

Tech or teach or both?

A case study of digitalisation of vocational education and training in Mauritius

Rampersand-Totaram, Sanjana Devi

**KBTC, Mauritius Institute of Training and Development
Polytechnics Mauritius Limited*

Abstract

This paper aims at filling the gap of lack of research on the use of digital tools to teach in the vocational sector. It presents the findings of the application of the Digital Education Leadership Training in Action (C-DELTA) project for the digitalisation of the vocational education and training at the Mauritius Institute of Training and Development (MITD). Implementation of C-DELTA is in line with the Technology Acceptance Model (Davis *et al.*, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT2) (Venkatesh *et al.*, 2012). Action research has been used. The data collected has been analysed using both qualitative and quantitative techniques. A significant improvement in performance has been noted among those who adopted the digital shift. The learners were motivated to learn differently. This paper proves that the digital shift is possible in vocational training for the benefit of the students provided that the key ingredients are in place like an effective training of the trainers, a robust online platform, and active participation of the learners.

Introduction

Information and Communication Technology is invading the workplace. For instance, the application of artificial intelligence is forcing a large number of employers to adjust their business models in order to offer better products and services to their customers. Consequently, both the current and future employees need to have a new skill set (Benjamin, Gati, and Braunstein-Bercovitz, 2011; Bokek-Cohen, 2018; Goss and Phillips, 2002; Roman, 2014). However, the volume of research that is dedicated to the application of new technologies to boost creativity and innovation is significantly more than the research on how to empower future employees with digital skills. The situation is even more critical in the field of vocational training (Achtenhagen and Achtenhagen, 2018). This paper aims at filling this gap. It presents the findings of the application of the Digital Education Leadership Training in Action (C-DELTA) project for the digitalisation of vocational education and training at the Mauritius Institute of Training and Development (MITD). This international project, funded by the Commonwealth of Learning, provides the necessary framework to promote digital learning. This project is also being implemented in several countries including Antigua & Barbuda, Bangladesh, India, Kenya, Mauritius, Saint Lucia, South Africa, Sri Lanka and Uganda (Commonwealth of Learning, 2016).

In fact, this study focuses on the implementation of C-DELTA platform in the teaching and learning process as well as evaluates whether the programme is in fact meeting the needs of the trainees who are living in a society dominated by digital technology and helping them to become Digital Leaders. Our learners who are considered as digital natives and called upon to function properly in a society where they will have to use related IT tools be it mobile phones, tablets, iPad with the latest apps, use of 'cloud' to save information, and the use of the Internet which is likely to have a considerable impact on them.

The rapid growth of the global economy and the information-based society has pressurized education systems around the world to use ICT to teach the knowledge and skills they need in the 21st Century (World Bank, 2004). The growth of the ICT sector has challenged teachers to prepare for effective use of the new teaching and learning tools in their teaching profession.

According to UNESCO (2002) and Laferriere, Breuleux and Bracewell (1999), there are significant benefits of using ICT as part of the teaching and learning process as long as teachers recognize the relationship between the use of ICT and the overall curriculum. Haddad and Draxler (2005) point out that different ICTs do make some valuable contributions to various parts of educational development and effective learning through expanding access, promoting efficiency, improving the quality of learning, enhancing quality teaching, and improving management systems.

Education and training involve teaching and development of specific skills and also imparting knowledge, good judgment and wisdom. It is believed that education starts before birth through music listening and reading to the baby by the parents in the hope that this will educate the child. There are two forms of education namely formal type obtained from schools and informal type through family imparting cultures and moral values. In order to achieve and sustain a prosperous economy, Mauritius needs to shift from its traditional sectors like agriculture and integrate a new international economic order focusing mainly on the Information and Communication Technology sector. This can happen by boosting the skills, creativity and competence of its human resources through investment so as to meet the demands of the society. It has been recognized that basic education is the

pillar of social progress and the government has all along attached great importance to it. According to Education Statistic 2019, an amount of 18,176 million rupees representing 12.1 % of the annual budget of the government has been allocated to the educational sector as per the breakdown indicated in Table 1 (Statistics Mauritius, 2020).

Table 1. Expenditure of the budget allocated to Educational & Vocational Sector during financial year 2018/2019

Educational level	% of expenditure
Primary education	24.5
Secondary	50.1
Tertiary	7.7
Technical and Vocational	2.7
Pre-primary education	1.6
Other expenses	13.8

Source: Statistics Mauritius (2021)

Technical and Vocational Education and Training (TVET)

Technical and Vocational Education and Training (TVET) is aimed at developing knowledge, skills and attitude needed for an occupation that suits one’s aptitude and ability. The effect of such vocational education is measured by rate of employment. Vocational education is divided into prevocational education and education that focuses on the ability to develop and sustain an occupation by learning knowledge and skills related to occupation.

TVET has acquired momentum during years. This is because training is contributing and helping in economic development and social growth. In Mauritius, all stakeholders widely recognize the role of TVET to boost development. TVET is viewed as an imperative approach providing the required labour to meet the needs of our industries. Our country depends mainly on its human resource base for the production of riches due to lack of natural resources. Hence, training in the professional segment is one of the fundamental pillars that can boost the competitiveness of our country while helping it to escape from the trap of middle-income countries.

The main challenge of TVET is to contribute to reduce the rising rate of unemployment in developing countries. One of the main reasons for this rise is the mismatch between training and work. Competition is becoming increasingly intense among industries and nations with world liberalisation and the appearance of globalization. A talented and able workforce that can adapt to continuous development and the fast changes in technology is required for businesses to keep progressing. That’s why we need to negotiate the digital shift in TVET carefully.

Mauritius Institute of Training and Development (MITD)

The Mauritius Institute of Training and Development (MITD) is a corporate body, which operates under the aegis of MoEHR and is mandated to promote excellence in technical & vocational education training. MITD is called upon to develop TVET in Mauritius. Its vision is “to be the leader in human capital development in the region and beyond for global employability” and its mission is “to provide and promote innovative and quality learning and certification services for the development of a sustainable human capital” (MITD, 2020). The MITD has several centres around the island and offers training by different modes and different levels either on a full-time basis or on the National Apprenticeship Programme mode. Courses run by MITD are within the National Qualification Framework. The MITD governed by Act 12 of 2009, has taken over the activities of the ex-Industrial and Vocational Training Board (ex-IVTB) and part of the ex-Technical School Management Trust Fund (ex-TSMTF) as from 16 November 2009. MITD mainly offers courses at National Certificate level 3 up to Higher National Diploma. The objectives of MITD are:

- to promote excellence in technical, vocational education and training;
- to promote research and enhance knowledge in technical, vocational education and training;
- to increase access to technical, vocational education and training through the setting up of training centres;
- to promote exchange programmes and courses with other institutions in technical, vocational education and training;
- and to assist in the apprenticeship of persons who are, or will be, employed in future.

Methodology

Action Research has been used (Collier, 1945; French and Bell, 1990; Fisk *et al.*, 2016) with several cycles of planning, action, and observation in the implementation of the C-DELTA project in twenty-two MITD training centres. Both quantitative and qualitative research methods have been used. The digital skills of the students were assessed prior to the implementation of the project in order to develop a baseline as well as to categorise them. Their digital skills were monitored through regular post-test assessments. The difference between the

achievement of students during pre-test and post-test has been analysed. The marks obtained by the students across the trades have been analysed. Their results have also been analysed by their academic profile. This research includes in-depth interviews of the students and the trainers in order to have a better insight into the impact of this digitalisation project on them. The involvement of the students in the online activities has also been captured through observation.

Initially, an awareness session on C-DELTA was conducted with a small group of four trainees (two boys and two girls) enrolled in the National Certificate Level 5. Of these trainees, two took the pre-test. They also completed the three modules and obtained their badges and successfully completed the Post Test as well.

All 90 trainees were taken on board from the three cohorts.

Out of the three trainers only two actively participated to promote the Programme.

Profile of Trainees

- ▶ Age ranging from 16-25 years old
- ▶ They are all familiar with the use of computer
- ▶ They have a satisfactory knowledge of the use of English language

Table 2 shows the number of trainers and trainees who registered and took the Pre-test and Post-test

Table 2. number of trainers and trainees who registered and took the Pre-test and Post-test

Centre	Gender	Registered	Pre-test	Module 1-3	Module 4-7	Post-test	General Remarks
KBTC trainees	M	65	55	60	n/a	60	Certificates at Beginner, Intermediate and Fluency Level obtained.
	F	25	20	24	n/a	24	
KBTC trainers	M	3	3	2	1	1	
	F	2	2	1	1	1	

Figures in the Pre-test, Module 1-3 and Post-test columns indicate the number of trainees who successfully completed the course. They scored at least the 40% of marks required to pass and qualify for a certificate and badges for each module completed.

C-DELTA

Digital Education Skills play a pivotal role in promoting lifelong learning strategies. Through this project that allows the integration of technology in the teaching and learning process, individual educators and learners can create their digital identity online by contributing to the body of knowledge while sharing their practices in the global network aimed at fostering learning.

The objectives of C-DELTA include the development of e-learning materials; assessment of digital competencies; and monitoring the achievement of students. C-DELTA starts with the training of the trainers for digital education leadership. Students have the opportunity to acquire digital skills through the use of online learning materials developed by COL. They can even obtain digital badges and certificates that play an important role in their curriculum vitae.

The C-DELTA platform is embedded with a vast ocean of open educational resources, which can be used freely by anyone in the world. It is currently used in more than 20 countries to promote Digital Education Skills.

Trainers are the most essential elements to ensure the transmission of knowledge, skills and attitudes. Besides having academic qualifications, trainers are required to have proper pedagogical training, which will help them to cater to trainees more efficiently as these learners have learning difficulties. Pedagogy is the art and science of teaching. Pedagogic components form part of vocational learning and put much emphasis on technical, hands-on and technological aspects. Examples of pedagogical training programmes that are dispensed by MITD are the Training of Trainers course (ToT) and Trainer's Certificate in Vocational Training (TCVT). The ToT on C-DELTA programme enabled trainers to help trainees to better understand the platform. Trainers thus are able to set appropriate cognitive objectives and also help to construct psycho-motor skills, apply psychology of learning such as motivation of trainees, reinforcement of learning and application of proper teaching methods for a greater transfer of learning, improve the communication skills both written and oral, develop methods to conduct demonstration, give continuous feedback about the performance of trainees and supervise practical sessions in the workshop.

It is not possible to use the same teaching strategy in all situations. With these trainees, learning outcomes will improve by using a combination of effective teaching strategies thus increasing the confidence of both students and teachers leading to effective learning and teaching in the school. In this case, using digital education via the C-DELTA platform boosts the motivation level of the trainees hence achieving the learning objectives. Using a set of strategies, a trainer enables learners to perform at their optimum capacities in an inclusive learning environment. C-DELTA enabled trainers to put into practice the various teaching strategies like the Lesson method, Discussion method, Project method, Cooperate method and Demonstration method.

CDELTA is an online platform embedded with resources that enable trainees and trainers who are more accustomed to the traditional pen and paper style to teach and learn in an efficient and effective way. To access the platform, cdelta.col.org is typed in the browser, we then sign up using our credentials.



Figure 1: The COL C DELTA Portal

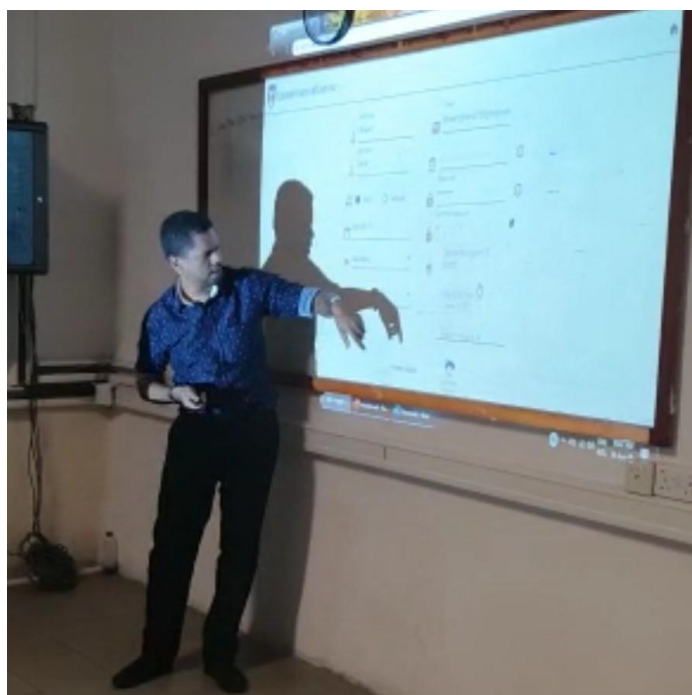


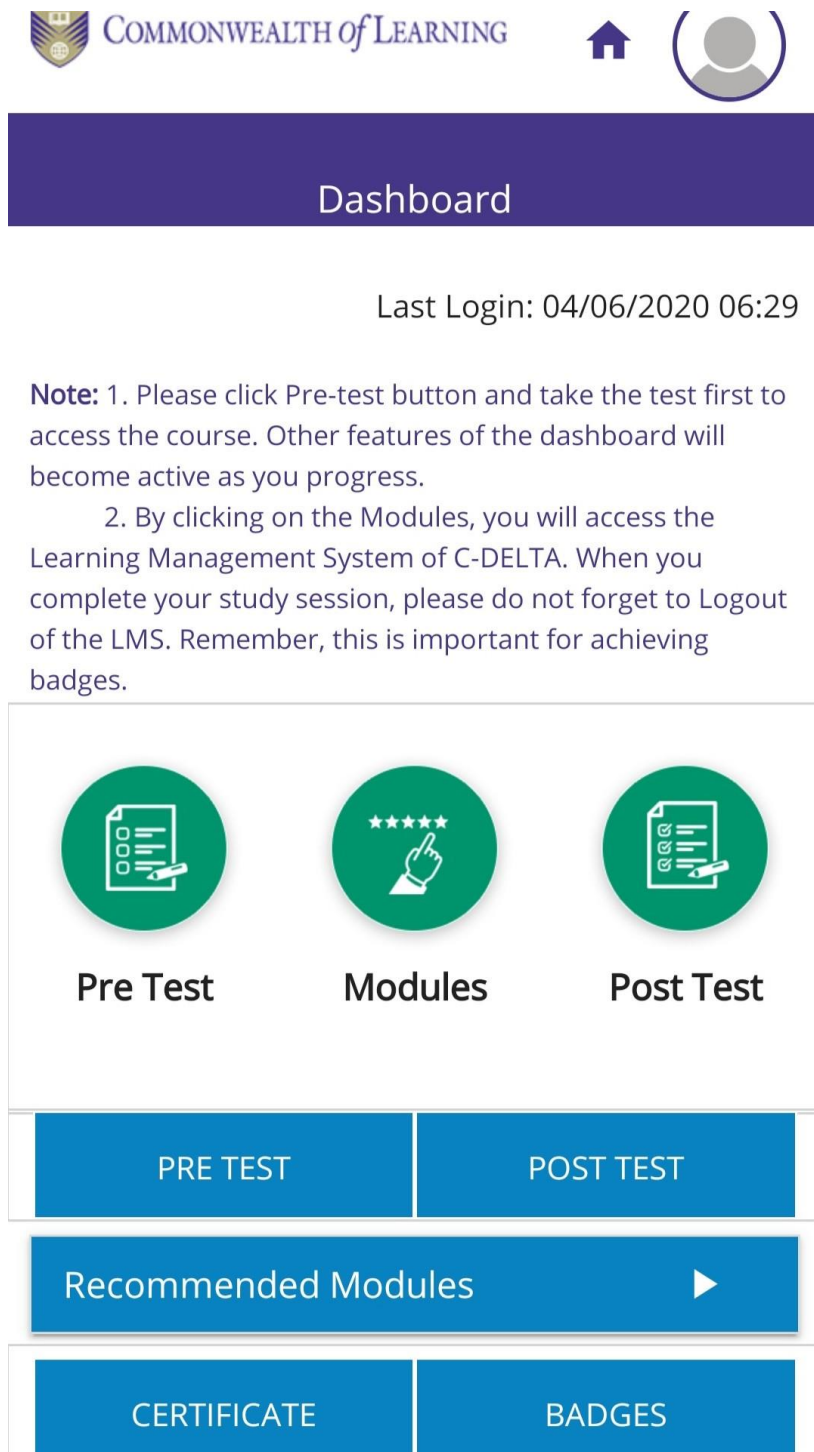
Figure 2: Trainer demonstrating how to Register on the platform (picture uploaded with permission of trainer Mr G.Veerassamy)

Once registered trainees can sign in using their e-mail address and password.

C-DELTA is a long-term programme of the Commonwealth of Learning to promote digital education environments in Commonwealth nations. It comprises of 7 modules namely:

- Module 1: Developing Digital Identities
- Module 2: Mobilising Resources
- Module 3: Engaging with networks
- Module 4: Enhancing Access
- Module 5: Making Informed Decisions

Students undertake the first three only as shown in the illustration below:



During the Training of Trainer (ToT) Workshop participants were provided with the knowledge and skills which would enable them to disseminate the 21st-century skills at MITD. Post ToT Workshop an orientation session was conducted with our trainees on 3rd June 2019. In this session, the trainees were exposed to the importance of Digital Education and how C-DELTA could be a helpful platform for them. An overview of the first 3 modules was given to the trainees. Active participation was triggered as some who were very enthusiastic to know more about C-DELTA instantly registered on the spot through their mobile phones. This helped the other trainees to better understand the registration process. This would eventually help them become “Digital Education Leaders”. The trainees were given till the end of the month to complete the registration and take the

pre-test. As the trainees registered on the platform, we could trace who is taking the pre-test and who is not. After one week my colleague and I downloaded the user analytics sheet to see the response. Most of them had registered and taken the Pre-Test. Those who scored below 40% which is by default the pass mark seemed to be demotivated. Some even had already started to go through the different modules and even earned their badges. They were happy as they had something additional to add to their CV. We encouraged them to show this to their fellow friends and this gradually motivated the others. One of the trainees even scored **100%** and some who did very well were invited by COL via an email to participate in a survey.

Group sessions were organised for those trainees who only registered on the platform but had not taken the Pre-Test. Hence the importance of digitalisation was highlighted in the group session done on 5th of July in order to motivate them to get involved on the C-Delta platform. Some trainees even did some presentations to encourage their fellow friends to at least take the Pre- Test.

During implementation time we were having a connectivity issue in our labs therefore we could not log in to the available computers to help those trainees who were having difficulties. As committed trainers, we used our smartphones to help those trainees having difficulties. They had to take the Pre-tests, complete the modules and Post-tests at home. As they progressed their performance was being recorded and we could give them feedback on same.

- ▶ Trainers used mainly active learning strategies to empower, engage, and involve the participants in the different sessions.
- ▶ Opportunities were also given for trainees to think critically and use their imagination and creativity.
- ▶ An application-based approach was used requiring the participants to state how they will apply the knowledge acquired to better understand the digital environment.

➤ **Approaches/strategies used:**

- ❖ Group work and Discussion
- ❖ Collaborative Learning

Theoretical Frameworks

Having technology is not sufficient. The students and trainers must accept the technology. C-DELTA is based in line with the robust and well-known Technology Acceptance Model (TAM) and its variants (Davis *et al.*, 1989). According to TAM, adoption of digital technology depends on the perceived usefulness and ease of use. It is also in line with the Unified Theory of Acceptance and Use of Technology (UTAUT2) which posits that adoption of technology depends on effort expectancy, hedonic motivation (for example enjoyment), social influence, performance expectancy, facilitating conditions, habit, and price value (Venkatesh *et al.*, 2003; Venkatesh *et al.*, 2012). The hedonic motivation has played a key role to attract learners as the digital shift has allowed the students to operate in the online environment, which is familiar to them. Most of the students are used to the online environment so this habit has also boosted the acceptance. Trainers also have the habit to carry out searches online. Due to prior intensive training, both academics and learners found the C-DELTA easy to use during the implementation phase. The eventual improvement of performance has also boosted the adoption of the C-DELTA among the learners.

The learning is based on a constructivist approach where there is a dynamic interaction (Synergy) between the task, instructor and learner. The learner is a unique individual, learning is an active and social process and the instructor has as role that of a facilitator helping learners develop their own understanding of content. In the Collaboration process, the role of the instructor changes from that of the sole source of knowledge to that of a guide and role model. The instructor connects with students in ways that address their own learning needs by moderating discussions and activities in a way that collectively leads students towards the larger learning goals of the class. The advantages of the digital shift include:

- **Convenience:** 24/7 access from any online computer; accommodates busy schedules; no commuting, no searching for parking.
- **Enhanced Learning:** Research shows an increased depth of understanding and retention of course content; more meaningful discussions; emphasis on writing skills, technology skills, and life skills like time management, independence, and self-discipline.
- **Levelling of the Playing Field:** Students can take more time to think and reflect before communicating; shy students tend to thrive online; anonymity of the online environment.
- **Interaction:** Increased student-to-teacher and student-to-student interaction and discussion; a more student-centred learning environment; less passive listening and more active learning; a greater sense of connectedness, and synergy.

- **Innovative Teaching:** Student-centred approaches; increased variety and creativity of learning activities; address different learning styles; changes and improvements can translate to on-ground courses as well.
- **Improved Administration:** Time to examine student work more thoroughly; ability to document and record online interactions; ability to manage grading online.
- **Savings:** Accommodate more students; increased student satisfaction = higher retention and fewer repeats.
- **Maximize Physical Resources:** Lessen demand on limited campus infrastructure; decrease congestion on campus and parking lots.
- **Outreach:** Give students options; reach new student markets; appeal to current students thus increasing enrolments.

Analysis and Discussion

C-Delta has helped to improve the performance of the trainees significantly. For instance, as shown in Table 3, the number of students who could score at least forty marks reduced from fifteen to six. This reduction was thirty percent more among females as compared to males.

Table 3. Marks obtained by the trainees

Marks	Pre-Test		Post Test	
	Male	Female	Male	Female
0-39	10	5	5	1
40-50	8	4	12	6
51-60	19	8	11	5
61-70	12	4	14	3
71-80	11	1	15	4
81-90	4	2	7	4
91-100	1	1	1	2
TOTAL	65	25	65	25

Table 4 shows that the t-test confirms the significant improvement in performance for the entire group of ninety trainees. On average there has been an increase of eight marks.

Table 4: Comparing the pre-test and post-test marks for all the trainees
Paired Samples Test

		Paired Differences						t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
					Lower	Upper				
Pair 1	Pre-test marks - Post-test marks	-7.96667	19.44422	2.04960	-12.03918	-3.89415	-3.887	89	.000	

Analysing the results gender-wise shows that the average marks for females increased by 11.52 marks while for males it increased by 6.6 marks as shown in Table 5. This result is confirmed by a t-test that shows a significant increase in post-test marks for both male and female trainees.

Table 5: Mean marks for pre-test and post-test gender-wise

Paired Samples Statistics

Gender of student			Mean	N	Std. Deviation	Std. Error Mean
Male	Pair 1	Pre-test marks	53.4769	65	23.27224	2.88657
		Post-test marks	60.0769	65	24.16112	2.99682
Female	Pair 1	Pre-test marks	54.3200	25	24.64366	4.92873
		Post-test marks	65.8400	25	22.88864	4.57773

Table 6: Comparing mean marks for pre-test and post-test gender-wise

			Paired Samples Test							
			Paired Differences							
Gender of student			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
						Lower	Upper			
Male	Pair 1	Pre-test marks - Post-test marks	-6.60000	19.35426	2.40060	-11.39575	-1.80425	-2.749	64	.008
Female	Pair 1	Pre-test marks - Post-test marks	-11.52000	19.61955	3.92391	-19.61855	-3.42145	-2.936	24	.007

Table 7 shows the result of the survey of the perception of the trainees about the C-Delta course. All the participants agreed that the different modules of the course met their expectations. All of them found the platform to be easily accessible and the overall structure to be friendly. However, one-fifth of the students did not find the notes to be clear. When explored further, this was mainly due to the language which was not their mother tongue. Three out of every five trainees found the duration of the course to be inadequate. All of them appreciated the blended mode of delivery. They also stated that they would recommend the course to others.

Table 7. Survey of perception among trainees who followed the C-DELTA course

SN	ITEM	Agree	Neither Agree nor disagree	Disagree
1	The different modules of the course met my expectations	100%		
2	The C-Delta Platform was easily accessible	100%		
3	The e – learning forum was useful	100%		
4	The explanation and notes were clear	60%	20%	20%
5	Examples used to clarify concepts reinforced learning	100%		
6	The use of multimedia to support teaching was effective	60%	40%	
7	The overall structure was user friendly	100%		
8	The material contains examples to promote understanding of the different concepts.	100%		
9	Time spent for the course was adequate	40%		60%
10	The face to face contact with course tutors was helpful in clarifying certain concepts	100%		
11	I find the course interesting and will recommend it to others.	100%		

Learning/Technological Gains

- ▶ CDELTA has enabled both trainers and trainees to use a mix of presentations and indulge in active group work and discussions.
- ▶ Engaging in several online activities lead to the creation of a Personal Learning Network and this helped in the process of effective teaching and learning.
- ▶ Moreover, the use of multimedia promotes interest, motivation, understanding and retention of knowledge.
- ▶ Collaborative learning provide autonomy to our learners and they acquire skills regarding planning and managing time; communication with members of the group and leadership skills as well.
- ▶ Learners show creativity in their work/assignment.
- ▶ Trainees are more conscious of security issues regarding their online presence.
- ▶ Trainees also acknowledge the use of Open Educational Resources by giving proper attribution to the authors

Pedagogical Changes

Changes following C-DELTA Course

1. Trainers are now using the collaborative approach when teaching learners. Trainees work in a group on certain themes, whereby they are encouraged to use online resources for their research work.
2. There is networking among trainers whereby they share their experiences and knowledge on a common WhatsApp platform. Trainers also meet regularly to discuss issues related to the implementation of the C-Delta Course. Regular Workshops / Technology forums are now being organised.

3. Some trainers are favouring a form of blended learning whereby they assist the face-to-face training with some forms of e-learning.
4. It has also been observed that some trainers are making increased use of multimedia to assist them in the teaching and learning process.
5. Trainers are now using Open Educational Resources for preparing their training materials.
6. Trainers are now checking several sources of information, comparing and evaluating

Constraints and Actions Taken

▶ **Constraints**

- ▶ Not all the trainees had access to computers
- ▶ In some cases, there was a slowdown in internet connection
- ▶ In some cases, the trainees found that they were not given sufficient time to complete the 3 modules due to their current workload.

▶ **Actions Taken**

- ▶ Acquisition of new Lab, PCs and tablets. students are encouraged to use their own mobile phones/tablets.
- ▶ The internet connectivity in all centres has been upgraded. Fibre connectivity is now available.
- ▶ Students will be introduced to C-DELTA right at the start of their courses so that they can plan properly.

Conclusion and Recommendation

Opposed to the belief in certain quarters that vocation education and training cannot be digitalised, the results of this research show that digitalisation of training is possible to a significant extent. The use of digital tools in the teaching and learning process has a positive impact on the overall achievement of the students. The rise in the level of confidence among students and trainers to embrace technology has been highlighted. Hence it is both teach and tech. C-Delta, when delivered through the blended mode of learning, will definitely lead to significant improvement in the success of the students.

References

Achtenhagen, C. and Achtenhagen, L. (2018). "The impact of digital technologies on vocational education and training needs. An exploratory study in the German food industry", *Education + Training*, Vol. 61 No. 2, pp. 222-233.

Benjamin, B.A., Gati, I. and Braunstein-Bercovitz, H. (2011), "Career development in Israel: characteristics, services and challenges", *Career Planning and Adult Development Journal*, Vol. 27 No. 1, p. 20.

Beyond Access: Effective Digital Learning for a Globalized World [Online]. Available at <https://files.eric.ed.gov/fulltext/ED544254.pdf> [Accessed 27 May 2020]

Bokek-Cohen, Y. (2018). "Conceptualizing employees' digital skills as signals delivered to employers", *International Journal of Organization Theory & Behavior*, Vol. 21 No. 1, pp. 17-27.

Commonwealth of Learning (2016) *Curriculum for Digital Education Leadership: A Concept Paper*, Commonwealth of Learning, Canada.

Collier, J. (1945). "United States Indian administration as a laboratory of ethnic relations". *Social Research*, Vol. 12, pp. 275–276.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.

Fisk, R.P.P., Anderson, L., Bowen, D.E., Gruber, T., Ostrom, A., Patrício, L. and Sebastiani, R. (2016), "Billions of impoverished people deserve to be better served: a call to action for the service research community", *Journal of Service Management*, Vol. 27 No. 1, pp. 43-55.

French, W. L., & Bell, C. H., Jr. (1990). *Organization development: Behavioral science interventions for organization improvement*. Englewood Cliffs, NJ: Prentice-Hall.

Goss, E. and Phillips, J. (2002), "How information technology affects wages: evidence using Internet usage as a proxy for IT skills", *Journal of Labor Research*, Vol. 23 No. 3, pp. 463-474.

Introduction to Online Teaching and Learning, Joshua Stern, Ph.D.[Online] Available at <http://www.wlac.edu/online/documents/otl.pdf> [Accessed 27 May 2020]

Roman, L.A. (2014), "Using social media to enhance career development opportunities for health promotion professionals", *Health Promotion Practice*, Vol. 15 No. 4, pp. 471-475.

Statistics Mauritius (2020). Digest of Education Statistics 2018. [Online]. Available at http://statsmauritius.govmu.org/English/StatsbySubj/Documents/Digest/Education/Digest_Edu_Yr18.pdf. [Accessed 30 May 2020].

UNESCO. (2002). *Technical and Vocational Education and Training for the Twenty-first Century: UNESCO and ILO Recommendations*, UNESCO Publications.

Venkatesh, V., Thong, J.Y. and Xu, X. (2012), "Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology", *MIS Quarterly*, Vol. 36 No. 1, pp. 157-178.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003), "User acceptance of information technology: toward a unified view", *MIS Quarterly*, Vol. 27 No. 3, pp. 425-478.

World Bank, (2004). *Contributions of ICTs Economic Growth*. Washington DC: The World Bank Institute