INNOVATION, ADAPTATION AND EFFECTIVE PRACTICE AND INNOVATION IN WORK-BASED LEARNING DURING THE COVID-19 PANDEMIC

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1. INTRODUCTION

This paper provides a reflection on the issue of lessons learned innovations, adaptations and effective practice in Work-based Learning (WBL) in Vocational Education and Training (VET), identified by the Eduwork.net project during the Covid-19 pandemic. It captures the challenges and insights of those in the WBL community who were determined to address the challenge of offering high quality work-based learning to their students and trainees throughout the pandemic. It also identifies how, in doing so, innovations that were often 'forced' by the pandemic have now been adopted more permanently as novel and effective practice.

As with many in Europe who were running transnational projects or providing work-based learning, the Eduwork.net project and its partners experienced the pandemic through a set of phases, as VET provision was shut down across Europe and, as a result, foreseen project activities were severely curtailed:

- ***Coping*** - as workplaces and educational provision were locked down and closed, VET institutions were faced by wholescale closure and suspension of programmes; workplaces were also closed. Therefore, VET providers, their tutors and trainees had to cope with the situation to keep their programmes 'alive' with their students and trainees

- ***Adapting*** - VET institutions migrated online what provision they could and found various ways to support their teaching staff and learners, who were often forced to work and study at home for prolonged periods. Often, in a WBL context, there were few ready-made solutions or techniques available, and WBL was a low priority for many companies faced with existential issues at work, so tutors looked to adapt their provision to the new realities

- ***Innovating*** - whilst making a 'virtue out of necessity', many VET institutions began to find different ways to innovate, co-creating with their companies, industry experts, their own IT departments and their students novel and innovative ways to create WBL experiences for students who were otherwise denied regular access to the workplace

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- ***Sustaining Effective practice*** - rather than these changes being seen solely as a temporary or necessary reaction to the pandemic, many VET institutions have developed new, sustainable and effective approaches to WBL, which will endure and develop further in a 'post- Covid' world.

To reform WBL, during a climate where workplaces were closed and many VET institutions had to suspend their offers**, both VET provides and Employers needed support** to adopt. Whilst there is 'nothing new' about education being provided online, it is arguable that this has been less widespread in WBL; indeed the defining factor in WBL is that it takes place 'at the workplace.' Therefore, WBL provision did not necessarily benefit from high degrees of digital interaction.

Despite all the disruption and difficulties, it is evident that the Covid-19 pandemic provided an opportunity for VET providers and Employers to consolidate, explore, develop and implement creative ways to ensure that work-based learning continued. In the best cases, a mutually beneficial collaboration between VET and Employers resulted in both training in and assisting with **alternative arrangements for digital learning and assessment**. Further, the word **resilience** occurs repeatedly… reports from across the EU cite that in a crisis situation a **high degree of autonomy for planning, teaching and assessment** is needed, which results in **flexible solutions that fosters confidence among students**.

Captured by examples our own Eduwork.Net Networks as well as reports produced at the national and European levels, a common reoccurring theme is the need to **rethink and reimagine** and maintain into the future **a new agile work-based learning model**, how **motivation** is maintained, how **work is monitored**, and continually learn how **digital transformations** can bring about **a new dynamic to work-based learning across Europe**.

2. CASE STUDIES FROM EDUWORK.NET

Case Study:
HVET ITS Angelo Rizzoli & Polenghi-LAS s.r.l

An initiative of the Higher VET ITS Angelo Rizzoli (ITSAR) saw the collaboration of two companies, Polenghi-Las and Siemens seeking to ensure continuity for trainee WBL experiences through a 'smart working' element of internship, with a strong digital content.

The company

Polenghi-LAS s.r.l., is a food company in the lower Lodi area, whose main activity is bottling lemon juice.

The case

Two students faced having to give up their internship or having to postpone it. This situation was widespread for many young people in the months of the Covid-19 emergency. Having reached the end of their two-year "Smart Manufacturing Specialist" course, the students began the internship at the beginning of February 2020.

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The challenge was to conduct production efficiency measures on bottling machinery in 'real time.' To do so is, in fact, a strategic objective for Polenghi-LAS, as it would make it possible to conduct timely interventions that correct any inefficiencies. The alternative - waiting for the processing of production data at the end of the process – affords much less opportunity to intervene effectively.

Specifically, the internship activities concerned the census of control devices installed on the company's bottling lines, their classification with reference to technical parameters and according to the need to connect to the company data collection system.

It would have been a waste of time to attempt this work to detect the characteristics in the company's laboratories, in contact with the machinery in operation and in collaboration with the maintenance staff. After only a few days of face-to-face activities, which had been barely enough for students to acquire a minimum of familiarity with the business context, the explosion of the pandemic forced the suspension of on-site activities. Moreover, the fact that the company and the students' homes were located in the epicentre of the initial outbreaks of Covid-19, in the area between Lodi, Codogno and Piacenza, made it even more difficult to adapt.

Consequently, discussions were carried out between Polenghi-LAS, students and teachers through the MS Teams platform. These discussions revealed the possibility of simulating the operation of the bottling lines control devices to establish a "virtual plant", on which the connection to the system processing and production data collection could be tested.

The 'Agile Internship' and the virtualization of Project Work

The first draft of the idea was refined and further discussions led to the conversion of the initial project concept into a completely digital experience. The students not only carried out the project remotely but were able to operate entirely in a virtual development environment. The students were also able to experiment with the use of digital industrial programming tools "from home" without interrupting their internship.

The teams from the partner companies made available to the students the simulation and calculation tools of the efficiency parameters required by the standardized Overall Equipment Efficiency (O.E.E.) scheme. The students were thus able to experiment with the installation and configuration of a 'state-of-the-art 'software tool and learn its operation, with the support of the Company's technicians in periodic, online alignment meetings.

The first experiments with the virtual environment allowed the students to learn more about the functioning of real devices and to hypothesize their responses 'in the field.' The students used the PCs made available by ITS Angelo Rizzoli, which proved to be adequate to support the simulation software used in the experimentation. When they were allowed to return or enter physically the Polenghi-LAS plant, they verified the functioning of the real devices live.

Critical aspects

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The most important critical aspect was the lack of knowledge of the production environment on the part of the students, who thus studied the documentation and manuals on the operation of the installed systems prior to the exercises. The greatest difficulties arose from interactions with software download portals, which are normally used by trained technicians. The installation of the tools and the learning of their operation were carried out mainly by trial and error.

"The Internship project turned out to be richer than was initially conceivable. The need to solve problems independently has led students to experiment and test themselves in unexpected situations "
Massimo Redolfi, Technical-Scientific Manager of the ITS Smart Manufacturing Course

Examples of innovation and effective practice highlight the importance of ensuring equity and enabling access to a high-quality work-based learning experience, for all. The following reflections highlight the ways in which people adapted across the spectrum of design, delivery and engagement in work-based learning.

- *"**Provision of additional equipment** has allowed participants to engage in almost the entire programme, especially that related to work-based learning. Operating within Covid-19 guidelines, we have adapted group sizes and the conditions within the laboratories and workshops."*
- *"We have provided our interns with **personal computers** and appointed an **employee as their mentor**/supervisor."*
- *"**Online recruitment** and **post WBL monitoring tools** have been and will be further developed as these have proven effective."*
- *"Whilst we **cannot fully substitute highly-valued WBL outside of the workplace** environment (relationship building, on-the-spot decision making, developing a team spirit) **it is possible to integrate real-life scenarios into eLearning programmes**."*
- *"In the course of virtual learning, the magic is not found in the sophistication of the technology but in **how well the physical and virtual tools are used** to create and facilitate a learning event."*
- *"The **introduction of remote and blended learning has caused a shift** in how providers and staff **quality assure** online courses and share practice. The greater use of technology enables opportunities for **greater reflection** on an individual basis and **sharing of innovation practice** to all staff."*

Case Study:
Effective practice in work-based learning during the Covid-19 pandemic in Visaginas TVPMC

The mission of Visaginas Technology and Business Vocational Training Centre is to train employees with high professional qualifications and competencies, to meet the expectations of the learner and to create conditions for further learning and the pursuit of new competencies and qualifications.

The Centre organizes work-based learning (WBL) two ways (i) there are cases where training is organized for the whole group, or (ii) specific activities/WBL learning is applied to individuals within the context of the group. Successful implementation of the VET apprenticeships in the Centre is

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determined by the fact that learners/students are only sent to companies where the workplace environment provides a 'best fit' with the VET curriculum.

- Visaginas Technology and Business Vocational Training Centre since 2016 cooperates with Intersurgical (https://lt.intersurgical.com/apie).

- Intersurgical is a global designer, manufacturer and supplier of a wide range of high-quality medical devices for respiratory support.

The company provides flexible patient solutions for airway management, anaesthesia, critical care and oxygen & aerosol therapy, for use within emergency care, hospitals and also in the home. The company employs about 2,400 employees in Lithuania). In close cooperation, both parties launched a WBL training program for mechatronics operator of automatic systems.

Under normal conditions, apprentices work together with professionals in their field and that experience allows them to deepen and understand the peculiarities of mechatronics in a practical environment much faster. WBL takes place through hands-on activities carried out by the learners at the Intersurgical production base under the supervision of masters, thus acquiring a wide range of practical skills and competencies relevant to the specific business environment.

In the above mentioned cooperation, having faced the pandemic challenges, the decision was taken to look flexibly at the approved curriculum. The company continued usual activities regulating shifts and number of people in the place, but, unfortunately, WBL learners were asked to put their work-based learning on pause, and the agreement was made with VET provider that the program will be prolonged according to the length of time that was spent not in the learning process. More time was allocated for distance learning of theoretical issues. The practical topics were shifted focusing on the ones that can be successfully done in distance, having the proper supervision from company masters, working with WBL learners.

The company provided WBL learners with the pilot software version for them to develop microchips schemes according to the set tasks remotely and check those with the company master. This solution allowed:

- to use time effectively
- to use virtual learning environments, virtual workplace environments, online learning and digitalisation of learning.

Usually this topic is covered in the workplace allowing the learners to work with real company software and hands-on consultations from the masters. The suggested solution helped to involve WBL learners into the process. However, the following points were noted as areas for which further solutions needed to be found:

- the learners lost the possibility to work in real working environment,
- the learners could not ask questions and to show initiatives for additional tasks in order to fully grasp the material.

The level of engagement through the use of new technologies remained high, the same as in the normal WBL process. The effective practice can be considered the flexibility and adaptation in the force major situation in order not to stop the WBL and learning process, but keep both parties involved.

3. FLEXIBILITY, ADAPTATION AND RESILIENCE

Work-based learning (WBL) has risen rapidly in the policy agenda over recent years in the European Union. According to CEDEFOP (*The role of work-based learning in VET and tertiary education*) efforts to strengthen WBL in vocational education and training (VET), are increasingly common throughout European countries. In the European Parliament report '*Youth in Europe: Effects of Covid-19 on their economic and social situation'*, the 'scarring effects' of the Covid-19 impact is explored. The final report produced by bequal.app project *'Impact of the Covid-19 pandemic on Work-based Learning in Europe'* (December 2020) the results highlight the **adaptive nature** of those engaged and consulted with, revealing that only 18% of those spoken to were forced to stop the recruitment process; 32% used telephone or internet-based processes, and 42% said that relevant recruitment practices were already and in place. Looking further into how organisations implemented changes to support motivation, 59% said they partially and 25% said they completely focused efforts on trainee/intern/apprentice/students' **motivation**; 16% declared they had not implemented specific actions to increase or maintain motivation.

In terms of WBL duration, modalities and change in terms and conditions of executing WBL, the report cited that mostly the **structure of training delivery was changed**, with 41% saying that **blended training or complete online learning was introduced** (45%). 22% of those spoken to said that they were forced to suspend their WBL. When looking at how WBL was monitored and quality assured during the Covid-19 pandemic, 33% of those consulted said that they **adopted a brand-new monitoring process**, with 46% saying that their current practices remained 'fit for purpose' throughout; 21% of those asked said that they were forced to stop the monitoring process. in the main, **assessment, tests and exams were adapted to be undertaken and submitted online** (53%), and despite challenges and adaptations, 83% of students/programme attendees were enabled to finish their work-based learning.

Case Study:
Mission in Action: Developing courses to support the reopening of Ireland

The mission of the CDETB is *"To provide professional high-quality education and training services for people in Dublin City that contributes both to the personal development of the individual as well as to the overall social, economic and cultural development of the city – think people, think service, think Dublin City."*

In April 2020, the Employer Engagement Unit in CDETB brought together experts from across the CDETB to support employers in Dublin city to respond to some of the challenges they were facing because of Covid-19. One of the results emerging from those virtual gatherings was the conversion of the QQI Level 5 5N3734 Infection Prevention & Control module to an Online/Blended delivery course.

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On the 27th of May 2020 the first fifteen learners, all from crèches and childcare facilities, began their studies in preparation for the reopening of facilities on the 29th of June 2020. Personnel from CDETB's Employer Engagement unit, established and coordinated a virtual working group to prepare the module for online/blended delivery. The group, hugely supported by the Principal and Deputy Principal of Coláiste Íde, consisted of subject matter experts from across the CDETB in areas such as:

- infection prevention and control
- technology enhanced learning
- universal design and assessment with guidance on Quality Assurance from the FET Development Unit.

There were many firsts for this group:

- It was the first time the employer engagement unit brought expertise from across the different service spheres together to develop a module or course.
- it was the first time that most of the group had met remotely or used virtual meeting spaces, so they needed to develop a new skill before they could bring their existing expertise into play.
- first time for the group members to meet
- first time for this team to convert a face-to-face module to a blended/online offering.

The team worked remotely to develop the content and the assessments in line with the module descriptors, the CDETB blended learning policy and best practice in universal design and assessment. As most sectors were on lockdown the team began preparing the module content for delivery to those in the 'care' sectors focusing on health care, social care and childcare sectors. This course in now running in Coláiste Íde for those sectors with the virtual learning platform hosted on their Moodle platform. The team are currently modifying the content to support a broader set of employers and their staff including retail and hospitability industries. Reflections from the team on what worked well /could be improved:

"There was no template for converting programmes so we had no preconceptions of what would or wouldn't work - we took a leap of faith."
"Developing guidance or templates for this would be really helpful."
"Working remotely posed some challenges for the team and the fact everyone was also involved in other duties which meant that these programmes relied heavily on the goodwill of all involved. The concept of developing methods to accurately record achieved learning outcomes through the medium of technology was very challenging and all new learning for us."

What worked so well that it could be retained beyond the emergency?

- Acknowledging and harnessing the skillset among staff across the provision.
- The development of a working group to pool our resources to enable the efficient use of time and skills in the development of Online/Blended programmes to be offered beyond the emergency.

Case Study:
CIOFS-FP Lombardy Region

In the spring of 2020, the lockdown for the Covid-19 Pandemic suspended in-person training activities both at VET institutes and at companies. The Lombardy Region issued its first indications to complete

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the training courses of the 2019/20 training year allowing for the implementation of Project Work activities as WBL experiences. According to the regional regulation, Project work is "a teaching method that allows the student to experiment in a concrete and active way what has been learned during classroom and laboratory lessons".

Following operational instructions of the teacher or tutor (with expertise in the subject of reference) or mentor, during the project work a student is required, to create an artifact, a multimedia product, a document, concrete and assessable. Such an output must be typical of the real productive and organizational contexts and professionalism resulting from the training path and realizable even at a distance (carried out at home). Having no alternatives available, CIOFS-FP Lombardy, at that time, implemented this kind of work-based learning activity for its students. The outcome of this experimentation highlighted the training limits of a purely simulative activity both at technical-professional and personal levels. The Lombardy Region allowed for implementing the distance project work as part of the internship/WBL experiences also for the following training year (2020/21).

CIOFS-FP Lombardy decided to set a limit the use of this solution, despite the epidemiological situation not being at all favourable: in several cases, the establishment of made it complicated, even impossible, to carry out the activities at the companies due to closures at certain times of the year. In fact, in one distance Project Work, the setting and the realization was not authentic. Thus, CIOFS-FP Lombardy choose to experiment 'in Presence' Project Work. Students were assigned a complex real job, carried out at the VET centre but were referred either to a client company or to a concrete service with real users and clients; the involvement of professionals from the world of work made the experience even more realistic.

According to our assessment, work-based learning experiences are difficult to be replaced by other training modalities. The adoption of distance learning, the digitalization of learning, online learning and virtual learning are excellent tools for integrating, improving traditional didactics, but as far as the development of professional skills is concerned, the direct experimentation in the work context of the work task, of the work dynamic cannot be replaced by this modality.

For short periods, 'in Presence' project work made it possible to keep the in-company experience active and partly replace it. However, it cannot be completely replaced. It is certain that a broad use of distance learning represents the major element of innovation, but this aspect concerns the basic preparation, and, in any case, the training carried out preliminarily in the vocational training centres.

With respect to the relationship between learning on the job and the work done in the company context, the experimentation of in presence Project Work of trainees, which CIOFS-FP successfully carried out, could be recovered as a practice to prepare students for the training activities in the company. It may yet be that preparation of the students (especially in the years in which, due to age and regulatory constraints, it is not yet possible to enter the company) the management of in presence Project Work experiences.

In fact, they differ from the classic laboratory activity or from the management of single events and/or single operative moments for the structure that replicates the complexity of the work experience. In this sense, they must be non-simulative and require for a careful planning and organization. The involvement of sectoral professionals from the world of work can guarantee this direct link.

CASE STUDY: DISCOVERY CENTRE CTC

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Discovery Community Training Centre 'MasterChef'

The Discovery Centre is a Community Training Centre providing vocational support to disadvantaged early school leavers in the Belcamp/Priorswood area of Dublin 17. In accordance with Government guidelines, the centre closed on Friday March 13th, 2020, but the work with the learners continued remotely.

The situation occurred suddenly without warning which made preparation for home-schooling challenging and required the Discovery staff to quickly develop different methods to support emergency remote teaching and learning during the Covid-19 lockdown. The learners on the centre's catering programme learned best from a practical holistic approach using Visual, Auditory and Kinaesthetic (V.A.K) learning methodologies. Printed workbooks were posted for learners to complete at home and several virtual learning platforms (VLP) were attempted to engage learners, including Google Classroom, Zoom and Edmondo with varying degrees of success. Technology presented particular challenges due to a lack of resources available to the learners along with their technical ability.

It became apparent to the centre staff that they would have to produce a platform they could all use, something that would catch their attention and use VAK learning methodologies remotely. The learners all had access to email and were familiar with YouTube, so it seemed a logical platform to use. During the normal face-to-face sessions, the practical classes were favoured by the majority of learners and typically received better engagement. Based on these two observations the staff of the centre came up with a plan to motivate the learners.

They ran the **"Master Chef Competition"** with the intention of engaging the learners and providing them with a way to maintain and develop their cooking skills while creatively expressing themselves. Each week the learners had to research a new dish that they could produce at home, using whatever ingredients were available to them. To motivate and reward learners for their efforts, catering equipment relevant to the course and future career development were given as prizes. To support the competition while delivering the course curriculum, centre staff set up a YouTube channel to give the learners guidance and to try to inspire their weekly submissions. To aid learners' instructional cookery demonstrations were tailor made to cover the learning outcomes of individual modules on the catering programme.

The response from the learners to this initiative was very positive and they performed the set tasks extremely well. Based on this the staff in the Discovery Centre have gone on to develop training videos in other course areas including Tourism, Hair & Beauty, Health Related Fitness, ICT and Woodwork.

Case Study:
Regione Lombardia – Project work at distance

In the spring of 2020, in Italy, it was almost impossible to implement work-based learning activities due to the lockdown of the many companies. The Lombardy Region adopted the project work at distance as a solution to carry out the WBL activities previewed in VET pathways. Teachers assigned a project work (a writing, a drawing, a video in the best cases) related as much as possible to the

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course/professional figure attended by the students and supported and monitored them while accomplishing their tasks and using their own professional and personal abilities and skills.
Given the poor outcomes, in terms of both attendance and results, at professional and personal level, CIOFS-FP Lombardy decided not to adopt it longer as an "ordinary" solution and developed other solutions and measures.

The most adopted one was to reschedule the implementation of WBL experiences in the company, anticipating or postponing it in periods assumed less risky with respect to the phenomenon of contagion from Covid-19.
Even such a measure was obviously not sufficient; therefore, as an alternative, CIOFS-FP tried and experimented the Project Work in presence.
The basic hypothesis was to allow the students to experience the professional dynamics of the provision of a service and / or the realization of a product in a context very similar to the working and business. Therefore, some CIOFS-FP vocational training centres (VTCs) carried out in presence project works within a context including:

- the existence of a client
- the presence and involvement of a user (client/user),
- a production process as similar as possible to the business one
- the management, even if only partial, of the economic aspects of the activity/product realized.

During the training year 2020-2021 such kind of Project Work was tested:

1. in Cinisello Balsamo, by producing and distributing meals to local Caritas seats
2. in Pavia, by collaborating in the preparation and distance selling of packages of food and wine products with a local Consortium
3. in Castellanza, by managing a VTC coffee bar and canteen service for the students attending the VTC courses.

On February 2021, the students implemented an in presence project work by managing the coffee bar inside the VTC whose customers are the same students attending the VTC. They had to manage four coffee breaks: in fact, in compliance with the measures for the Covid-19, from 50% to 75% of the students for each class (about 12) could attend in presence, with a maximum of 40-60 people in the coffee bar during the breaks. On Mondays, the students also experimented the management of lunch service for some colleagues who attended the afternoon activities.

Such activity involved the students attending the third and fourth classes, accomplishing their tasks separately on different days (2 students per week per class).
Practically, all the professional skills of the two training profiles were involved (qualification and diploma in the bar sector), specifically the following skills:
a) Designing, planning and evaluating of all aspects necessary to autonomously manage coffee bar services and to guarantee the provision of drinks and food during the breaks according to the CIOFS-FP Covid-19 Protocol (3 different timing to manage spacing and avoid assemblages):

- promotion and marketing
- supply of goods
- goods management
- arrangement of turnover and roles
- timetable management
- administrative management
- health and hygiene aspects (in compliance with Covid-19 industry regulations)

b) Management of the room services for the lunch break of the students of the training course of aesthetics that previewed

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- Room and table dressing
- Reservations
- Supply management

- Delivery of the service in the room
- Arrangement, cleaning, sanitation of the premises
- Cleaning and sanitation of tools and equipment

The coffee bar service included the management of economic aspects: sale of products, booking and purchase of goods.
A deeper insight on the management of catering businesses (e.g. H&S at work, hygiene at work, management of perishable goods, economic-administrative management, etc..) was necessary to emphasize and qualify the educational and training value of these experiences. A professional expert from the business world was involved (1 day a week for both classes) thanks to the collaboration with the Union of Commerce of Varese. One working and training week was "devoted" to each topic: the morning of the first day some entrepreneurs/experts (in remote connection) presented the topic; such presentation was resumed during the final briefing. It was also possible to connect to the remote interventions of the experts more classes from other sectors of the VTC (Business Services and Sales) (especially when they dealt with topics of transversal interest), thus multiplying the positive outcome.

Compared to other similar experiences, such a solution allowed the students to experience the complexity of running a business for a long time. They played direct roles and responsibilities (supported and supervised by a laboratory technician) including the rotation of different working groups more widely than possible in a normal practical traineeship in a company, even if the tasks performed were more limited.

This has highlighted the potential that the organization of a VTC offers to its students when it is considered not only as a training facility but also as a productive reality where services are organized and managed and can become an opportunity for students to learn on the job, provided that the management is organized differently.

Case Study:
FINGLAS TRAINING CENTRE

Finglas Training Centre is located just off the M50 and is four miles from both Dublin Airport and O'Connell Street. It provides vocational training for unemployed, employed and career changers offering courses across a range of programme types that include Apprenticeships, Traineeships and Specific Skills Training programmes. Courses delivered at Finglas Training Centre have rolling start dates with course events commencing at various times of the year. Learners attending full time courses attend for 33 hours per week. At the time of the Covid-19 closure, the following courses were being delivered involving approximately 250 fulltime learners across daytime provision and 190 part-time evening training learners engaged in a range of modules that include skills specific Theory and Practice, Transversal Skills Modules, Work Experience and On-the-Job Practice.

TRAINING CONTINUANCE

At the time of the emergency lockdown courses were at varying stages of progress; some well-established with learners capable of independent performance, while other classes or class groups were not so independent. The impact of the closure was an unknown but quickly manifested itself with instant issues arising. The issues impacting remote training delivery affected both learners and staff and can be categorised under two distinct headings of Physical and Emotional considerations.

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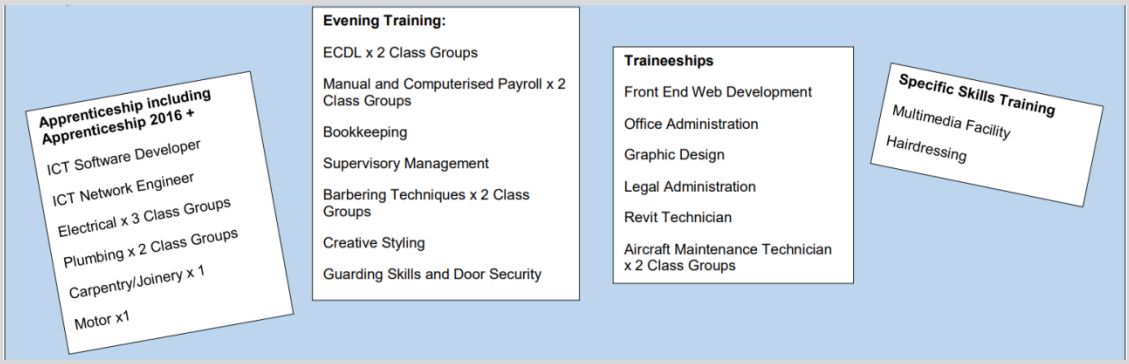

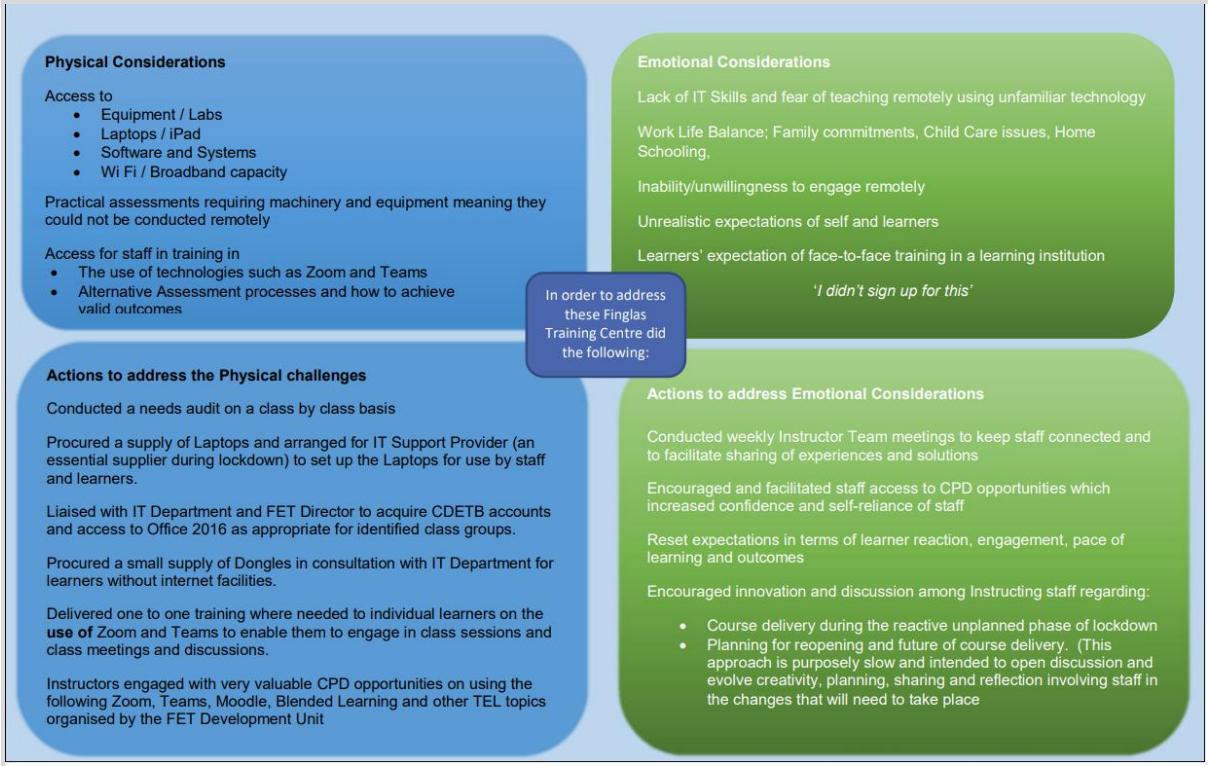

OUTCOMES OF THIS APPROACH

- Learners now have the resources required for continuation of learning. Feedback was very positive with many expressing appreciation for the "care" afforded to them in the prevailing circumstances.
- Learners have for the most part adapted to the new delivery methodology and have learned new IT Skills.
- Learning and exposure to subject matter is continuing but with a very real expectation of completing training in the learning establishment.
- Instructors now endeavour to structure delivery and have produced ways of keeping learners engaged and where possible on track.
- Innovation on conducting valid assessment is collaborative and on-going.

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- Instructing staff have embraced the challenge of remote and blended delivery and have engaged in learning opportunities to this end. A number have committed to the NUI Galway TEL Courses.
- Technology Enhanced Learning Mentoring Support (TELMS), an output from an Erasmus+ project will be innovated in the Finglas Training Centre with staff already indicating their interest in becoming champions of TELMS.
- We have learned to be solution driven because "we had no choice."

OBSERVATIONS GOING FORWARD

- Remote learning can be a positive experience provided the correct structure, resources and supports are in place. Such an approach could achieve a positive impact on learner self-reliance and autonomy for their own learning.
- Setting clear expectations of provision, delivery methodologies (i.e. Blended or remote) must be clear and unambiguous from the outset for all new learners engaging in our training courses.
- Learners must be trained during induction on the use of the technologies as an operational tool in preparation for the remote or blended learning experience.
- One size does not fit all. Individuals learn in diverse ways with many requiring the structure of the physical environment to best learn. This must be considered going forward if we are to provide learners with the skills, knowledge and competencies to compete for available jobs and to obtain and sustain employment.
- As the 'workplace' changes because of the impact of COVID 19, the content and mode of delivery of the courses offered by CDETB has to match expected industry standards.
- Many practical courses do not lend themselves to full remote learning. In a vocational context, it is critical to consider the development of competency and fluency of tasks that can only be achieved in the physical environment on a face-to-face setting. Due to social distancing requirements this may result in less learners on site at any one time.
- How learners are assessed must be considered in terms of reliance on paper based written assessment with solutions that line up with assessment integrity and QA provision.

Case Study:
BSD S.r.l.

Business Service Development, born in 2002 as an initiative of professionals and teachers of the Polytechnic of Turin, it supports Italian and international companies with its specialized divisions in the field of market research and data analysis, digital business development, business in service development.

Also, ergonomic research, study of the interrelation between man and machine, organizational planning, as well as any and all related technical, analytical, design, manufacturing, experimental activities

bsd STRATEGY BY DESIGN

The BSD company has been applying an agile work model for more than ten years based on the ability to operate remotely, both from Italy and abroad, especially in situations where customers and partners require presence. The main collaboration and video-Conferencing tools in March 2020 were therefore already currently used by the entire structure both for work and for updating and training.

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An innovative aspect of the corporate approach to work-based learning was the creation of specific digital environments in the field of training and co-design workshops, necessary to involve customers not accustomed until March 2020 to remote activities but mostly in presence.

The new operating model has made it possible to increase the effectiveness of collaboration through institutionalized digital practices (e.g. wake-up meeting every day at 9.00) and aims for the future to make use of smart working in a constant and structured way, whatever the location of collaborators, whereas previously it happened occasionally and connected to particular operational needs.

Case Study:
MyNP3, Athens

https://my.np3.gr/media/general/mynp3-logo3-min.png

MyNP3 Next Generation is a software development and IT systems company with a dynamic presence in Greece and Europe. They specialize in the development of web applications, cloud services, mobile and tablet applications, website creation and design, digital marketing and Augmented Reality artificial intelligence systems applications.
They provide authentic and certified solutions in management, production and automation, with software products / solutions and systems that extend from the analysis of a project and reach its implementation and maintenance, supporting with stability and reliability the value and importance of electronic information.

My NP3 operates in Athens, Greece and in Pavia, Italy and uses students from Vocational Training Institute of Aigaleo (DIEK Aigaleo) in Athens, Greece for web site designers/ developers practical training. The students do their 6 month work based learning practical training at the company's location in Athens. They complete a 2 year course (4 semester - 1200 hours) of theoretical and practical training at DIEK Aigaleo and they need to complete 960 hours of practical training as web site designers-developers in an IT company like MyNP3.

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During the Covid-19 pandemic, the company employed two students of the Web Design Development specialisation from DIEK Aigaleo . One of them, Marios, started his practical training at the same time the lockdown started so the entire period of his work based learning was done remotely using mostly Microsoft Teams platform and sometimes the Zoom platform. Due to the nature of his work, software development with Microsoft C# was done completely remotely, working from home. This flexibility allowed work-based learning to continue for all workers of the company based in a remote development system that was adopted by all, using mostly the Microsoft Teams platform.

The work based from the company was the same as working in the workplace at the company's headquarters, providing authentic assessment settings and realistic workplace settings. Also the working culture or work-place culture enabled the business to continue the work-based learning for their students doing their practical training.
The company provided internal and external support to Marios in order to build resilience during the COVID19 crisis.

For an IT company such as MyNP3, it was relatively straightforward to introduce a Virtual learning environment to practical training for students. MyNP3 use Virtual workplace environment and since their core business is online learning and digitalisation of learning, this process was simple to be implemented. Nonetheless, MyNP3 found out early in the crisis that remote work threw up some surprising results from implementing the new model, providing higher levels of engagement using new technologies and platforms like Microsoft Teams. Products were more easily developed and no time was wasted in travel or commuting due to the use of the virtual workplace environment.

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Case Study:
EFA MORATALAZ, Spain

EFA Moratalaz is a centre of vocational training, founded in 1976 and located in Manzanares (Ciudad Real).In Spain, the EFAS are dual vocational training and secondary education centres located in rural areas. The objective of these schools is the improvement and promotion of rural areas through training in know-how relevant for the region, thus providing the necessary tools and knowledge to people to transform and improve the environment in which they live, according to three pillars:

- A personalized education of the student.
- Pedagogical tools in vocational and education training.
- Broad social participation.

This school is, nowadays, mainly focused on the following courses:

- Application development with Spring and Hibernate.
- Cutting and boning of hams.
- Computer forensics and cybersecurity.
- Welding inspection.
- Treatment and elaboration of chocolates.
- Traceability in the food industry.

In the second week of March 2020, the Spanish government announced a complete lockdown due to Covid-19. The lockdown lasted for several months and the schools maintained the closure for the full academic course. Consequently, all the education, vocational and training centres suddenly needed to adapted their work-based model to the new situation.

EFA Moratalaz was particularly affected adversely by this situation, since many of its courses require manual instruction, requiring a new pathway of learning and training for those students that required the acquisition of practical skills from their training. It therefore adapted its teaching methods rapidly from their already existing internal Moodle, created by and for the VET students of informatics. The existence of these online work-based tools and the use of existing communication channels enabled the centre to rapidly organise a response to retake lessons.

The innovativeness of the EFA Moratalaz model resides in that, whilst it already implemented dual systems (on-site and on-line systems), and an online communication channel, the adaptations contribute to the implementation of dual or online teaching models at a national level in the short term. They demonstrated the benefits of amplifying the knowledge of the students, teachers and trainers in a more dynamic and pragmatic way; and demonstrated an efficiency that can be applied in circumstances were it is impossible to arrange personal attendance at on-site lessons. The measures have permitted:

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- The possibility for VET students that currently are attending on-site courses access to newly recorded and uploaded digital material, released on an online platform;.
- Working methods adapted to enable all of the educational community to follow the courses both on-site and online depending of their specific needs. Lessons can now be taught and followed through electronic devices, removing the strict necessity of attending on-site lessons.
- Covid-19 accelerated the trend of digitalizing many of the courses that can be attended 100% online, which may lead to the digitalization of a huge percentage of the education system. However, in the specific case of those courses that require manual knowledge, the crisis demonstrated not only the deficiencies of the education system to adapt to sudden crises, but also that a 100% education system digitally-based would not be efficient.

VET-Industry Curriculum Development and Work-based Learning, a UK perspective

In the UK, the Department for Education (DfE) publication '*FE Remote and Blended Learning Case Studies (Good practice developed during the coronavirus (Covid-19) pandemic*)', March 2021 aimed to share good practice across the Further Education (FE) sector to document aspects of their remote and blended learning practice that may be of interest and benefit to other FE providers. In the OECD Policy Response to Coronavirus (Covid-19), the policy brief argues that VET programmes can be adapted to deliver practical components of VET, where there is a shortage of work-based learning opportunities. It also describes how innovative technologies such as virtual reality (VR), augmented reality (AR) and simulators can be effectively utilized to deliver practical learning, but also improve the effectiveness of face-to-face and online teaching in VET in the longer-term.

Innovative work-based learning practice

In the case of Burnley College, their art and design department identified three barriers to overcome in order to move their provision online:

i) Student use of sketch books and paper-based portfolios
ii) Access to specific supplies including paint, chalk, brushes and equipment such as cameras and laptops
iii) Space needed to undertake practical work

In response, art and design teachers worked alongside the College's IT department to ensure all students had access to specialist software they needed to undertake their courses remotely, such as Photoshop, InDesign, Lightroom and Illustrator (as well as the general teaching platforms used by the College). All students were encouraged and supported to digitalise their sketchbooks/portfolio work. Reflections, collaborations, hyperlinks to other work and feedback were embedded into the students' digital portfolios to indicate progress over time. Online exhibitions for students to showcase their work was made possible and will continue – the College has had a nine screen video wall installed in the art and design curriculum area to present student's digitised work to inspire students and visitors.

In the case of Manchester College, realising the importance of skills acquisitions, along with connectivity to the industry and established industry partners, resulted in a blended learning approach that encompassed online live lessons with live-stream performances, to ensure a fully reflective model process so that both teachers/trainers/learning facilitators could respond rapidly to changes and external challenges.

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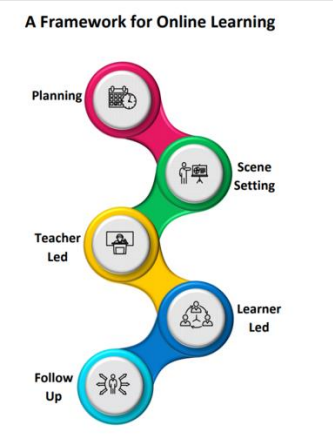
A case study from Carshalton College, reveals the importance of being responsive, flexible and open to new ideas in order to innovate curriculum design, with the support from industry. Carshalton College established a partnership with Mirobot, a small robotics company. The goal of this partnership was to jointly design and implement an innovative robotics module as part of the College's IT vocational programme. As a result of this collaboration between the College and robotics industry experts, students were able to acquire vocational skills that are usually developed in the workplace in a college-based project. The focus on teamwork, the project actively promoted the development of soft skills that are crucial in work environments, such as critical thinking, collaboration and communication.

From the case studies reviewed, it is quite clear to see that curriculum innovation is key to work-based learning now and in the future. Many of the cases reviewed stated that the Covid-19 pandemic had brought about changes to the VET curriculum that would be continued. In the case of two Colleges, both innovated their VET curriculum by meeting with industry experts to co-design specific modules and/or aspects of the curriculum/work-based learning. In terms of collaboration, both the VET and industry experts worked together to establish the module goals and content, decided on the pedagogical approach to be used and the materials needed, etc. As a second stage, it was noted that huge benefits can be gained by having VET staff trained by the industry exerts – *members of the college staff were trained for two days by an industry expert in order to introduce them to the skills needed to implement the project (e.g. contemporary programming techniques, coding and the use of Raspberry Pi, a basic single-board micro-computer).* Input throughout the co-design and implementation process is also key to achieving work-based learning impact, for example, in the case of Carshalton College, during the implementation stage, Mirobot experts visited the college on a regular basis to monitor progress in each project and to ensure that the work the students were producing reflected the industry practice.

Across all case studies captured in the DfE report, it is evident that good/effective practice stems from strong leadership coupled with confidence and/or expertise in using digital learning tools. In some cases, the implementation of a 'Framework for Online Learning' which embedded a comprehensive commitment to *keeping learning moving* and establishing a *productive learning culture* to ensure that teachers/trainers/learning facilitators were supported and connected – *establishing a programme focused on sharing innovative teaching strategies that 'inspire, challenge and engage'*, along with a 'digital inclusion' programme, including a 'digital induction' covered safeguarding, safeguarding, and etiquette, for example.



The Covid-19 crisis has and could continue to further stimulate the adoption of new and advanced technologies, and there is evidence to suggest that investment in such technologies is being made, especially complementing the alternative work-based learning

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opportunities and environments. In terms of impact, it is evident that new technologies could facilitate the delivery of practical learning in VET settings, and that the use of advanced technologies in work-based learning environments is on the rise.

'How are vocational institutions innovating, evolving and changing as a result of Covid-19?'. a report produced by British Council '(June 2021) presents the findings from a study of practice and perspective in five different countries. A summary of findings highlighted:

Digital Transformation

- Development of new and bespoke learner management systems.
- Move to a more flexible and blended delivery and assessment methods.
- An improved understanding of the benefits of online delivery.
- New quality assurance systems.
- Improved staff digital skills and CPD opportunities.
- Improved student digital skills, independent working ability and employability.
- Better communication within and outside the college, improve staff teamwork and staff-student engagement.

New Opportunities

- New curriculum and commercial opportunities.
- Utilisation of digital marketing in addition to traditional marketing tools.
- New and greater audiences and student reach through online tools, including social media.
- Closer alignment with employers.
- New avenues for engagement with local community partners.
- Policy development and review at organisational level.

One section of this report highlights a key aspect of the radical change brought about by the Covid-19 pandemic, and this is **inclusive practice**. Two key themes emerged in relation to students and inclusive practice. First, lost learning and welfare and secondly, improving student support and engagement. *"The impact of Covid-19 on student welfare is arguably as important as its impact on student learning and there is an opportunity for institutions to share best practice in this area for as long as the effects of the pandemic continue to be felt."*

In another publication, an example from Finland demonstrates how an established and robust work-based learning programme had to adapt to the challenges brought about by Covid-19. The crisis not only caused the TVET institutions to transition to distance learning, but also affected the operations of the companies and organisations where students completed their work-based learning and skills demonstrations. Despite the crisis, the students were supported through to their graduation, made possible by an overarching objective to enable TVET students to continue their courses and to graduate. This included:

- ***Providing flexibility and adaptation*** *to allow a form of work-based learning to continue for all students.*
- ***Online or in-person skills demonstrations*** *via workplaces and institutions.*

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- *The **continuation of assessment via the use of video calls** in workspaces (where permitted), or else in settings similar to authentic work situations.*

In terms of this example, the outcomes an impact are listed as follows:

- Continued learning: the majority of students continued to progress in their TVET studies despite the pandemic, enabled by a proactive VET approach and mutually benefitting collaborations between VET and employers – working together to ensure covid-safe working environments.
- Amended legislation: a temporary change in Finland allowed TVET providers to arrange skills and competence demonstrations within the education provider's premises when work-based learning was not possible.
- Online learning: encouragement of advanced digitalization strategies, including goals for cloud-based services, device policy and staff training, which facilitates the roll-out of distance and online learning solutions.

4. CONCLUSIONS

This paper illustrates how the creativity, innovation, and the tenacity of VET providers and employers ensured that new and flexible approaches were rapidly put in place to ensure high-quality provision of WBL opportunities for Europe's diverse population. In all effective practice cases, the dogged commitment to ensuring that learning continued shines through.

It is evident that the confinement measures brought about by the Covid-19 pandemic has highlighted some of the benefits of digital technologies, especially in terms of remote working and learning. This suggests that emerging advanced technologies could play an important role in ensuring the continuity of practical learning in VET when work-based learning opportunities are scarce. When the availability of work-based learning opportunities becomes more limited, VET providers play an even bigger role in the delivery of VET, which can be challenging for countries or specific sectors have a very strong work-based learning culture and practice.

To conclude, a summary of key messages:

- VET Institutions and Employers should develop the right organisational culture to foster innovation in curriculum design and implementation.
    - Regular Review of the curriculum to enable an agile and adaptable learning and assessment process to ensure continuity of learning
      Autonomy – in learner-centred planning, teaching and assessment
      The simple things: What cannot be replaced – workplace culture (behaviour, expectations, soft and transversal, interpersonal communication) – one of employers biggest complaints about VET; don't make it worse!

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- Ensuring equity in learning through digital and physical accessibility.
    - Investment in staff and student digital skills in combination with higher-level design and implementation of digitalisation processes as part of a resilience building and sustainability model.

- Enhance work-based learning opportunities through innovating delivery methods through enhanced employer relationships, involving them in all aspects of work-based learning and assessments.
    - Develop and implement agile and flexible work-based learning opportunities and embed online learning/blended learning to enhance participation and accessibility
    - Flexibility is important but ensure that it is done in a way that maintains the confidence and motivation of the student / trainee

- Recognise the importance of staff goodwill and commitment to navigate challenges and managing learning within an emerging digital infrastructure.
    - Implement a flexible CPD programme for staff, and provide ample time for reflection, and best practice exchanges
    - Technology is important – but as important is the Mindset; what is it to be effective in WBL?

- Have or continually work towards developing an organisational ability to promote inclusivity and provide welfare support.
    - Develop a student support network, inclusive of local community providers, and support networks with staff.

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