of them logged into the platform after registering. They were almost equal in terms of sex (slightly more men than women), but they were more diverse in age, with 57% being under 20 years old.

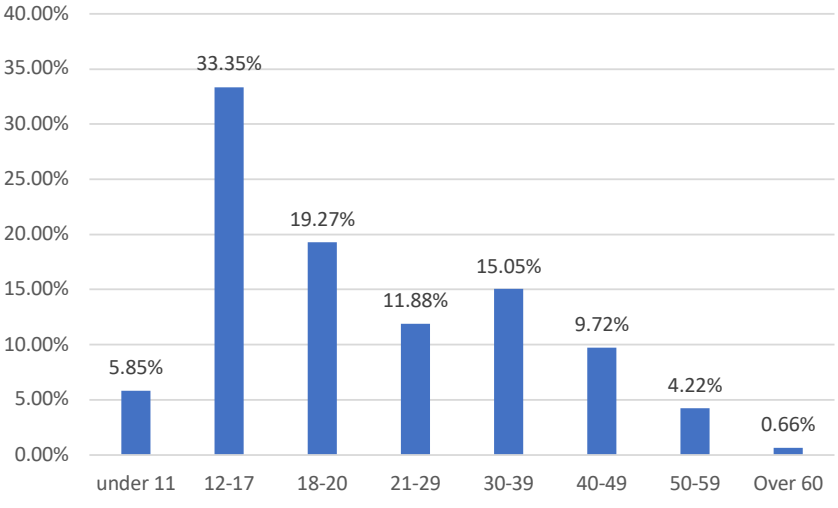

Figure 4: Age range of participants who logged into the C-DELTA platform

Most of the participants classified themselves as "student" users.

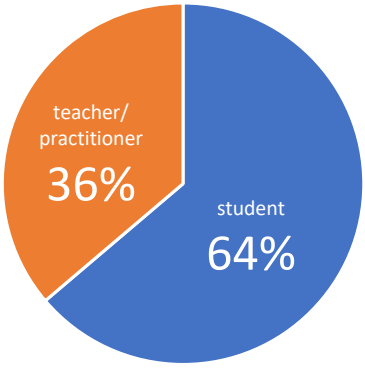

Figure 5: Type of participants who logged into the C-DELTA platform

Participants came from 28 countries, but it is clear that the highest number came from countries where C-DELTA training has occurred. This accounted for 97% of the participants (see Table 2).

Table 2: Registered participants by country

COUNTRY	FREQUENCY	%
Sri Lanka	481	15.2%
St Lucia	436	13.8%
South Africa	434	13.8%
Bangladesh	398	12.6%
Mauritius	272	8.6%
Antigua and Barbuda	73	2.3%
India	71	2.3%
Uganda	59	1.9%
Total	**2,224**	**100.00**

In Figure 6, the blue markers indicate the locations of all participants (and thus provide evidence of the expanse of C-DELTA). The red markers indicate the locations where in-country training had occurred. Although there are fewer red markers, their locations had the largest concentration of participants.

Figure 6: Global distribution of participants who logged into C-DELTA

A summary of the pre- and post-test data is presented in Table 3: 84%, 1,877 participants, undertook the pre-test and scored an average of 38 (scores ranging from 12 to 100). A group of 24 participants scored less than 20 on the pre-test, which suggests compliance-driven behaviour, as participants had to undertake the pre-test in order to get access to the module content.

Of those participants who undertook the pre-test, 31% (595 participants) completed the post-test. The average score was 48, an increase of 10 points overall. However, 170 participants achieved a lower score for their post-test than their pre-test. In some cases, the difference was quite significant (-45) and is possibly due to strategic compliance behaviour (Kahan, Soffer & Nachmias, 2017), because 151 of these participants had obtained a certificate based on their pre-test mark. However, if one excludes this group (on the assumption that the participants were simply clicking boxes and not making a genuine, concerted effort to participate), the average increase in pre- and post-test scores is 19 points. We know from MOOC research that online learners are motivated differently and the notion of participation and completion needs to be thought of differently (Ho et al., 2014). Some learners are driven by assessment and certification, others by using the content to develop their knowledge. It appears that we are seeing similar patterns here in the use of the C-DELTA platform.

Table 3: Overview of pre- and post-test data

	PRE-TEST	POST-TEST	DIFFERENCE	DIFFERENCE (EXCLUDING NEGATIVE RESULTS)
n	1877	595		
Average	38	48	+10	+19
Min	12	15	-45	0
Max	100	102	77	77
Std dev	20	30		

Pre- and post-test results were then compared between countries with more than five participants (Table 4).

Table 4: Country comparison for pre- and post-test results

COUNTRY	TOTAL SAMPLE	PRE-TEST AVERAGE	SD	POST-TEST AVERAGE	SD	POST-TEST PARTICIPATION		OVERALL INCREASE IN SCORE
Antigua and Barbuda	56	37.4	19.1	46	26	n=6	11%	5
Bangladesh	355	44.2	25.6	54	33	n=240	68%	22
India	62	46.8	22.1	58	32	n= 29	47%	21
Mauritius	201	39.3	18	47	27	n=22	11%	12
St Lucia	332	38.2	18	62	31	n=43	13%	34
South Africa	380	36.6	16	36	21	n=67	18%	5
Sri Lanka	405	35.1	18	38	22	n=164	40%	6
Uganda	55	38	22	45	21	n=19	35%	2
Total	**1877**	**38**	**20**	**48**		**n=595**	**32%**	**+19**

The ten greatest improvements between pre- and post-test results (53 to 77 points increase) were achieved by male and female students from Bangladesh across four schools. Bangladesh students also hold the top scores overall, as out of the 89 participants who scored above 90 in the post-test, 59 were from Bangladesh.

In order to determine if there is a statistically significant difference between pre- and post-test scores for the entire sample, a simple linear regression model[22] was used to determine if a correlation exists between the variables. ANOVA shows that country has a statistically significant effect on the difference ($F_{2,}$ = 50.97 $p < 0.000$).

22 Assumptions of normality and homoscedasticity of residuals, normality of random effects were checked prior to analysis.

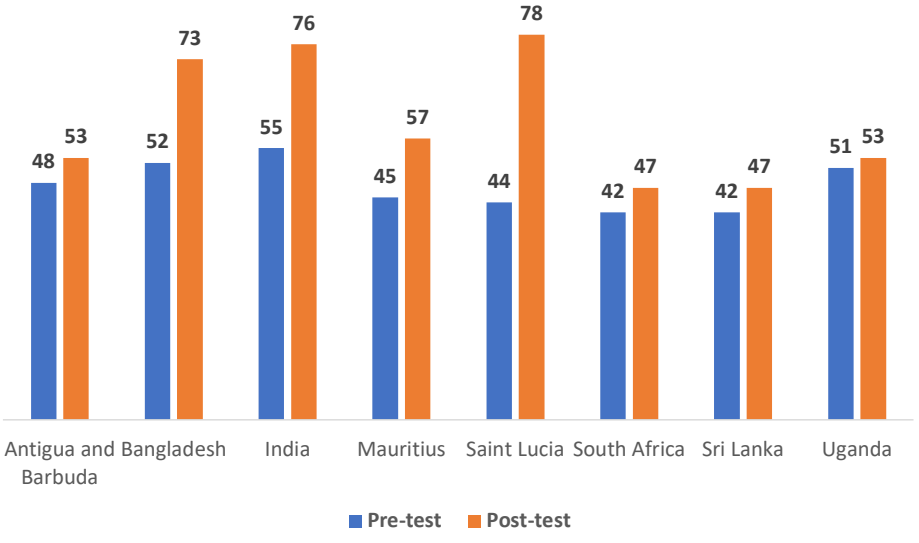

Figure 7: Visual representation of country-wise pre- and post-test means (n>5)

Following the ANOVA confirmation of significant difference, a Tukey's Honest Significant Difference Test was undertaken to find out which specific countries' means (compared with each other) were different.

The results are plotted in Figure 8. The countries that share letters had similar results.

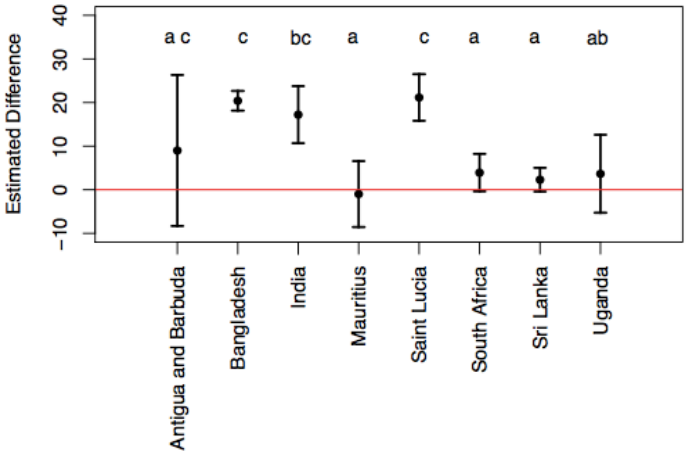

Figure 8: Tukey's Honest Significant Difference

The statistical difference neither provides evidence of why these differences occur nor explains what they mean. However, it does indicate that there is a meaningful difference. While patterns are evident, it is hard to interpret why they are different. However, the differentiation between countries indicates the pre- and post-test scores are differentiating, which warrants further statistical exploration.

Survey Data

Participants' background

On 20 June 2019, all participants who had completed the pre- and post-tests on the C-DELTA platform were sent a request to participate in an evaluation survey (Appendix 2). The survey was open until 26 July 2019. The response rates are given in Table 5.

Table *5*: Survey response rates

	PRE-TEST	POST-TEST
Total sample	1877	594
Survey completions	70	71
Response rate	3.7%	11%

C-DELTA aims to encourage the participation of people with a wide and diverse range of digital experiences from different countries with different approaches to education.

In order to get a sense of how "new" and different learning with C-DELTA would be for participants, we asked them whether they had used an LMS before: 40% of both pre- and post-test participants had never used an LMS before. A smaller percentage (19% for the pre-test and 11% for the post-test) had used one often.

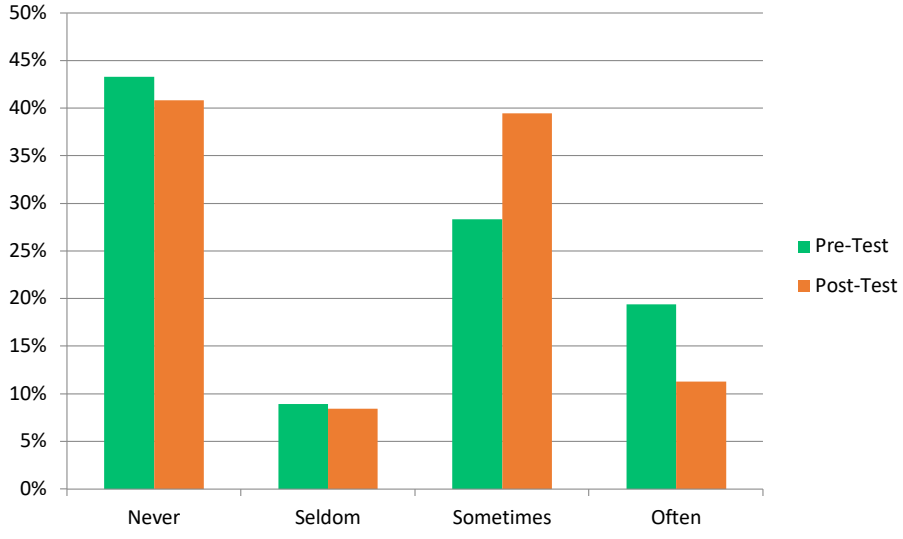

Figure 9: Survey results: Previous experience using an LMS

Over 50% of participants indicated that the device they most often used was a smart phone, with the next most frequently used technology being a computer. Few participants used tablets, and some indicated they most often used a basic mobile phone.

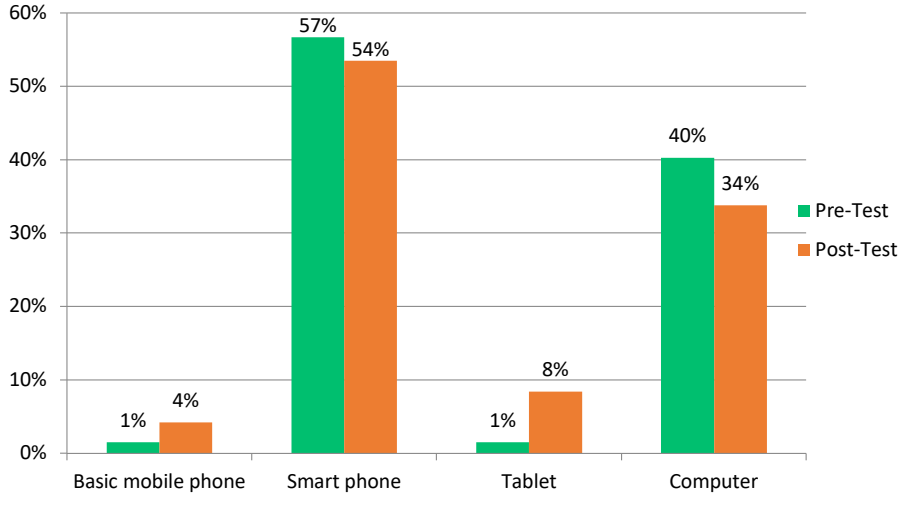

Figure 10: Survey results: Types of technology most often used

Pre- and post-test participants rated their ability with using technology differently. Overall, pre-test participants rated themselves slightly more highly in terms of technical ability than post-test participants.

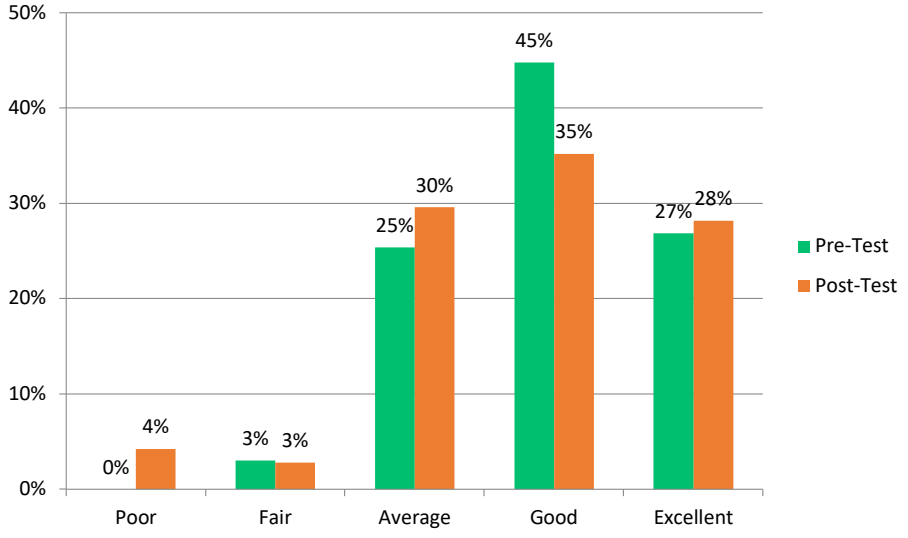

Figure 11: Survey results: Personal perceptions of technology ability

When it came to ability to use technology for educational purposes, post-test participants rated their ability more highly. This was interesting, as the question was framed generally and did not ask explicitly whether they felt their ability to use technology for educational purposes had increased after undertaking C-DELTA. However, post-test participants clearly completed more of the modules and, as the survey was conducted after they had engaged in C-DELTA, this could have been a factor in their more positive responses.

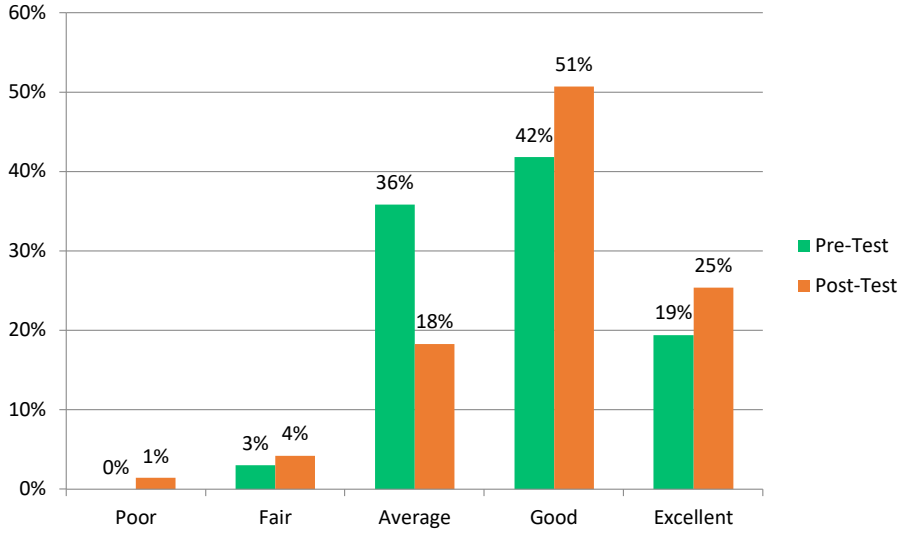

Figure 12: Survey results: Personal perceptions of educational technology ability

Pre- and post-test respondents indicated different types of engagement with C-DELTA. The majority of pre-test respondents (58%) had either not completed or only browsed through modules. Of these, 52% indicated whether they were a learner or a teacher. From this, it may be noted that half (12) of the learners from the pre-test group indicated they had undertaken Module 1, and more than two thirds (10) of the teachers undertook Module 1, with six completing Module 3, and one all seven modules.

This demonstrates the success of the learning design approach of C-DELTA, as the varied pathways and options enabled participants to choose the specific aspects of content that were most relevant to them. If participants felt they had solid knowledge of a content area, they did not need to complete the module. Those who did complete the modules focused predominantly on the first three modules.

Table 6: Self-reported completion of C-DELTA modules

WHICH OF THE C-DELTA MODULES HAVE YOU COMPLETED?	PRE-TEST GROUP	LEARNER	TEACHER	POST-TEST GROUP	LEARNER	TEACHER
Not completed any modules	21%	4	1	4%	1	0
Browsed module content	37%	8	1	18%	5	4
Completed Module 1	45%	12	10	68%	18	12
Completed Module 2	24%	5	8	62%	19	12
Completed Module 3	19%	4	6	65%	19	11
Completed Module 4	7%	1	2	34%	19	11
Completed Module 5	3%	0	1	31%	2	11
Completed Module 6	1%	0	1	28%	2	11
Completed Module 7	1%	0	1	35%	3	12
	67	**21**	**14**	**71**	**27**	**16**

The way post-test respondents indicated they engaged with C-DELTA was different. The majority of post-test participants indicated they had completed Module 1 (68%) and 35% completed Module 7. Interestingly, it appears that some skipped Modules 5 and 6. More learners completed Modules 1 – 3 (18 out of 27), as expected, and 11 teachers (68%) continued and completed all seven modules.

Motivations for using C-DELTA

In the survey, respondents were asked why they had decided to register for C-DELTA. The qualitative data was analysed cumulatively, as fewer respondents (113 of the 142) answered the open-ended questions. The responses were coded according to various categories that emerged from the data and are depicted in Table 7.

Table 7: Thematic analysis of motivations for participation

CODE	EXAMPLE OF RESPONSE
Learning	• *I acquire some knowledge for the future and it also helps me in my studies.* • *I want to know more about technology and also to change the old system of teaching and learning, to make teaching and learning exciting, easy, interesting and to save time too.*
Knowledge/ experience	• *To increase knowledge and experience that I may use for personal purposes and in my classrooms.* • *It's a great way to increase my chances of being a great IT specialist and also a great platform to learn new skills, challenge my knowledge about ICT and be exposed to new information.*
Competence/ skill	• *I want to improve my ability in the field of information and communication technology.*
Fun/interest	• *To know more about digital technology, to make teaching and learning more interesting, exciting and easy, and also to teach other colleagues to prepare for the fourth industrial revolution.*
Self-/ professional development	• *I decided to register for C-DELTA because I wanted to learn from it. I always find any learning site [interesting]. When I heard the Commonwealth gave a chance for us to learn, I registered on C-DELTA. Now I am willing to learn more from here. Though our family is very poor, I want to go outside of my country to learn. Thanks to the Commonwealth.*
Requirement	• *It is part of our organisation project.* • *Was referred to me by a teacher.*
Recommended	• *My boss recommended it.*
Help others	• *It is best for the digital person who has acted in online activity and works with students and teaching profession.*
Relevant	• *I like to use technology in my classroom, so I am always seeking new things in this area. Moreover it is an international platform where I can learn about other people's view.*
Role	• *It was interesting and looked like it would help aid my teaching practices.*
Certificate	• *To face new challenge as proposed by our teacher Mrs G and hence obtain additional knowledge and obtain certificates to face the new challenges of tomorrow.*

The predominant reasons for registering (organised in order of descending frequency) were learning about DEL, the knowledge and/or experience gained through doing an online course and to acquire particular competencies and skills. Only three respondents indicated they undertook the programme to obtain the certificate.

Table 8: Frequency of motivational codes

CODE	PRE-TEST RESPONDENTS 52/70	POST-TEST RESPONDENTS 61/71	TOTAL
Learning	13	13	26
Knowledge/experience	9	16	25
Competence/skill	9	16	25
Fun/interest	9	6	15
Self-/professional development	11	3	14
Requirement	10	2	12
Recommended	2	7	9
Help others	2	5	7
Relevant	5	1	6
Role	3	2	5
Certificate	2	1	3

Respondents' experiences of the C-DELTA course

Post-test participants were more satisfied overall with C-DELTA than pre-test participants. This is valuable feedback, as it is clear that these respondents were more active participants.

Questions about respondents' experiences using C-DELTA were measured on a 5-point Likert scale with 3 being neutral and 5 being strongly agree. All the responses from both pre- and post-test participants were in the positive range, with the weighted average being above 4, which would indicate agreement.

In terms of the online platform, post-test respondents' weighted average was 4.2 whereas pre-test respondents' was 3.9. Pre-test respondents were most positive that the online platform was useful to their learning and least positive that it was easy to learn how to use it. Post-test respondents were most positive that the online platform increased their digital education skills and least positive in terms of their confidence about undertaking the pre-test (Table 9).

Table 9: C-DELTA participants' experience of the platform, organised by pre- and post-test completion

	TEST	N	MEAN	STD DEVIATION	STD ERROR MEAN
1 Easy to use	Pre	58	4.03	.837	.110
	Post	62	4.16	1.011	.128
2 User-friendly	Pre	58	3.91	.779	.102
	Post	62	4.19	.743	.094
3 Easy to learn	Pre	58	3.74	.909	.119
	Post	62	4.13	.877	.111
4 Overall satisfied	Pre	58	3.95	.887	.116
	Post	62	4.24	.619	.079
5 Confident	Pre	58	3.76	.802	.105
	Post	62	4.05	.895	.114
6 Available	Pre	58	4.00	.991	.130
	Post	62	4.26	.676	.086
7 Useful to learning	Pre	58	4.12	.818	.107
	Post	62	4.35	.770	.098
8 More quickly	Pre	57	3.96	.823	.109
	Post	62	4.29	.687	.087
9 More easily	Pre	58	3.91	.844	.111
	Post	62	4.08	.855	.109
10 Increases my skills	Pre	58	4.07	.896	.118
	Post	62	4.56	.500	.063

Note: Column 1 above corresponds to questions 7-16 in Appendix 2.

Both groups were very positive about the course content being up to date, current and relevant to their learning, while pre-test respondents were least positive that it was easy to understand and post-test respondents were least positive about the variety of forms in which the course content was presented. (Table 10).

Table 10: C-DELTA course content, organised by pre- and post-test participants

	TEST	N	MEAN	STD DEVIATION	STD ERROR MEAN
11 Current	Pre	58	4.00	.772	.101
	Post	62	4.29	.710	.090
12 Relevant	Pre	58	4.00	.795	.104
	Post	62	4.23	.734	.093
13 Easy to understand	Pre	57	3.70	.906	.120
	Post	62	4.06	.939	.119
14 Variety of forms	Pre	58	3.69	.959	.126
	Post	62	3.89	.960	.122
15 What I need	Pre	58	3.78	.859	.113
	Post	62	3.90	.762	.097
16 Increased knowledge	Pre	58	3.93	.915	.120
	Post	62	4.40	.613	.078

Note: Column 1 above corresponds to questions 17-22 in Appendix 2.

Table 11 shows that respondents were very positive about the overall experience, with the majority agreeing or strongly agreeing that C-DELTA had had a positive impact on their learning and that they would encourage others to use it.

Table 11: Overall experience with C-DELTA, organised by pre- and post-test participants

	TYPE	N	MEAN	STD DEVIATION	STD RRROR MEAN
17 Positive impact	Pre	58	4.09	.732	.096
	Post	62	4.40	.527	.067
18 Encourage others	Pre	58	3.95	1.033	.136
	Post	62	4.45	.670	.085
19 Continue	Pre	58	3.93	1.024	.134
	Post	62	4.27	.833	.106
20 Identify changes	Pre	58	4.00	.898	.118
	Post	62	4.39	.710	.090

Note: Column 1 above corresponds to questions 23-26 in Appendix 2.

An independent samples t-Test was also conducted on the user satisfaction questions to determine if there was any difference between pre- and post-test samples. It showed no significant difference across any of the items and therefore the null hypothesis that the sample means were equal to the population mean (i.e. overall mean for all groups) was accepted.

The variables from the survey were examined using factor analysis. In this case there does not appear to be any relationship between the variables that suggests groupings and the model does not predict a causal relationship as evidenced in other research (DeLone & McLean, 2003; Mtebe & Raphael, 2018). An eigenvalue plot suggests only one variable as being a strong influencer (Figure 13). There is therefore no clear evidence the data fits the model used or that there are any neatly aligned variables that we can associate with the component identified by the eigenvalues.

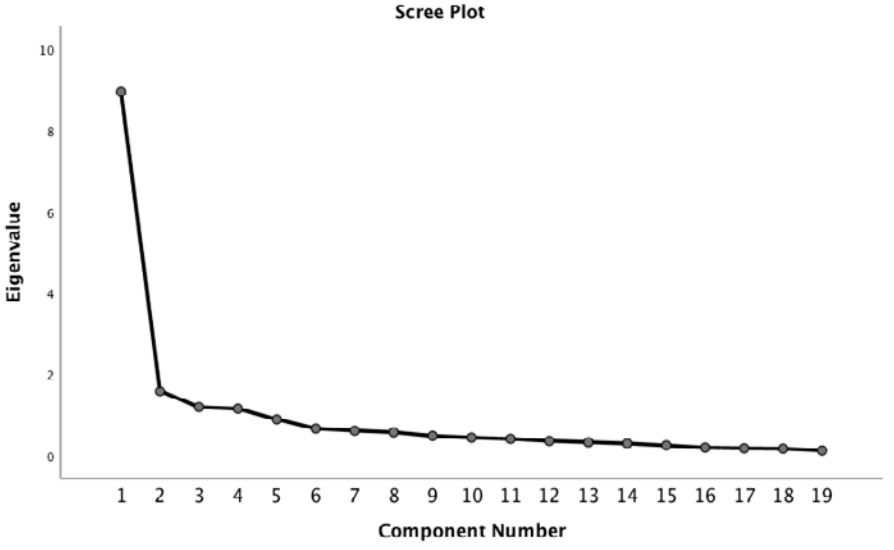

Figure 13: Eigenvalue plot of survey variables

Overall, respondents were very positive about all aspects of C-DELTA explored through the survey. There was no significant difference between pre- and post-test respondents and the survey did not confirm previous research models of causal relationship.

In an endeavour to explore C-DELTA's value further, responses to open-ended questions were analysed. In the open-ended questions of the survey, respondents were asked what they felt the most valuable and useful aspect of C-DELTA was for them. Half (76) answered this question: 30 offered rather general responses, saying they learned new things and all of C-DELTA was valuable or useful. Where respondents highlighted specific aspects, the concepts of digital identity (13 mentions) and information literacy (11 mentions) were foregrounded. Other areas singled out were digital footprint and copyright/Creative Commons (six mentions). The platform and process of learning (seven mentions) and certificate and quiz process (four mentions) were also mentioned specifically, which demonstrates that C-DELTA is not just about the content but also about the process of learning online.

When asked what they had learned that was new to them, there was quite a wide range of answers, including copyright/OER, privacy, safety, footprint, platform, responsibility, information literacy, identity, digital education innovations, digital leadership and terminology.

Survey respondents also had the opportunity to provide feedback on the programme. There were fewer responses to this question, with only 45 people responding; 26 of them offered positive feedback and 19 provided suggestions pertinent to the themes in Table 12.

Table 12: Suggestions from the survey participants

THEME	MENTIONS	QUOTE
Access	5	• *If we can get the laptop we can help each other.* • *Provide support to the communities which are the remotest and hardest to reach without having any electricity or any access to internet.*
Content	6	• *The modules are very different and therefore are aimed at different audiences; ie module 1 is very useful for students, but some of the later ones are not (as they are for school leaders). The earlier modules could be trimmed down and made more accessible to school students. But most importantly, the pre-test needs to be broken down into pre-tests for each module. It makes it quite unusable with students, and even teachers who are very busy and don't have time to do the whole course all at once.* • *I think the first 3 modules which are available for students need to add more video and interactive tools. Because only a huge amount of information sometimes monotonous.*
Communication	3	*Routine updates through emails about C-Delta conferences, workshops where exchange of ideas will take place.*
Language	2	*It must be the mother language.*
Quiz (pre-/post-test)	3	• *The structure is very excluding. It is really not helpful to include all the modules in one pre-test. The modules are very different, each applicable to different audiences, ages etc. So it is a major roadblock for me in terms of asking colleagues or students to do the modules. Also, in busy lives and packed curricula, no one has time to do all at once. Rather have a pre-test for each module, and possibly a mini overview pre-test which could recommend which modules to do (include questions to determine needs eg, I am a secondary school teacher, etc.). Also, to be honest, the course worked for me because of the group work.* • *Please change the questions model and content that is used in tests (written in Capitals).*

How is C-DELTA changing practice?

The qualitative data was analysed cumulatively, as fewer respondents (52) answered the question about whether they had any ideas or plans about how they would use technology-enhanced teaching/learning in the future. Six were not specific about their plans and simply indicated in the affirmative. However, of the 46 who were specific, some general themes emerged. Some respondents had more than one idea about the way they would use TEL in the future and those were coded into more than one category. Professional development was mentioned by 10 people (see Table 13). As one respondent noted, "Most of our teachers are afraid of using technology. Based on the learning in C-DELTA most of our veteran teachers can learn from the C-DELTA programme so that they can also be up to date." Increasing use of TEL also featured strongly. While some respondents said they would change the way they taught, others said they would change the way students learned: "We now teach 21st-century learners and as a result I need to step up as a teacher and use the technology available in the classroom. Students are now greatly acquainted with smartphones, tablets, computers and surfing the Internet. Therefore, I will ensure that I make use of these resources to make learning exciting, engaging and relevant."

Table 13: C-DELTA changing practice

THEME	NUMBER OF MENTIONS
Working with colleagues to change practice through professional development or establishing communities of practice	10
Online/blended/technology-enhanced teaching	9
Use virtual or artificial reality or video in some way	7
Online/blended/technology-enhanced learning	6
Personal development	6
Mobile learning/increasing access to learning	6
Learner motivation/engagement with ICTs	5
Set up a learning management system or digital classroom in their school	2
Content not platform	1

Implementation case studies

Bangladesh and Sri Lanka C-DELTA facilitators have both documented "participant stories" in relation to C-DELTA. In Bangladesh, two female students' experiences were documented.[23] One student described how she had become more aware of how she is represented online and how C-DELTA had increased her confidence to participate in contributing content online and that she wanted to share this experience with her classmates.[24] The other described how she had increased her knowledge of digital security and open education resources (among other topics) and developed valuable skills while earning her certificate.

In Sri Lanka, teacher stories are documented through a blog set up to document practitioner experiences in implementing the C-DELTA programme in schools.[25] It provides a stark reminder of some of the extreme access and connectivity issues teachers and students face. For example, one teacher describes endeavouring to set up C-DELTA without computers and Internet facilities, both of which are fundamental to the programme's success, in their school.[26] Despite language and motivational challenges, the commitment of the principal and teachers resulted in a small group of students having their first ever online examination experience. Their positive experience increased the students' desire to participate online, and through their self-directed learning they proceeded to complete the first three C-DELTA modules and earn a certificate.

Even in a school that was regarded as having good infrastructure teachers faced challenges, but they reported that through C-DELTA, students had begun to "look at the internet as an effective learning resource without wasting their time on social media."[27] And that "the students'[,] teachers' and parents' attitudes towards internet were changed in a better way."

23 https://drive.google.com/file/d/1ml_TOv22UzRP1lQFcbnCkyj7hnHgOzMX/view

24 http://oasis.col.org/bitstream/handle/11599/3305/PCF9_Papers_paper_178.pdf?sequence=1&isAllowed=y

25 https://cdeltaousl.wordpress.com/stories/

26 https://cdeltaousl.wordpress.com/southern-2/

27 https://cdeltaousl.wordpress.com/north-central-5/

DISCUSSION AND CONCLUSION

While there are plenty of formal (usually postgraduate) courses on digital education and digital literacy, C-DELTA is unique in its open content (CC BY-SA licensing), range of levels of complexity, and accessibility and use. Uptake has to date been concentrated in countries where focused training of teachers has occurred through facilitated workshops, but it has been undertaken by people across the world. Additionally, course materials have already been adapted and reused to meet the needs of specific contexts.

When it was initially established, the programme set out to encourage the participation of people with a wide and diverse range of digital experiences from different countries with different approaches to education. This aim was clearly achieved, as the evaluation showed that participants came from 28 countries and ranged in age from 11 to 72 (although the majority were aged 12 to 20). More than half the survey respondents reported never or seldom having used an LMS before, which demonstrated the diversity of experience in structured online learning, but the majority rated their online learning skills as good–excellent after their C-DELTA participation. While this latter point cannot be definitively linked to their C-DELTA experience, the survey results indicate that it had made a positive impact on students' learning, and qualitative data specifically supported the value of C-DELTA in developing digital literacy and digital education leadership.

The platform data show that participants use C-DELTA in different ways, which demonstrates how the programme can be adapted for different educational approaches and learning needs. This is not unlike participant behaviour in MOOCs, where researchers have described different approaches to engaging with content (Kahan, Soffer & Nachmias, 2017). C-DELTA had participants who registered but never actually accessed the courseware — a category noted by Ho et al. (2014) as "only registered" and which accounted for 34% of the registrations. The next category of participants could be referred to as "samplers" (Kizilcec & Schneider, 2015) or "tasters" (Kahan et al., 2017). These participants are not interested in the outcome of the assessment or systematically working through the curriculum materials. They appeared to be intrinsically motivated, as they undertook the pre-test as a means of accessing the course content and reported browsing content but did not complete modules. The next group undertook the pre-test and engaged particularly with

Part 1 of the C-DELTA curriculum. These participants definitely engaged with the content and had most in common with Ho's category of "explorers," who are described as non-certified registrants who accessed more than half of the available content (Ho et al., 2014). Kahan et al. (2017) delved deeper into the difference of the group they called "engagers," noting differences in online and offline behaviour, and those who participated in activities (such as quizzes) and discussions. The last group are "certified participants," those who completed the post-test and earned a certificate.

However, even though participants engaged with C-DELTA in a range of ways, the evaluation has shown that the pre- and post-test quizzes can be used to differentiate participants' knowledge of digital education leadership across different country contexts. The increase in knowledge of digital literacy among students and in digital education leadership among teachers between the pre- and post-tests is statistically significant. It may therefore be prudent to explore this further in order to create a measure to index countries' different levels of digital education knowledge.

Those who completed the programme indicated a high degree of learner satisfaction. Overall, the feedback from participants was very positive, and the success stories captured in two countries' implementations demonstrate the very real influence C-DELTA has had on students, particularly in increasing their confidence in the use of ICTs for learning. Teachers are making an impact in their schools and among their learners, despite limited resources and opportunity. In addition, C-DELTA's relevance is evidenced in its use in and adaption for other programmes and publications.

There are statistically significant differences between pre- and post-test scores between countries. This suggests that these measures could be used as indicators of digital literacy and digital education leadership skills. It is suggested that statistical testing of a larger, more evenly distributed sample could provide more in-depth understanding of these differences and assist in establishing baseline measures across countries.

Some suggestions for improvements have been offered, but addressing them will be problematic. For example, quiz questions (pre- and post-test) must be challenging. However, specific feedback from both participants and implementation reports indicates that the language used is complex and participants' mother tongues are often not used, both of which points present a variety of challenges. The text-heavy nature of the content and lack of interactivity and multiple modalities have also been commented on. The reality is that it is hard to design a programme that meets everyone's needs in terms of diversity of conditions of access, skills and experiences. The participant survey contained clear indications that lack of access was an issue for some people; this is a crucial point to keep in mind for future developments.

While outside the scope of C-DELTA, it was heartening that some of the feedback received as part of this evaluation showed that participants and facilitators were keen to see an expansion of the programme. Some suggestions included:

- Make the pre-test optional so participants (e.g. those who are not motivated by assessment or certification) can easily browse material simply for interest.
- Run C-DELTA as a MOOC so participants can engage with others during the learning process.

Unfortunately, these suggestions do not align with the principles and purpose of C-DELTA as it is currently conceptualised.

The implementation of the C-DELTA programme is still in its infancy (less than 18 months) and many of the country-wide initiatives (see Table 1) offer promise for significant expansion as the trainers roll out the programme with students in their schools and colleges over the next 12 months.

RECOMMENDATIONS

Recommendations have been grouped according to a number of themes.

(i) **Access to C-DELTA content:** Given the range of motivations participants had with regards to the online platform and the resource-constrained contexts in which some of the teachers are endeavouring to develop digital literacy, it may be useful to remind teachers and participants that there is a text-based print version of modules that could be used as a backup in poor access conditions (COL could consider documenting downloads of these as this is also an indicator of use).

(ii) **Increasing effectiveness of teacher training:** In view of what worked best in the training of teachers, C-DELTA facilitators and trainers felt that success was more likely if:

- During the selection process for teacher workshops, ICT champions were prioritised as participants.
- Teacher trainers had adequate infrastructure to implement C-DELTA at their schools.
- More support was allocated for teachers implementing C-DELTA.

(iii) **Expansion of C-DELTA:** The programme is designed for self-directed learning and to be facilitated in group (class/course) settings. However, many participants expressed interest in expanding their community of practice and learning with others. Recommendations for expansion include:

- Continuing and increasing the training programmes, as the biggest impact comes from countries where training programmes have been conducted.

(iv) **Increasing visibility of outcomes and building communities:** One of the biggest successes of C-DELTA to date can be found at the Open University of Sri Lanka, where a project has been established to train and support teachers in the implementation process. A blog was created to document participants' journeys and highlight successes and challenges.

- Developing a C-DELTA shared space for the sharing of outcomes and resources would assist in forming a Community of Practice

(CoP) and provide a means for teachers to share contextually relevant examples of how they are implementing the programme.

- There is evidence that C-DELTA OER content is being reused and adapted but, as is the case with many OERs, there is no way to capture this information and reshare it with the C-DELTA community.

(v) **Curriculum enhancements:** There was no indication that the curriculum content needed adjusting at this stage, although in a dynamic field like digital education this will be inevitable in the future. However, given the diversity of the participants, certain changes could increase engagement and participation through to the certificate stage:

- Revisit the content of the assessment specifically to simplify the language (given that many participants do not speak English as their first or principle language). This could increase motivation to complete the pre- and post-tests.
- Consider providing an overview of module-based scores (questions are already linked) to encourage participants' engagement in specific modules.
- Encourage development of multimedia and contextually specific resources by C-DELTA trainers/participants.
- Consider ways of linking multimedia and contextually specific resources developed and created by C-DELTA trainers/participants with module content.
- Consider translating core aspects of C-DELTA content into local languages.

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APPENDICES

Appendix 1: Data Obtained from Country Implementations of C-DELTA

COUNTRY	NEWS ARTICLES AND PUBLICATIONS	REPORT	ARTICLE	FOCUS GROUP
St Lucia: Pilot May/June 2018	http://www.commonwealthcbc.com/news/digital-education-leadership-training-in-antigua-and-barbuda https://www.col.org/news/news/digital-education-leadership-training-saint-lucia	Yes	Yes	
Sri Lanka: July 2018	http://www.ou.ac.lk/home/index.php/news-events/1056-implementing-c-delta-programme-at-the-ousl https://www.col.org/news/news/digital-education-leadership-training-sri-lanka	Yes	Yes	Yes
ToT, Delhi: Dec. 2018	https://indianexpress.com/article/education/new-commonwealth-initiative-to-boost-digital-education-skills-5173154/	Yes	N/A	N/A
South Africa: Jan. 2019	https://www.schoolnet.org.za/news/professional-development-in-digital-education-leadership-oppurtunity/ https://www.col.org/news/news/digital-education-leadership-training-teachers-south-africa	Yes		Yes

Bangladesh: Jan. 2019	http://www.ahsaniamission.org.bd/new/commonwealth-digital-education-leadership-training-in-action-c-delta-held-in-dhaka/ https://www.col.org/news/news/training-teachers-digital-education-leadership-bangladesh	Yes	Yes
Uganda: March 2019	https://www.col.org/news/news/cultivating-digital-education-skills-uganda	Yes	Yes
Mauritius: April 2019	https://www.col.org/news/news/digital-education-skills-training-mauritius	Yes	Yes
Kenya, June 2019	https://www.col.org/news/news/kaimosi-friends-university-college-kenya-adopts-c-delta https://www.col.org/news/news/digital-education-leadership-training-kenya		Yes
India, June 2019	https://www.col.org/news/news/indian-teachers-trained-mentoring-students-digital-learning		Yes

Appendix 2: Participant Survey of C-DELTA

Survey of Participants

About your experience before you begun using C-DELTA.

Q#	QUESTION	
1	Had you used a Learning management system (a platform like the one C-DELTA uses) before?	5-point Likert scale ranging from 1 (never) to 5 (often)
2	What types of technology do you use most often?	Basic mobile phone, smart phone, tablet, computer
3	How would you rate your ability to use technology?	5-point Likert scale ranging from 1 (poor) to 5 (excellent)
4	How would you rate your ability to use technology for educational purposes?	5-point Likert scale ranging from 1 (poor) to 5 (excellent)
5	Which of the C-DELTA modules have you completed?	Multiple Check Boxes: Not completed any modules Browsed through the module content Completed Module 1 Completed Module 2 Completed Module 3 Completed Module 4 Completed Module 5 Completed Module 6 Completed Module 7
6	Why did you decide to register for C-DELTA?	Open ended

About your experience using the C-DELTA online platform

Q#	QUESTION	
7	The C-DELTA online platform is easy to use	5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree)
8	The C-DELTA online platform is user friendly	
9	The C-DELTA online platform is easy to learn	
10	Overall, I am satisfied with the C-DELTA online platform	
11	I felt confident undertaking the C-DELTA quizzes	
12	The C-DELTA online platform is available most of the time	
13	The C-DELTA online platform is useful to my learning	
14	The C-DELTA online platform enables me to accomplish the learning activities more quickly	
15	The C-DELTA online platform enables me to accomplish the learning activities easily	
16	Using C-DELTA online platform increases my skills in Digital Education	

About your experience of the C-DELTA course content

Q#	QUESTION	
17	The C-DELTA course content is up-to-date and current	5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree)
18	The C-DELTA course content is relevant to my learning	
19	The C-DELTA course content is easy to understand	
20	The C-DELTA course content is in a variety of forms – audio, video, texts, etc.	
21	The C-DELTA course content is exactly what I need	
22	The C-DELTA course content has increased my knowledge about Digital Education Leadership	

About your experience of C-DELTA overall

Q#	QUESTION	
23	C-DELTA has a positive impact on my learning	5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree)
24	I am willing to encourage other people to use C-DELTA	
25	I predict I will continue to use C-DELTA online platform	
26	C-DELTA has helped me to identify the changes I can make in digital education	

Please tell us more about your experience with C-DELTA

Q#	QUESTION	
27	What were the most valuable/useful aspect of C-DELTA for you?	Open ended paragraph
28	What was something new which you learnt?	
29	What was something which surprised you about digital education or the digital world?	
30	Do you have any ideas or plans about how you will use technology enhanced teaching/ learning in the future? If so, can you tell us more about them?	
31	Any other comments or aspects of C-DELTA you would like to provide feedback on?	

By submitting this survey you agree to your responses being used in the evaluation project

SUBMIT

Thank you

Thank you for your participation in the C-DELTA Evaluation.

Would you like a copy of the results? *[Yes/No]{Insert email address}*

Would you be prepared to be contacted for an online interview to explore your experiences of C-DELTA further? *[Yes/No]{Insert email address}*

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