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Critical Curation and Collaboration in Learning

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Critical Curation and Collaboration in Learning (Cur8)

TRANSNATIONAL STOCKTAKING REPORT AND EDUCATOR ENGAGEMENT STRATEGY

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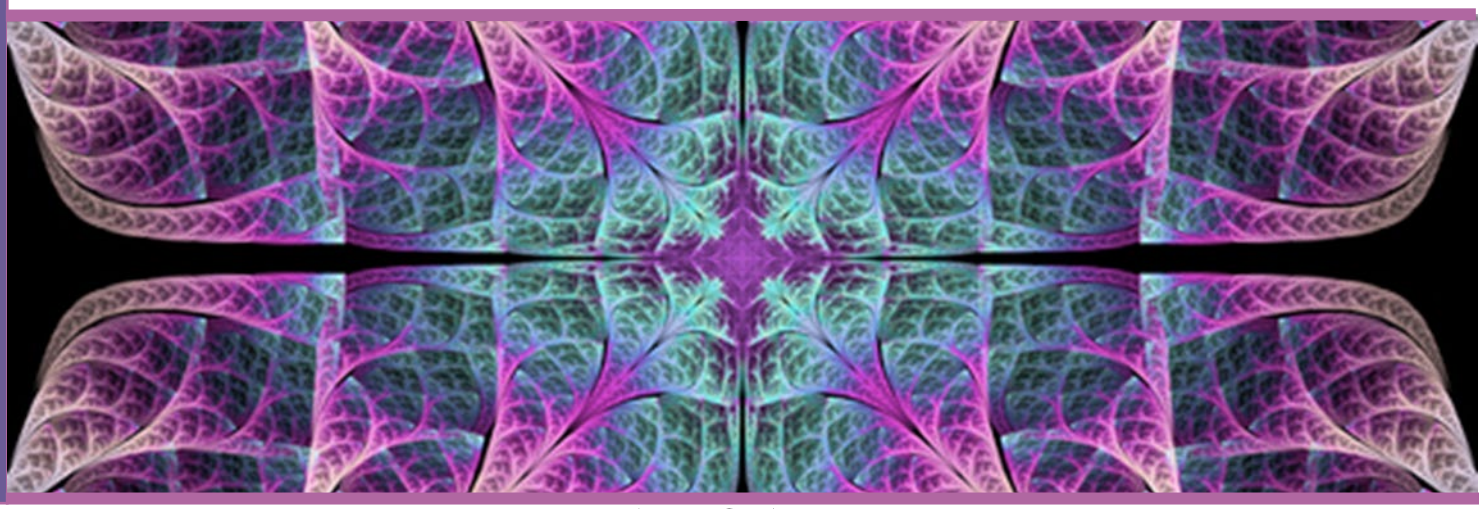

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Executive Summary (EN)

Many companies nowadays show great concern about the current or potential future shortage of skilled workers – a predicament many of them try to avoid by any means necessary. As a result, there is a broad support for the continuing vocational training of employees. Vocational Educational and Training organisations are also is willing to adapt their methodology to better prepare adult learners for the new challenges of the labour market including through re-skilling and upskilling.

The COVID-19 crisis brought a radical transformation to the whole educational sector, including the Continuing Vocational Education and Training (CVET) subsector. On the whole, many, if not all trainers, made the transition to a digital teaching environment. They managed to conduct at least some of their classes online and acquired new competences, speeding up the digital transformation. However, many teachers and trainers had very little time to prepare to the transition to online education, meaning that they lacked the necessary skillset to adapt to the new environment and kept using outdated methodologies, unsuited for the new circumstances. As a result, for many trainers and learners alike, their first experience of digital learning has been mostly negative.

The difficulties experienced were compounded by the lack of opportunity to deliver practical skills development. VET training almost invariably have a significant practical, hands-on component, delivered in a face-to-face environment. The most frequently used model for education is the group practice. These preconditions mean that the area does not necessarily lend itself to an easy transition to a digital format of teaching and learning.

Theoretical knowledge of concepts such as blended learning, self-directed learning, and curation, is still lacking amongst a large proportion of the CVET trainers. The situation looks much better in practice – even if they didn't have the time to study these concepts, they already discovered some of their benefits in their teaching practice and have adopted suitable behaviours. However, this lack of an underlying theoretical framework may lead to disruptions and even contradictions in the practical execution of innovative teaching concepts.

Many educators agree that the learner is to play a central role in the future of education, not the educator, and that the learners' self-awareness, ability to trust, and to find meaning is paramount to the success of a distant form of training.

The pace of change these days means that teaching staff simply can't create all the content that learners require. Luckily, there is a huge amount of content readily available on the web that can be accessed and made available to support learners. However, as far as the practice of curation of educational resources is concerned, there is a considerable gap between the expectations and practical implementation. Neuroscience and the application of Artificial Intelligence (AI) promise to radically transform the entire educational sector. For now, though, few of the potential uses of AI are being realised and even those that exist are far from being in a phase that would allow for broad implementation. Chatbots and machine translation are fairly widely used, and machine analysis of class interactions, AI-assisted marking and feedback, and adaptive learning systems are taking their first steps.

Curation of digital educational resources poses both challenges and opportunities to educators. Faced with little preparation and significant time pressure, they are inclined to emphasise the first group at the expense of the other. However, as they acquire the competences necessary to deal with the challenges, they will have a greater chance to benefit from the many unique features o f the new learning context. There is a general consensus that educators need a new skillset to adapt to the challenges posed by the new teaching environment. Digital and media literacy, as well as didactic competences, stand out as the most important priorities in the CPD of educators. However, few of them have the time necessary

to undergo a fundamental skill retraining. Instead, practical, easy-to-implement solutions are in most active demand.

In order to best support the educators, this report identified several main areas for upskilling:

- *Facilitating online learning:*
  - *Keeping the learner's attention*
  - *Strategies for establishing ongoing communication*
  - *Feedback*
- *Empowering the learners: enhancing their digital and self-directed learning competences*
- *Finding and assessing open educational resources (OER)*
- *Selecting and implementing appropriate digital tools*
- *Understanding copyright*
- *Educator self-care*

Zusammenfassung (DE)

Viele Unternehmen machen sich derzeit Sorgen über den gegenwärtigen oder potenziellen zukünftigen Fachkräftemangel – eine Situation, die sie um jeden Preis vermeiden wollen. Infolgedessen gewinnt die berufliche Weiterbildung von Beschäftigten weiterhin an Bedeutung. Auch Berufsschulen und andere Einrichtungen der beruflichen Aus- und Weiterbildung sind bereit, ihre Methoden anzupassen, um AbsolventInnen besser auf die Herausforderungen des heutigen Arbeitsmarktes vorzubereiten.

Die Covid-19-Krise hat zu einem radikalen Wandel im gesamten Bildungssektor geführt, auch im Bereich der beruflichen Bildung. Insgesamt ist vielen Lehrkräften und TrainerInnen der Umstieg auf ein digitales Unterrichts- und Trainingsumfeld gelungen. Zumindest ein Teil des Unterrichts konnte online abgehalten werden, und durch den Erwerb neuer Kenntnisse und Fähigkeiten wurde der digitale Wandel beschleunigt. Viele Lehrkräfte und TrainerInnen hatten jedoch nur sehr wenig Zeit, um sich auf den Übergang zum Online-Unterricht vorzubereiten und sich an die neue Situation anzupassen, sodass sie weiterhin veraltete, für die veränderten Bedingungen ungeeignete Lehrmethoden verwendeten. Infolgedessen waren diese ersten Erfahrungen mit E-Learning für viele Lehrkräfte ebenso wie für die Lernenden eher negativ.

Ein weiterer Grund für Schwierigkeiten ist, dass Berufsbildung fast immer eine umfangreiche praktische Komponente aufweist, die im Normalbetrieb in Präsenz und teilweise in Gruppenarbeit vermittelt wird. Somit wird der Umstieg auf ein digitales Unterrichtsformat in diesem Bereich oft noch zusätzlich erschwert.

Theoretische Kenntnisse über Konzepte wie Blended Learning, selbstgesteuertes Lernen und Kuratierung von Lerninhalten sind bei der Mehrheit der Lehrkräfte und TrainerInnen noch nicht ausreichend vorhanden. In der Praxis ist die Situation wesentlich besser – auch wenn es keine Zeit für die intensive Beschäftigung mit derlei Konzepten gab, haben bereits viele deren Vorteile für den Unterricht erkannt und sich entsprechende Praktiken angeeignet. Das Fehlen eines theoretischen Grundgerüsts kann jedoch zu Problemen und sogar Widersprüchen bei der praktischen Umsetzung innovativer Lehrkonzepte führen.

Viele PädagogInnen und ErwachsenenbildnerInnen sind sich einig, dass in Zukunft nicht der/die Lehrende, sondern der/die Lernende im Mittelpunkt der Bildung stehen soll und dass die Selbstwahrnehmung, das Vertrauen und die Sinnfindung der Lernenden ausschlaggebend für den Erfolg der Online-Lehre sind.

Angesichts des aktuell raschen Wandels können Lehrkräfte und TrainerInnen nicht mehr alle Inhalte für Lernende selbst erstellen. Glücklicherweise gibt es im Internet zahlreiche leicht zugängliche Lerninhalte, die den Lernenden unterstützend zur Verfügung gestellt werden können. Was jedoch die Praxis des Kuratierens von Bildungsressourcen angeht, so besteht noch eine erhebliche Kluft zwischen den Erwartungen und der tatsächlichen Umsetzung. Durch die Erkenntnisse der Neurowissenschaften und die Anwendung von Künstlicher Intelligenz (KI) könnte sich der gesamte Bildungssektor radikal verändern. Bislang sind jedoch nur wenige der potenziellen Einsatzmöglichkeiten von KI realistisch, und selbst die vorhandenen sind für eine großflächige Umsetzung noch lange nicht ausgereift genug. Chatbots und maschinelle Übersetzung sind relativ weit verbreitet, die computergesteuerte Analyse von Gruppenarbeiten, KI-gestützte Benotung und Feedbackgebung sowie adaptive Lernsysteme unternehmen erste Schritte.

Die Kuratierung digitaler Bildungsressourcen stellt PädagogInnen und TrainerInnen sowohl vor Herausforderungen als auch vor Chancen. Angesichts des erheblichen Zeitdrucks und mangelnder Unterstützung tendieren sie derzeit dazu, eher die Herausforderungen zu sehen. Sobald sie jedoch die notwendigen Kompetenzen erworben haben, können sie mit größerer Wahrscheinlichkeit von den vielen einzigartigen Eigenschaften des neuen

Lernkontextes profitieren. Allgemein herrscht Einigkeit darüber, dass PädagogInnen und TrainerInnen neue Fähigkeiten benötigen, um sich an die Herausforderungen im digitalen Lehrumfeld anpassen zu können. Die Priorität bei der Weiterbildung von PädagogInnen und TrainerInnen liegt derzeit auf Digital- und Medienkompetenz sowie auf didaktischen Kompetenzen. Allerdings haben nur wenige von ihnen genug Zeit für eine grundlegende Umschulung. Stattdessen sind vor allem praktische, leicht umsetzbare Lösungen gefragt.

Um PädagogInnen und TrainerInnen bestmöglich zu unterstützen, wurden in diesem Bericht mehrere Schwerpunkte für die Fort- und Weiterbildung ermittelt:

- *Erleichterung des Online-Lernens:*
  - *Aufmerksamkeit der Lernenden aufrechterhalten*
  - *Strategien zum Aufbau einer kontinuierlichen Kommunikation*
  - *Feedback*
- *Befähigung der Lernenden: Verbesserung ihrer digitalen Kompetenz und Fähigkeiten für selbstgesteuertes Lernen*
- *Suche und Bewertung offener Bildungsressourcen (Operational Educational Resources, OER)*
- *Auswahl und Einsatz geeigneter digitaler Tools*
- *Verständnis des Urheberrechts*
- *Selbstfürsorge für PädagogInnen und TrainerInnen*

Кратко резюме (BG)

В днешно време много компании са силно обезпокоени от настоящия или потенциалния бъдещ ***недостиг на квалифицирани работници*** *– едно затруднение, което много от тях се опитват да избегнат по всякакъв начин. В резултат на това има широка подкрепа за продължаващото професионално обучение на служителите. Училищата, от своя страна, като част от професионалното образование и обучение (ПОО), също са готови да адаптират своята методология, за да подготвят по-добре своите възпитаници за* ***новите предизвикателства на пазара на труда****.*

Кризата вследствие на Covid-19 води до ***радикална промяна в целия образователен сектор****, включително и в подсектора на ПОО. В общ план много, ако не и всички преподаватели, преминават към* ***дигитална учебна среда****, като успяват да проведат поне част от часовете си онлайн и придобиват нови компетенции. Това води до значително ускоряване на цифровата трансформация. Въпреки това, много учители и обучители имат малко време за подготовка на* ***прехода към онлайн обучение****, което означава, че не разполагат с необходимия набор от умения, за да се адаптират към новата среда и продължават да използват* ***остаряла методика****, неподходяща за новите условия. В резултат на това както за много обучители, така и за самите обучаеми този първи опит с електронното обучение е предимно негативен.*

Друга причина за тези трудности е, че обученията в областта на ПОО почти винаги съдържат ***значителен практически компонент****, който се провежда в среда на живо. Най-често използваният модел на обучение е работата в група. Тези предпоставки означават, че в тази област* ***преходът към цифров формат на преподаване невинаги е лесен****.*

При по-голямата част от обучителите все още липсва теоретичното познаване на понятия като ***смесено обучение****,* ***самонасочено учене*** *и* ***куриране****. На практика ситуацията изглежда много по-добре - дори да не са имали време да изучават тези концепции, те вече откриват някои от ползите им в преподавателската си практика и възприемат подходящото*

поведение. Тази липса на основна теоретична рамка обаче може да доведе до смущения и дори до противоречия в практическото изпълнение на иновативните концепции за преподаване.

*Много преподаватели са съгласни, че **централна роля в бъдещето на образованието трябва да играе обучаемият**, а не преподавателят, и че самосъзнанието на обучаемите, способността им да се доверяват и да намират смисъл са от първостепенно значение за успеха на дистанционната форма на обучение.*

*Темпото на промените в днешно време означава, че преподавателите не могат да създадат цялото съдържание, необходимо на обучаемите. За щастие, в интернет има **огромно количество достъпно съдържание**, което може да бъде използвано в помощ на учащите. Що се отнася до практиката на куриране на образователни ресурси, обаче, съществува значително разминаване между очакванията и практическото изпълнение. Невронауката и прилагането на изкуствения интелект (ИИ) обещават да променят радикално целия образователен сектор. Засега обаче **малко от потенциалните приложения на ИИ са реалистични**, а тези, които съществуват, далеч не са във фаза, която позволява широкото им прилагане. **Чатботовете и машинният превод** вече се използват доста широко, а машинният анализ на взаимодействията в клас, оценяването и обратната връзка с помощта на ИИ и системите за адаптивно обучение правят първите си стъпки.*

***Курирането на цифрови образователни ресурси** създава както предизвикателства, така и възможности за преподавателите. Поради слаба подготовка и значителен времеви натиск, те са склонни да наблягат на*

първата група за сметка на втората. Въпреки това, когато придобият необходимите компетенции за справяне с предизвикателствата, те ще имат ***по-голям шанс*** *да се възползват от многото уникални характеристики на новия учебен контекст. Съществува консенсус, че преподавателите се нуждаят от* ***нов набор от умения****, за да се адаптират към предизвикателствата, породени от новата учебна среда.* ***Цифровата и медийната грамотност****, както и* ***дидактическите компетентности****, се открояват като най-важните приоритети в продължаващото професионално обучение на преподавателите. Малцина от тях обаче разполагат с необходимото време, за да преминат през преквалификация на основните умения. Вместо това най-активно се търсят* ***практически, лесни за прилагане решения****.*

За да може да се окаже най-добра подкрепа на преподавателите, са идентифицирани няколко основни ***области за повишаване на квалификацията****:*

- *Фасилитиране на онлайн обучението:*
  - *Задържане вниманието на обучаемите*
  - *Стратегии за установяване на постоянна комуникация*
  - *Обратна връзка*
- *Овластяване на обучаемите: повишаване на техните умения за цифрово и самонасочено учене*
- *Намиране и оценяване на отворени образователни ресурси (ООР)*
- *Избор и прилагане на подходящи цифрови инструменти*
- *Разбиране на авторското право*
- *Грижа на преподавателя за себе си*

Sammanfattning (SE)

Nu för tiden uttrycker många företag sin oro för den nuvarande eller eventuellt framtida ***bristen på kvalificerade arbetare*** *– en besvärlig situation som många av dem försöker undvika med alla medel som krävs. Till följd av detta finns det ett brett stöd för anställdas fortsatta yrkesutbildning (VET). Den teoretiska delen av VET är också villig att anpassa sin metodologi för att förbereda sina utexaminerade studenter inför de* ***nya utmaningarna på arbetsmarknaden****.*

Covid-19-krisen medförde en ***radikal omvandling av hela utbildningssektorn****, däribland undersektorn av VET. På det stora hela har många, om inte alla utbildare, övergått till* ***digital undervisning****. De klarade att hålla åtminstone vissa av sina kurser och lektioner digitalt och förvärvade nya kunskaper och kompetenser, vilket påskyndade den digitala omvandlingen. Däremot hade många lärare och utbildare väldigt* ***lite tid för att förbereda sig*** *inför övergången till digital undervisning, vilket innebär att de* ***saknade de nödvändiga färdigheterna*** *för att anpassa sig till den nya miljön, och att de fortsatte använda* ***gammalmodiga och förlegade metoder*** *som inte lämpar sig för de nya omständigheterna. Till följd av detta har den här första erfarenheten av digital undervisning mestadels varit negativ för både utbildare och elever.*

En annan orsak till de här svårigheterna är att yrkesutbildningar nästintill alltid har en ***betydande praktisk komponent*** *som tillhandahålls i en fysisk undervisningsmiljö. Den mest använda utbildningsmodellen är* ***gruppundervisning****. De här förutsättningarna innebär att området inte nödvändigtvis lämpar sig för en enkel övergång till ett* ***digitalt undervisningsformat****.*

Teoretisk kunskap om begrepp såsom ***blandade lärmiljöer*** *(även kallat flerformsundervisning),* ***självstyrt lärande*** *(självstudier) och* ***kuratering*** *saknas fortfarande bland majoriteten av utbildarna. Situationen ser mycket bättre ut i praktiken – även om de inte hade tid till att studera dessa begrepp så hade de redan upptäckt några av deras fördelar i sin undervisningspraxis och har anammat lämpliga beteenden. Däremot kan den här* ***bristen på ett underliggande teoretiskt ramverk*** *leda till störningar och till och med* ***motsättningar och konflikter*** *i det praktiska utförandet av innovativa undervisningskoncept.*

Många utbildare är överens om att eleven ska spela en ***central roll*** *i den framtida undervisningen, inte utbildaren, och att elevernas* ***självmedvetenhet, förmåga att känna tillit och att finna mening*** *är avgörande för framgången med distansundervisning.*

Förändringstakten i dessa tider innebär att lärarkollegiet helt enkelt inte kan skapa allt innehåll och material som elever behöver. Lyckligtvis finns det en ***oansenlig mängd innehåll lättillgängligt*** *på internet som kan nås och göras tillgängligt för att stödja elever. Däremot, beträffande praxis för att kuratera utbildningsresurser (söka upp och välja ut innehåll, sätta det i ett sammanhang och dela det med relevanta målgrupper), finns det en* ***stor klyfta mellan förväntningarna och den praktiska implementeringen****. Neurovetenskap och tillämpningen av artificiell intelligens (AI) lovar att radikalt omvandla hela utbildningssektorn. För närvarande, dock, är få av de potentiella användningsområdena för AI realistiska och även de som finns är långt ifrån att befinna sig i en fas som skulle tillåta omfattande implementering.* ***Chatbots*** *(datorprogram som kan interagera med människor genom text eller röst)* ***och maskinöversättning*** *används i ganska stor utsträckning, och maskinanalys av samspel i klassrummet, AI-assisterande betygsättning och återkoppling, samt adaptiva (anpassningsbara) inlärningssystem tar sina första steg.*

Kuratering av digitala utbildningsresurser *medför både utmaningar och möjligheter för utbildare. Ställda inför få förberedelser och stor tidspress är de benägna att framhäva den första gruppen på den andras bekostnad. Däremot, när de förvärvar kunskaperna och kompetenserna som behövs för att hantera utmaningarna, kommer de att ha en* ***bättre möjlighet*** *att gynnas av de många unika inslagen i den nya lärandekontexten. Det råder allmän enighet om att* ***utbildare behöver nya kunskaper och färdigheter*** *för att anpassa sig till utmaningarna som den nya lärandemiljön medför.* ***Digital***

kompetens, mediekompetens *och* ***didaktiska kompetenser*** *utmärker sig som de viktigaste prioriteringarna i utbildarnas kompetensutveckling (CPD). Däremot är det få av dem som har tiden som krävs för att genomgå en omskolning av grundläggande färdigheter. Istället är det* ***praktiska lösningar som är enkla att implementera*** *som aktivt efterfrågas.*

För att stödja utbildarna på bästa sätt har flera ***huvudområden för kompetensutveckling*** *identifierats:*

- *Underlätta digital undervisning:*
  - *Bibehålla elevens uppmärksamhet*
  - *Strategier för att upprätta kontinuerlig kommunikation*
  - *Återkoppling*
- *Bemyndiga eleverna: förbättra deras digitala och självstyrda inlärningskompetenser*
- *Hitta och bedöma öppna digitala utbildningsresurser (OER)*
- *Välja och implementera lämpliga digitala verktyg*
- *Förstå upphovsrätt*
- *Lärares självvård*

Introduction

This research report aims to analyse the degree to which CVET suppliers, trainers and educators are applying digital technologies in their teaching and learning strategies in the partner countries of Austria, Bulgaria, Germany, Sweden and the United Kingdom.

The study surveys and accesses the desire of educators to address the task of producing, maintaining and curating digital content to increase the effectiveness of learning; the levels of commitment to digital learning services, development and sharing in partner countries; the competences needed for educators to be able to move to a 'curator-concierge' model of delivery, the interest and potential of educational professionals to engage in this form of CPD, and provides a comparative overview of the use of these technologies by the University and School sectors.

The report was prepared by a combination of desk research covering the partner countries and interviews with selected experts. The desk research was undertaken using the internet and through access to research from organisations that champion the use of digital technologies in education, such as Professional Institutes and University departments of education. In addition, in-depth interviews with around 40 educators and representative professional associations (CVET/VET providers, workplace trainers and Adult Educators) were undertaken.

In order to establish an effective connection to the potential users of the project outputs, the partners researched and articulated practice strategies for engaging educators in CPD to enhance and innovate education and training.

State of Continuing VET in the partner countries

1. Overall state of Continuing VET

a. Overview

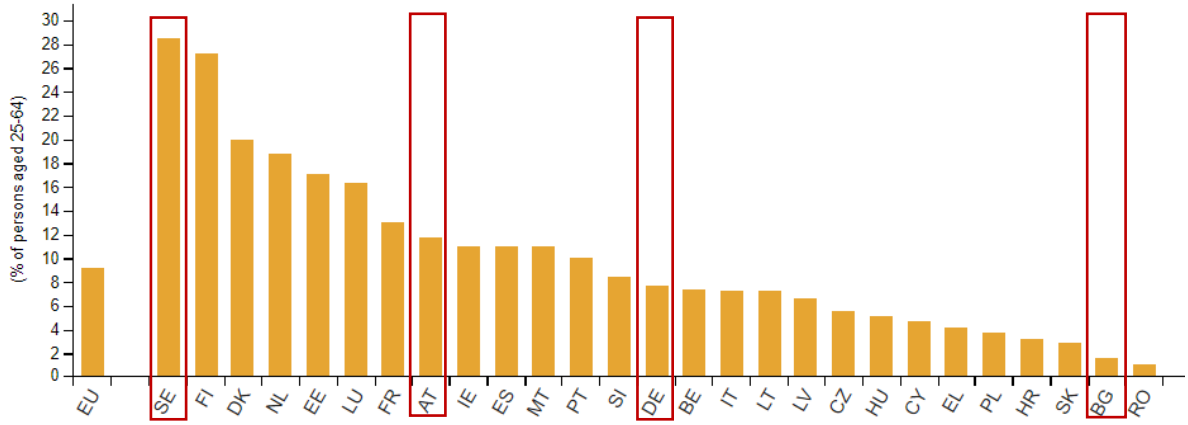
VET is a very large field including many different sub-sectors and target groups. If one thing can be said about the sector that applies to all partner countries, it is that it is one of the main pillars of the educational system, engaging very large numbers of not only younger, but also adult learners.

VET training in Austria, Bulgaria and Germany has a **secondary education focus**. 75% of all learners who have completed compulsory schooling in Austria are in VET programmes, while 54,5 % of the total

secondary education population in Bulgaria are VET learners. Dual track apprenticeships (combining apprenticeships in a company with vocational training at a vocational school) are very popular in Austria and Germany, but not in Bulgaria. In the meantime, in Sweden and UK, VET has more of a **higher education focus**. Adult vocational programmes in the UK have historically been at a lower level, and have had less status attached to them.

The levels of participation in VET vary widely between the partner countries. For example, if almost a third of the Swedish population aged 25-64 attended some form of education and training in the last four weeks, the figure is around 10% for Austria and Germany, and less than 2% for Bulgaria.

Participation rate in education and training, last 4 weeks - 2020



Graph: Lifelong learning: % of population aged 25 to 64 participating in education and training over the four weeks prior to the survey, 2020 (source: Eurostat Adult Learning Statistics)

VET has several key functions:

- to provide **young learners** with the skills they would need for a future profession – a function generally fulfilled by public educational institutions;
- to upskill **people with lesser qualification** and enable them to re-renter the labour market – a function carried out on behalf of the national Employment Agency or similar structure, who are bringing in most participants;
- to help **employees** stay on top of the demands of their profession – a task often undertaken by the companies themselves.

Many companies show great concern about the current or potential future **shortage of skilled workers** – a predicament many of them try to avoid by any means necessary. As a result, for example, 88% of Austrian enterprises with ten or more employees actively support continuing vocational training for

their employees. Unlike the state VET system, where **state educational standards** play a major role in shaping qualifications and curricula, the content of in-company is often designed by the educational providers themselves and is usually also **demand-oriented**. Compared to other educational sectors, the companies demanding continuing education services work with a clearly different staff structure, dominated by **freelance employees**.

VET trainings almost invariably have a significant **practical, hands-on** component, delivered in a **face-to-face** environment. The most frequently used model for education is the **group practice**. These preconditions mean that the area does not necessarily lend itself to an easy transition to a digital format of teaching.

b. Austria

In Austria, vocational education and training (VET) plays an important role. Compulsory schooling starts at the age of 6 and lasts nine years, and **75% of all learners** are enrolled in VET programmes. Young people can choose from a wide range of dual track apprenticeships or mainly school-based programmes. The major VET programmes include:

- Three- to four-year (mainly) school-based programmes (**schools for intermediate vocational education**/ Berufsbildende Mittlere Schulen or BMS, age 14-17/18) leading to qualifications to exercise the respective taught occupation(s) and to have access to regulated professional activities immediately after the final exam. Graduates who complete the additional Berufsreifeprüfung (exam for persons whose initial VET does not automatically qualify them for entry into higher education) can obtain general access to tertiary level studies.
- Five-year (mainly) school-based programmes (**colleges for higher vocational education**/Berufsbildende Höhere Schulen or BHS, age 14-19) which lead to double qualifications for senior positions in business and general access to higher education at the same time. As with graduates of BMS, access to regulated trades is possible, however, more than 50% of BHS graduates progress to higher education.
- Dual track **apprenticeship** training in some 200 regulated apprenticeships (age 15 onwards; young apprentices often attend a pre-vocational school between secondary school and start of the apprenticeship). Based on national training regulations, apprenticeship training takes place at a company and at a vocational school. Graduates can obtain further qualifications by taking, for instance, the master craftsperson exam or the Berufsreifeprüfung.

- **Universities of applied sciences** (Fachhochschulen or FHs, age 18 onwards) are tailored to specific occupation fields and award academical professional qualifications (bachelor, master).
- **Adult learning, CVET**: Adult learning and continuing training outside the school system encompasses general adult education, second chance education, CVET for employees and training as part of active labour market measures. Adults (mostly young adults) can acquire the same qualifications within formal education and training as those open to people of school age. Building on prior learning (VET as well as general education), these programmes help people upgrade their qualifications (e.g. a master craftsperson diploma) or obtain additional ones. Outside formal education and training, learners can acquire different (legally regulated) qualifications through continuing VET. The CVET landscape is highly diverse and offers a wide range of courses covering vocational programmes as well as personality development (e.g. forklift operator, certified project manager, sommelier, certified memory trainer for seniors). For this area, social partner institutions such as the Economic Chambers or the Chamber of Labour, but also non-profit and private institutions are key providers offering a corresponding wide range of programmes. Furthermore, higher education based, postgraduate CVET is offered in the form of university courses.

A relatively new feature of the VET landscape in Austria is the so-called **"training obligation"** until age 18, which was introduced in 2016. Those who do not attend post-compulsory education and training or who are not in a job, must participate in mainstream school-based or apprenticeship programmes, supra-company training, production schools, or active labour market measures. Support and coaching measures for learners but also support for training companies are offered.

It is important to note that Austria has a relatively segmented education system and a (still) highly institution-focused perception of qualifications. The **importance of VET and CVET** is in general considered **very high**. Indeed, VET plays a major role in the Austrian school system. Around **three quarters of young people** in year 10 (i.e. after compulsory school) attend a pre-professional or vocational programme (BMS, BHS or dual apprenticeship). In particular, apprenticeship training continues to be held in high esteem as a vocational pathway. Around one third of the entire Austrian workforce has acquired an apprenticeship diploma as highest educational attainment. According to the last Eurostat Labour Force Survey, Austria hits the target for adult participation in learning set in the strategic framework for European cooperation in education and training which states that an average of at least **15% of adults** aged 25 to 64 years should participate in lifelong learning.

In an Austrian-wide survey of more than 4400 companies ("Skilled Labour Radar") in September 2020, 62,2% of the surveyed companies stated that they had been severely or rather severely affected by the **shortage of skilled workers** in their company last year and 59% of the companies had registered vacancies for skilled workers. In general, the analysis by occupational groups and occupations showed that above all occupations at the intermediate qualification level (especially apprenticeship graduates) are in high demand. The reason is that, while the increasing demand for higher qualifications is matched by an annually growing supply, the supply of intermediate qualifications in Austria is stagnating or even declining. The survey also showed that traditional, above all in-house forms of continuing education and training are predominant, but that there is also high potential for the application of new technologies in the field of continuing education and training. As many as 55% of the respondents considered virtual learning platforms (with learning tools, training videos, etc. for flexible, time-independent learning) to be very or rather useful for their company and 53% consider online courses/webinars at fixed times with interaction possibilities to be very or rather useful. 25% of the companies surveyed in September 2020 already used virtual learning platforms, another 35% would be happy to use them if there was an interesting offer.

Findings from the latest available European Continuing Vocational Training Survey 2015 (CVTS5) show that **88% of Austrian enterprises** with ten or more employees actively support continuing vocational training for their employees. The kind of skills most frequently taught in the courses were "technical, practical or job-specific" skills. Training activities in the field of customer care are also widespread. A more recent study called „CVET in Austria 2021", carried out by Makam Research among 500 enterprises with more than 50 employees, shows that the **willingness to invest in continuing education** has levelled off at a high level. 6 out of 10 companies expect the importance of continuing education to increase in the coming years, and almost 30% plan to invest more in the training of their staff this year. For the surveyed companies the priorities for staff development and training are personal development, management, entrepreneurship and leadership training.

c. Bulgaria

VET in Bulgaria has the following distinctive features: Its governance is multi-layered (national, regional, local levels); VET is provided at secondary and post-secondary (non-tertiary) levels. There are more learners in VET compared with general education: 51.7% of the total secondary education population in 2017 and **54,5 %** in 2018. Secondary general education schools may also open VET classes by a special order of the Education Minister. This option is popular in small towns and rural areas. Since

2016/17, secondary education has been offered **in two stages**. This improves access to VET, as learners may now choose their education path also after completing grade 10. However, dual VET (introduced in 2014) remains a major challenge for the country.

There are **four VET qualification levels** (ranging from EQF level 2 to level 5); The term "initial VET" is only used to refer to programmes leading learners to their first qualification, such as textile worker qualification at EQF levels 2 or its part. VET programmes are pursued afterwards; for example, textile production operator and textile technician qualifications at EQF level 3 and 4 are considered continuing VET.

State educational standards play a major role in shaping qualifications and curricula. According to the pre-school and school education act and the VET act, the acquisition of vocational qualifications is regulated by State educational standards. These standards exist for most VET qualifications. VET qualifications at all levels (EQF 2 to 5) are learning outcomes based, although a credit system is not yet fully established. The legal basis for validation of non-formal and informal learning in VET has been in place since 2015 and procedures and quality assurance criteria have been developed. Implementation of the Bulgarian qualifications framework will ease putting validation arrangements in place.

The main actors providing VET include:

- **VET schools** (providing education and training): comprising of 373 vocational gymnasiums; 22 art schools and 24 sport schools;
- Vocational classes in **general education schools**; These schools can be state-managed, municipal or private. Vocational gymnasiums offer vocational education leading to VET qualifications at NQF/EQF levels 2 to 4. They enrol learners with completed basic (grade 7) or stage 1 of secondary (grade 10) education. They may also provide a VET qualification at EQF/NQF level 5, partial qualifications and training for learners aged 16 or older.
- **Adult training institutions** (providing training only), comprising of 36 vocational colleges and 1006 vocational training centres. They provide vocational training leading to a VET qualification at NQF/EQF levels 2 to 4 and partial qualifications to individuals aged 16 or older.

The VET act defines two target groups: school-age learners and adults (16+ not in formal education and training). According to a research by NAVET, the National Agency for Vocational Education and Training, **middle-aged people (40-49)** have the most active participation in vocational training (34%), followed by 30-39 year olds (29%), while people in the ages 16-29 and 50-59 are less likely to participate. Furthermore, women (60%) are more likely to enrol on a VET than men (40%). The level of

education further influences participation levels. A third of the participants were informed about VET from the Employment Office, which plays a key role in the process. The most frequently used model for education (90%) is the group practice.

d. Germany

Germany is a country with **very strong focus towards VET** as a traditional part of the educational system, entangling it in the lives of its citizens from their school life (dual educational system in lower secondary, upper secondary level and post-secondary level) throughout adulthood (continuous adult learning, CVET, courses for unemployed people and vulnerable groups) (See CEDEFOP and ReferNet Germany).

The main actors include **private-sector educational enterprises** (the majority of the CVET providers – ca. 40%), institutions run by **major societal groups** (churches, political parties, trade unions, foundations, associations, clubs and similar), **adult education centres** and **vocational schools**.

In the state-regulated dual VET programmes, 70% of the learning happens on the job (in enterprises or public institutions) and 30% in the corresponding educational institution (school, university). Participation in continuing education (CET) is distributed differently among the offer of state, community, company and commercial providers: Overall, company-based providers account for most CET activities (45%), followed by commercial (22%), community (17%) and state (13%) providers. This goes hand in hand with the overall **high share of in-company CET** compared to individual work-related and non-work-related CET. In individual job-related and non-job-related CET, commercial and state providers predominate. Commercial providers also lead the field in terms of total hours invested in CET, followed by state and company providers. In-company providers thus offer many, but rather shorter courses.

CET is understood as an independent fourth pillar of the education system, even if it is shaped and controlled by the state to a much lesser extent than the other three pillars. A specific feature of great significance is that CET is designed in a participatory manner and is based on the principle of freewill participation. This means that the content of CET courses is designed by the providers and CET institutions themselves and is usually also **demand-oriented**. Participation in CET is voluntary, with the partial exception of in-company CET. Furthermore, there are only **very limited regulations** on degrees and certificates of CET. The design and significance of CET is closely interwoven with the concept of lifelong learning, which has been propagated internationally (UNESCO, OECD, EU) and nationally since

the 1970s. The topicality of the concept of lifelong learning results from the rapid social and technological change in societies and the associated new competence requirements.

Continuing education takes place in different forms, including formal, non-formal CET and informal learning. Formal education takes place within the (further) education system and ends with a certified qualification. Non-formal CET takes place outside the formal education system in the form of seminar courses as a structured activity within a teaching-learning relationship. Informal learning includes all activities that explicitly serve a learning goal but are less structured. These different (continuing) education forms are still characterised by different levels of social acceptance and recognition.

Compared to other educational sectors, continuing education institutions work with a clearly different staff structure, dominated by **freelance employees**. This has consequences for internal human resource development, and even more so for organisational development processes and policy-making possibilities.

Political actors in the field of CET divide their responsibilities at the federal and state levels. General cultural and personality-related CET, which takes place primarily in the Adult Education Centres, is generally assigned to the Ministries of Education. All vocational CET for securing employability, which is arranged and funded through the employment agencies, is the responsibility of the Ministries of Labour and Social Affairs. In-company CET is ultimately the responsibility of the Ministries of Economics. In this respect, the topic of digitalisation and the challenges it poses for CET is also addressed and dealt with in all of the above-mentioned areas. Corresponding challenges and fields of action at the federal level are currently described and discussed in various publications. The statements all go in one direction: "**Lifelong learning** and thus an upgrading of in-service CET will be necessary in order to keep up with the pace of digitalisation". (Berufliche Weiterbildung und Digitalisierung: Ergebnisse aus der Praxis für die Praxis, 2018)

e. Sweden

In Sweden, the main actors in Vocational Education and Training (VET) include:

- the **National School Agency** (Skolverket), responsible for monitoring and development of Initial Vocational Education and Training (IVET). The practical implementation and financing are the responsibility of the municipalities.
- the **National Agency for Higher VET** (YH-myndigheten), responsible for Continuous Higher Vocational Education (CVET). The agency is both responsible for monitoring, approval of

programs and as well as financing. The National Agency for Higher VET decides which courses may be included in VET education and which training providers are to be granted state subsidies or special funds. They analyse the labour market's needs for training, carry out supervision, review the quality of training, producing statistics and promoting the development and quality of training.

The main differences between IVET and CVET is that IVET is considered as part of educational system that except for a vocational dimension, also provides **knowledge in areas such as social and citizenship**. While CVET in Sweden mainly is focused on providing skilled workforce according to the needs of employers. This means that IVET is more input-oriented system while CVET is entirely **output-oriented**. The result of IVET with regards to EQAVET indicator 5 (destination of graduated students) is around 65-70 % while for CVET is 90-95 %. The same figure is true with regard to employability 1 year after graduation. The length of IVET is normally 3 years while CVET includes 1- to 2-year programs. In addition to IVET and CVET, there are some VET programs offered by **public employment agency**.

Another aspect is the life cycle of VET programs. IVET programs are the same every year, while CVET are approved for 2 consecutive years. A prolongation of CVET program has to be decided if the need of employers continues, otherwise the program will not be financed any more by the agency.

f. United Kingdom

In the UK, vocational, employability, enterprise and core skills are delivered through a range of learning providers who make up the technical and vocational education and training (TVET) sector. To meet employers' needs, UK governments have had a strong focus on engaging employers in both the design and delivery of TVET. The main TVET actors include:

- **Further Education Colleges**: These institutions are at the heart of the TVET sector in the UK and deliver all of the above skills from the age of 16+. Provision is both grant-funded and offered on a commercial basis.
- **Employers:** Many employers provide on and off the job training opportunities for their employees, including through apprenticeships. Training is normally directly related to the job role and the needs of the organisation. This includes both formal and non-formal training, updating, reskilling and upskilling skills as part of a job role.

- **Private-sector Training Providers:** These deliver a range of skills but usually with a focus on the vocationally specific elements eg. management development, fork-lift truck. They often deliver employability and lifetime skills through this focus.
- **Third-sector Training Providers:** There are many voluntary and charitable sector organisations involved in the provision of vocational training including for employability skills and for those with special needs.
- **Universities:** Alongside academic and higher-level vocational and technical skills, universities also deliver core skills and some have a focus on enterprise and employability. Learners are usually 18+.

There are two core purposes which adult further education serves:

- to provide vocational education for the workplace with a focus on **higher level professional and technical skills**. Further education colleges were initially developed as civic enterprises by businesses and local authorities, to teach the skills demanded by employers. This remains the essential core of further education.
- to provide **second chances** for those who have not succeeded in the school system. The further education system in all of its diversity remains the only chance such people have of addressing educational deficiencies which increasingly block off employment opportunities.

Vocational qualifications are work-related and linked to specific job roles or employment sectors. They are available from Entry Level to Level 8. **Parity of esteem** between academic qualifications and vocational qualifications continues to be an issue in the UK - even between academic higher education and higher-level vocational education (Level 4+) (other than for medicine, dentistry, law etc.). There is a growing **gap in the supply** of people with higher level vocational skills.

In higher level training, England is an outlier. It is 16th out of 20 OECD countries in terms of the proportion of adults holding *vocational* post-secondary qualifications (defined as equivalent level of a degree or higher). Adult vocational programmes have historically been at a lower level, and have had **less status attached** to them than those in other comparable countries. The largest proportion of adult further education has been delivered at Level 2, with a lower proportion at Level 3, and a very small proportion at Levels 4 and 5.

In the UK, 'Workplace Learning' supports individuals, teams or the organisation as a whole by building the capability that meets business needs. As working environments become more complex and greater agility is needed to ensure employees' capability (including through re-skilling and upskilling), a wide

breadth of different learning methods are deployed in order that employees have the vocational /working skills needed to support the activities of the organisation.

In January 2021 the UK Government announced **reforms** aimed at transforming post-16 education and training, boost skills and get more people into work. Business groups, including Chambers of Commerce, working alongside colleges to develop tailored skills plans to meet local training needs; will be supported by a £65 million (€76 million) Strategic Development Fund to put the plans into action and establish new College Business Centres to drive innovation and enhanced collaboration with employers. Employers will be given a central role in designing almost all technical courses by 2030, to ensure that the education and training people receive is directly linked to the skills needed for real jobs. The quality and uptake of Higher Technical Qualifications - that provide the skills many employers say they need and that can lead to higher wages – will be boosted by introducing newly approved qualifications from September 2022 supported by a government-backed brand and quality mark. The law will be changed so that from 2025 people can access flexible student finance so they can train and retrain throughout their lives, supported by funding in 21/22 to test ways to boost access to more modular and flexible learning. A nationwide recruitment campaign will be launched to get more talented individuals to teach in further education and investing in high quality professional development including a new Workforce Industry Exchange Programme. The funding and accountability rules will be overhauled, so funding is better targeted at supporting high quality education and training that meets the needs of employers; and introducing new powers to intervene when colleges are failing to deliver good outcomes for the communities they serve.

2. *Impact of COVID-19*

a. Overview

In all partner countries, including Sweden, which for a while pursued a different path, the spread of Covid-19 brought along lockdowns, and with them – a disruption of traditional teaching and training formats. Faced with an inability to conduct face-to-face classes, some providers cancelled them alltogether. In most cases, though, distance learning was introduced to varying degrees and quality. For some providers this meant a leap of innovation and digitalisation, while for others the lack of specific preparation meant they struggled to adapt.

The OECD Education at a Glance 2020 report highlighted that during lockdowns, VET programmes *"face challenges in the search for new forms of e-learning that will allow their students to continue to develop their skills. VET programmes suffer from a double disadvantage compared to general ones. First,*

whether they are school-based or combined school- and work-based programmes, ***practical teaching*** *forms an important part of their curricula, which is difficult to do at a distance. Some fields such as agriculture, health, engineering, construction or crafts, require* ***specific equipment****, learning in small groups for practical demonstrations, and careful attention from teachers to ensure that the actions performed by the students are the right ones. This type of learning does not correspond to what distance education offers, or does so only in a limited way, which raises questions about educational loss."*

On the positive side, it can be said that most actors who faced the transition to a digital form of education reacted sufficiently **adaptively**, calmly with motivation. The crisis seems to also have had a positive impact on the online teaching since it has **speeded up the development of digital tools** and **new ways of teaching** in an online environment. In some countries, like Sweden, the **technical transformation was done rather smoothly.**

In others, however, this was not the case. The need to move learning online quickly and with very **little time to prepare** meant that many teachers and trainers had to first develop technical skills to integrate digital tools into their teaching on the fly and simultaneously adapt their pedagogical approach. As a result, not a few of them failed and attempted to carry out in videoconference form the same lesson they would in the classroom and **did not adapt their methodology** to the new environment.

A new set of digital challenges emerged: especially with regard to the technical infrastructure, the **digital competences** of their staff and the **didactic preparation of the curriculum** for digital teaching in order to design an effective digital learning process for the learners. In addition, the demand for **synchronous learning** forms has grown much stronger. The need to adapt to these challenges means that a **learning mindset** towards design, delivery and consultative skills must be adopted.

Many trainers share that the amount of available learning offers is overwhelming and it is easy to get lost. There is also a clear **loss of focus** between teaching, communicating, and sharing of resources and tasks on a plethora of different platforms affecting the learning process in a negative way. According to a piece of research from Bulgaria, close to 50% of both teachers and students who moved to a distance form of learning experienced **difficulties to concentrate.**

The practical side of the training suffered most, as for the students it's been **very hard to find internships or practical training.** The distance form, at least so far, does not seem to offer sufficient opportunities for practical training. Some Training institutions tried to balance that development out by offering additional theoretical courses, but the results have been unsatisfactory.

Regarding the inclusivity of the digital learning format, the developments have had two-sided effects. On the one hand, the digitalisation of many learning offers in this sector meant an **improvement for target groups who had less opportunities** to participate before. On the other, many participants miss the adult education center as a physical place to meet and engage with others. Relationships and **human connectivity** are growing even more crucial in the digital era.

a. Austria

In mid-March 2020, Austria introduced its first nation-wide Covid-19 lockdown including the closure of schools, VET, CVET and adult education institutions. **Distance learning** was introduced to varying degrees and quality. While for some providers this meant a leap of innovation and digitalisation, for others the lockdown came without specific preparation, which challenged teachers, trainers and learners to use new approaches and technologies.

As the Austrian upper secondary level school system is characterized by a strong focus on VET school programmes, it faced considerable challenges because of the need to include **practical teaching forms**, which do not lend themselves to a simple transition to distance learning. Another challenge, highlighted by numerous educators was the need to move learning online quickly and with very **little time to prepare**, which meant that some if not a majority of teachers and trainers had to first develop technical skills to integrate digital tools into their teaching on the fly and simultaneously adapt their pedagogical approach. In addition, the technical equipment and network facilities in many schools were not prepared for hosting live online teaching sessions. This situation improved over the course of the epidemic years 2020-2021, but it is clear that the lockdowns affected the continuity of learning and probably also resulted in academic learning loss among students which is yet to be determined.

Within a few days in March 2020, the Austrian labor market completely changed. While the number of people registered as unemployed on March 15 was still 310.516 and thus slightly below the level of same date in 2019, the number of people registered as **unemployed increased daily** from that day on. After just one week, the number was 426.164 persons and in April 2020 522.253 persons were ultimately registered as unemployed. The tourism sector was particularly hit by the lockdown.

Once the first lockdown in Austria was eased in May 2020, VET, CVET and training in a professional context were more or less able to **continue in face-to-face settings** during further soft and hard lockdowns with certain security measures such as masking, physical distancing, limited participant numbers and shift classes which of course slowed delivery of training. For employers receiving short-

time work subsidy, an additional **training cost subsidy** for their employees was set up so that downtime could be used for professional training.

In general, the Covid-19 lockdowns triggered a rapid shift from pure classroom training to **digital teaching methods** in Austria: Whereas three quarters of companies surveyed in the above mentioned "CVET in Austria 2021" study planned classroom training before the first lockdown in March 2020, this year the figure is less than 40%. Digital forms of learning, on the other hand, will double to 34%, and blended learning will also become more important (up 16 percentage points to 25%). Almost all companies see a future potential in innovative digital learning formats. In particular, microlearning in the context of learning and knowledge portals, which can be accessed on demand, could be important for almost 8 out of 10 companies in the future. But virtual mentoring and coaching, which is particularly important in times of social distancing, is also seen as promising by almost two-thirds of the companies. The importance of very cost-intensive learning environments, such as virtual reality or gamified learning offerings, is viewed rather ambivalently. Around half of the companies consider these to be (very) important in the future, while the other half consider them to be less or not at all promising (Makam, 2021). According to the latest LinkedIn Workplace Learning Report, 30% of L&D professionals in the DACH (Germany, Austria, Switzerland) region expect their budgets to increase in 2021. 64% of the surveyed L&D professionals agreed that L&D has shifted from being a "nice to have" to a "need to have" in 2021. In this study, "technology skills/digital fluency" were seen as the top priority competence for the workforce, followed by "resilience and adaptability" and "communication across remote or distributed teams".

Due to the pandemic situation and the accompanying official regulations, trainers began to increasingly offer in-person training. Some educational institutions stopped offering continuing education altogether, while others looked for appropriate technical solutions to convert planned face-to-face events into online learning events. Trainers and adult educators dealt with this in very different ways. While there were some who were already very tech-savvy before the very first lockdown, others were completely overwhelmed by the situation of suddenly no longer being able to work face-to-face.

During the first Covid-19 lockdown, learning to use new technology may have helped people to stay in contact with family and friends and some innovative offers in this field emerged (e.g. volunteers offering "masked" one-on-one support for using video communication technology for older community members). For adult learning providers which often focus on other goals as VET such as personal development and hobbies, improved health and fitness, or civic engagement, the COVID-19

lockdowns have also led to unanticipated disruptions. While VET and CVET providers were soon granted exceptions from strict lockdown rules, informal and non-formal learning offers outside the occupational context, including basic education and literacy training when not within the framework of active labour market measures, will probably not be allowed in presence mode and larger group settings before May or June 2021. Many classes were moved online in the last year, and developing digital competences of adult educators has quickly gained importance. As one interviewee highlighted, the digitalisation of many learning offers in this sector also meant an **improvement for target groups who had less opportunities** to participate before, e.g. for participants in remote rural areas it was suddenly possible to choose online live courses from the broad offer of the Viennese adult education centres (VHS Vienna) and attend them from home. A group of regional providers bundled their offerings ranging from yoga to gardening and safer internet and scheduled online lectures under the umbrella theme "time out". However, in the interviews it also became clear that the focus on online-only offers and the inability to meet face-to-face for a very long time is now **slowing the restart of adult education**, in particular of small providers. Many participants miss the adult education center as a physical place to meet and engage with others. It is also evident that community-based adult education requires **a real community** and learning processes that are based on direct exchange, joint action, and experiences in the group.

b. Bulgaria

On March 13, 2020 the Parliament declared a state of emergency, granting rights to the Government to accept the necessary measures for coping with the COVID-19 pandemic. In the sphere of education, the act introduced the e-learning for all students obliging the teachers to conduct distance classes and the school directors to manage the process via information and communication technologies. In compliance with the new law the schools started distance and online education and on March 16, 2020 the Minister of education announced that around 90% of them had successfully implemented the digital communication and education.

However, most VET centres have been closed for a long time due to an **inability to conduct practical trainings** in a distance format. The target group of many of them – unemployed in need of upskilling, have some serious limitations – a large part of them do not have the material base for online trainings, and lack the digital skills necessary to learn effectively online. In addition, some of them lack motivation to learn, being mainly driven by administrative requirements to subscribe to trainings, and are poorly informed - some did not even know why they had dropped out of a training.

One notable exception is the **training of IT specialists**. Since the subject matter is already related to technology and computers, the change wasn't great. The mode of interaction changed, but not the content.

Despite the clear recommendations from the Ministry of Education and experts in the field, many teachers still attempt to carry out in videoconference form the same lesson they would in the classroom and **do not adapt their methodology** to the new environment. Around 10% of the Bulgarian teachers communicate with their students only through an online chat, despite its clear inappropriateness for educational purposes. There is a clear **loss of focus** between teaching, communicating, and sharing of resources and tasks on a plethora of different platforms affecting the learning process in a negative way.

A research by Veliko Tarnovo University reported that around 50% of both teachers and students who moved to a distance form of learning experienced **difficulties to concentrate** and a change in appetite, 30% suffered from a worsened mood and negative expectations, and up to 25% experienced sleep disruptions.

Another survey, however, carried out in the wake of the COVID crisis among students from grades 9-12, teachers, university students and professors showed that the respondents reacted sufficiently **adaptively**, calmly with motivation to the emergency introduction of e-learning. Through the analysis, certain problems were identified, which must become the object of special interest and attention and be transformed into a resource for development:

- e-learning is perceived positively rather on an individual (personal) level, and is still not strong enough as a group process.
- there is a problem with the sense of **control over time** (at 48%) as well as inner satisfaction (about 40%).
- a more general motivating feeling of enthusiasm is shared (40%), as well as **positive attitude** related to equipping with new educational resources (70%), and acquiring new knowledge and skills (66%).
- There are certain difficulties with the ability to concentrate, but the ability to empathize and find individual meaning develops positively.
- In **smaller settlements** there are more pronounced changes in being distracted, which implies the need for an inclusion of more systematic and sustainable support from aiding professionals.

A survey of parent satisfaction with the e-learning experience of their children showed a **general satisfaction** with the ability of the educational system to cope with distance learning. Only 13 % of parents were dissatisfied with the organisation of the education process in the emergency situation, while 74% expressed satisfaction. 76% deemed that the teachers are willing and flexible to deal with the learning process, while 18% did not. 19% of schoolchildren reacted negatively to the switch to distance learning, while 64% liked it. In 51% of cases, parents have to assist when a new learning tool is introduced.

Some suggestions from questioned parents on the topic of online education include:

- More engagement with the students, as the workload is less than before.
- More technical training for educators.
- A unified platform for education that provides access to teachers as well as students and parents must be integrated.
- A unified approach from all teachers must be implemented.

c. Germany

Changes in the VET sector mainly concern learning and working methods. The pandemic accelerated switch to remote working – a trend that is here to stay, with large numbers of workers and companies stating that they would like to transition to a hybrid workplace structure on a more permanent basis. The challenges of hybrid working and effectively managing people in a virtual work environment are numerous and more complex than originally thought. Beyond the logistical and technical hurdles, the skills associated with successful hybrid working need to be developed. HR managers on the one hand need to learn new skills of delegation and empowerment to give their employees greater autonomy over their working methods and the timing of their work, which in turn boosts employee motivation, health and performance, while employees need to learn how to deal with and the opportunities that arise from using new offerings. The sector needs to adapt to an entirely **new way of managing their personnel**. The pace of change forced on us by the pandemic has meant that the vast majority of general managers, middle managers and team leaders have had to make this transition very quickly and with no training at all.

From a learning and development perspective, CPD programmes would need to focus on the **digital transformation** and offer programmes that would promote technological skills that people need to operate effectively in an increasingly digital world. This includes a range of skills - from using the

Microsoft Office Suite to using advanced AI. Besides the companies, the educational institutions as well were particularly forced to deal with the digital challenges: especially with regard to the technical infrastructure, the digital competences of their staff and the **didactic preparation of the curriculum** for digital teaching in order to design an effective digital learning process for the learners. Digital technologies fulfil extensive functions in educational institutions: They can be used for organisational purposes, e.g. administration of participants, registration for examinations, etc. They are also used for the concrete delivery of learning content, e.g. with the help of learning videos, H5P etc. In addition, the instrumental mastery of digital media can be seen as an object of learning in its own right.

In continuing vocational education and training, digital instruction is becoming increasingly important. The educational offers in continuing education are increasingly supplemented by digital formats. This requires an open attitude on the part of the teaching staff towards such new learning formats and the digital learning culture. Important prerequisites for teachers in this context are, in addition to an open-minded attitude and willingness, the intuitive handling of technologies, but also didactic skills that can be transferred to digital teaching (Education Report 2020).

d. Sweden

The impact of COVID on VET sector **differs from many EU countries**. Sweden never declared a lockdown like many others but kept the society open including VET sector. From March until December 2020, the schools were open although some schools introduced blended learning environment. However, with the third wave more and more of the educational processes were directed towards online education.

The IVET schools were open from March 2020 to April 2021. An exception was the period between January and March 2021, when online training became more prevalent. The **Work-Based Learning (WBL) component disappeared** because of closures among enterprises. Since all the schools already had learning platforms before COVID, the **technical transformation was done rather smoothly**. However, many teachers found it problematic to move all their lectures online. The CVET also experienced the same transformation as IVET, however, many lectures were carried out with limited number of students.

The National Agency for higher VET introduced new, **shorter programs** aimed at upskilling or reskilling, especially for individuals risking unemployment. These programs were not subjected to the conditions of 1-2 year programs where the providers have to demonstrate a need for that kind of workforce among employers in their region. Instead, the shorter programs were used to upskill the workforce in

a company paid by government as an alternative to sacking employees. The major change with regards to Higher CVET has been the new form of usage of this kind of programs.

From the interviewees' perspective the main impact of Covid-19 on the VET-sector has been the transition from physical meetings and classroom teaching to only digital teaching. Now the entire training and educational programs are online which has implied many changes to the teaching process and the way of providing education. For the students it's been **very hard to find internships or practical training** (LIA) which is an important part of the VET education in Sweden. Therefore the schools have been **offering theoretical courses** to the students who have not been able to conduct an internship during Covid-19. Some of the VET-educators training programs were already available online before Covid-19, but with some mandatory meetings which has been cancelled and the entire training program has been online, as well as the examinations. The Covid-crisis seems to also have had a positive impact on the online teaching since it has **speeded up the development of digital tools** and **new ways of teaching** in an online environment.

According to the interviewed teachers and trainers it took a huge amount of time to switch digitally and adapt the teaching material. They all stated that teaching digitally has been in a completely different way from what they were used to. The presence with students has changed a lot and it is much more strenuous to teach online but also for the students to learn in a digital environment.

e. United Kingdom

A recent survey carried out by Faswoy Group in the UK found that only 17% of trainers found it easy for their learning operations to cope with the changes COVID-19 brought to their organisation. Around **4 in 10 struggled** with the impact on their learning operations and found it difficult transitioning their learning team to the new realities of a 'COVID world'. Less than 50% believe they have a learning platform fit for the modern workforce. 92% believe enhancing the digital learning experience is a priority and critical for the future success of their L&D team. **75 % report having significant skills gaps** in their organisation today.

Interviewees shared the following on the impact on Further Education: "Important changes have occurred in the whole e-learning/digital learning field. Prior to COVID there was interest from most staff in e-learning, but it was definitely as a bolt on extra for most with pockets of excellence - but not wholesale onboarding. Most of it was asynchronous and it was tended to be used for homework set on the VLE (mainly Moodle). Since lockdown, however, there's been much stronger **need for synchronous learning**."

Microsoft has been very successful as a result of the active promotion of their products. All learners are not only involved in synchronous learning using various platforms, but they are also involved in actually delivering, learning themselves, making videos, including for assessment e.g. in Hindi. These techniques are revolutionising the delivery vocational subjects use these very extensively.

Several of the interviewees shared there was almost **too much choice** and **finances** clearly limit what can be purchased. The key was to undertake an effective testing and due diligence before purchase (Colleges undertake due diligence on all of the software before it can be used in terms of its accessibility, IT security, data protection, etc.)

The COVID-19 pandemic has brought massive disruption globally, impacting not just the way people and organisations work, but also how they learn and develop the skills they need now and in the future. Many organisations have felt the need to **cut back on resources for learning**, placing additional pressure on learning and development (L&D) teams in the workplace who are also dealing with the sudden and sweeping changes to learning delivery, stemming from the overnight shift to remote working.

In the face of the global pandemic, L&D professionals have had to adjust swiftly to changes in the way people work and connect - and to critically rethink learning delivery. A high level of uncertainty remains about what the future holds, with "just 18% of UK organisations expecting learning strategy, investment, and resourcing to return to pre-pandemic levels" (CIPD 2021).

However, it is evident that for some organisations and L&D Professionals, the crisis has proved to be an opportunity: to refresh their alignment with organisational needs, to examine the enablers of collaboration and learning in their organisations, to embrace digital technology and to support employee reskilling and redeployment at a time of ongoing workforce disruption.

In the past, digital learning has often been seen as the 'poor relation' to face-to-face learning or disregarded altogether. Yet, largely as a result of the pandemic, there is growing evidence that digital methods can effectively achieve learning outcomes in an efficient, flexible and scalable way. "The COVID-19 pandemic has dramatically shifted the way we learn. Learning and development practitioners have been challenged to step outside of their comfort zone, be curious and embrace **new ways of delivering learning** with high impact for the digital age." CIPD: Impact of COVID-19 on the L&D Profession March 2021.

As L&D practitioners reflect on the longer-term implications and opportunities of digital learning, four key insights appear to be emerging:

- There is a place for **all forms of learning**, from in-person, to digital, to blended, to self-directed. Learning intervention decisions will be context-specific. However, more organisations will embrace the benefits of digital learning, blended with high-quality in-person interventions that promote social interaction and the accompanying peripheral learning benefits.
- New learner **priorities and challenges** are emerging in the digital age. There will be increased focus on inducting and onboarding employees digitally, developing a healthy and productive team culture when team members are dispersed, promoting employee health and wellbeing, and employing core management skills remotely. L&D practitioners will have a key role to play in supporting skill development in these areas.
- a **learning mindset** towards design, delivery and consultative skills must be adopted. The L&D professional's own skillset must continue to evolve to meet the changing needs of employees and organisations effectively. Practitioners need to show courage, curiosity and humility. To ensure that they continue to add real value, they must invest in their own skills development and role-model what they teach others about being open to learning and new experiences.
- Relationships and **human connectivity** are even more crucial in the digital era. In an increasingly technology-enabled world, physical closeness has become the novelty versus the norm. To maintain a sense of human connectedness and fulfilment from the work that we do, we must be purposeful in building relationships and rapport with learners, stakeholders and peers. We must do so in a way that is open, collaborative, supportive and real.

3. *Employment of blended learning and self-directed learning*

a. Understanding of the terms

Research has indicated a **gap between the conscious knowledge** about the concepts of blended and self-directed learning and their **implementation**. When first confronted with the names of the concepts, the educators often initially react with confusion, but when asked about the competences and the behaviours that actually stand behind these models, they confidently can illustrate many examples of these approaches and most importantly – they appreciate their added value and strive to encourage them. However, the lack of conscious knowledge about the theoretical concepts is concerning. Blended learning is a clear example for this point, since it is often simply taken for a combination of face-to-face learning with web-based sessions in-between. Few professionals

understand that blended learning is much more than that and requires critical curation of digital tools even during face-to-face formats.

For the interviewed sample of educators, self-directed learning is often linked to **self-awareness**, to **trust**, to feeling of **meaning** as prerequisites for its functioning, whereby suggestions by the trainer are accepted and implemented based on the learners' appreciation, his/her knowledge of their own needs and competences and his/her trust with the trainer. Some trainers shared they practice a form of authentic leadership – giving guidance and knowledge, linked to their own story, so that people can relate to it more strongly. The biggest added value for implementing self-directed learning is that it i**nspires** the learners to make their own steps and progress and to feel empowered by doing it. However, for some educators self-directed learning risks **losing the active participation** in navigating the learners' concentration and the process of knowledge acquisition. In regular school and adult VET classes, self-directed learning is often not possible because of **strict curricula** and varying student interests – the only way to be on the same page is to stick to the plan.

One case where self-directed learning appears to be well-accepted, is Sweden. According to the interviewed trainers it is an important part and characteristic of VET education in Sweden. It gives the student the ability to absorb information, identify problems and solve them themselves and take responsibility for their own way forward. Self-directed learning is very important since it's based on taking responsibility and the VET educations and training's task is among others to make the students employable than it is important to be able to plan and control your own work. Implementing self-directed learning in the education is a good way to practice it. However, even in Sweden a prolonged self-directed learning phase is considered undesirable, as students need discussions with their peers and teachers. That means that being on your own potentially leads to a significant loss of knowledge, which needs to be combined with group work and group reflections in order to get multiple perspectives.

Partner countries identified no general strategy in place concerning **collaborative learning**. They did, however, identify numerous training courses on the topic as well as tools, articles and publications, suggesting that the topic has definitely arrived in all educational fields. The positive benefits are described in various publications.

a. Use of blended learning

There are **huge differences** amongst teaching staff in the use of digital technologies to support learning, even within the same department. Some hardly use technology at all, others create a few

resources for the virtual learning environment (VLE), while innovators integrate educational technology (edtech) as part of a richer approach i.e. 'blended learning'.

In general, blended learning has been gradually **gaining importance** in school-based VET and various initiatives and policy-makers are putting efforts in developing and implementing measures for digitalisation. According to a recent Austrian survey, blended learning is seen as an efficient learning format for CVET by three quarters of companies. Although face-to-face trainings are still considered as the most efficient delivery method, blended learning in CVET is definitely here to stay.

In some cases, blended learning formats are **easier to implement** than purely online ones. For example, in VET courses focused exclusively on face-to-face interaction, videos are used in live trainings, and an online test option is available as a preparation for exams. Online VET training is very difficult due to the practical orientation of the trainings, so only theoretical modules can be delivered online.

It is evident that digital learning (and digital communication) have been established in VET, CVET and adult education quicker than expected – albeit at different degrees. Digital learning formats, blended learning or teaching in hybrid learning settings are now **available to a much broader target group**. There is evidence that the digital divide in access to and use of IT for teaching and learning has become smaller. Many actors who previously chose not to participate in online or blended learning or who lacked the opportunities and resources, are now participating. The majority of skills acquired during the Covid-19 pandemic revolved around handling and operating digital tools, e.g. using videoconferencing tools, LMS etc.

It is clear that due to the Covid-19 lockdowns and the need to move learning online, many teachers, trainers and learners collected new experiences and are now **better prepared** for blended learning or online-only learning events (both from a technical and from a mindset perspective). Many trainers have made an almost total transition to technology-mediated teaching, there the content has been communicated with the support of a learning platform, e-mail, distributed semester planning, listing on lesson positions, often in combination with video conferencing, chat, or email.

However, some of the VET teachers highlighted the still urgent need to **modernise IT infrastructure** as a prerequisite for digital tools to be used in schools. Delays in modernisation could once again hamper progress for blended or remote learning. For VET schools on all levels the focus is definitely on **curriculums and content** that has to be delivered. For example, insights the interviews suggest that the focus for practice-oriented work is rather on documentation than on reflection. Ideally, self-

directed learning would be encouraged in project-based settings, internships and practical work, mainly through learning diaries and reflection.

Despite the overall improvement, studies indicate that most teachers are not quite well-prepared for the challenges of digitalisation. *"The central prerequisite for making digital transformation in VET successful is that teachers have or acquire **digital pedagogical competences**. As teachers do not feel well prepared … at present, much effort (further education and training, basic pedagogical education) is needed to develop the digital competences of the pedagogical workforce in VET."* (Löffler/Mayerl, 2020)

b. Strengths, weaknesses and opportunities

When considering a blended learning format, most learners and educators focus on its digital component as the central addition to the teaching process. Participants are quick to point out numerous disadvantages of the digital format:

- a drop in the **quality of the teaching** (possibly due to skill shortage on the educator side);
- a lack of appropriate adopted **teaching materials**;
- a lack of a **live contact** between the trainer and learners. In an online environment every participant feels alone, not a part of the group;
- the **non-verbal** communication is missing;
- **feedback** is often lacking;
- fewer **questions** are asked;
- very few participants use their **cameras**, and this is almost universally accepted;
- the **motivation** of the learners is decreased;
- there is an insufficient or lacking **quality control** over the work of the learners;
- there is **overload** with learning activities;
- **technological malfunctions** are frequent when working in a virtual classroom;
- the necessity to acquire the technical **equipment** presents a challenge for disadvantaged learners;
- there is an additional demand for **time**;
- in some cases, sensitive information cannot be shared because of security and/or **copyright** implications.

However, online learning also has some distinct **advantages**:

- the ability to learn from **anywhere**;
- a calmer, safer learning **atmosphere** at home;
- saving time on **travel**;
- continuous access to additional **educational resources**;
- use of **recordings** makes catching up with missed progress easier.

In order to make the most of the training format, the trainers recommend:

- There must always be a **live instructor** in online trainings to ensure an interaction is possible – video recordings alone offer little effectiveness.
- Presenters must always **show their faces** – an active phase stimulates that. Only active participants are willing to reveal themselves.
- The online training must be **very short**, in small chunks, and very focused.
- It is too difficult to recreate all the specifics of a training virtually. A **practical experience** in which all the senses of the learner are used is obligatory. Theoretical experience is insufficient for professional practice.
- The trainings necessarily require digital literacy – power point, excel – problems rather arise in the participants of the training.

c. A Case Study

How Manchester College introduced blended delivery models across their curriculum using reflective practice and continuous improvement *(Source: FE remote and blended learning case studies) UK Government)*

Context: Lessons learnt from the first national lockdown in spring 2020 provided the starting point for Manchester College to develop an approach to curriculum planning that was agile and responsive to the specific skills and knowledge requirements of each curriculum area.

Blended delivery models for each curriculum area: Curriculum leaders, working with their teams, developed their initial curriculum models for blended learning from September 2020. These built on the foundation of safe working practices (including curriculum based risk assessments and social distancing) and on the potential for increased online and other remote learning practice. In presenting their proposed new blended delivery model, senior leaders at the College asked staff from each department to consider the **intent, implementation and impact** of their delivery models. Focus was

placed on timings of **practical vs theoretical** elements and how these could be best delivered to ensure a cohesive sequential learning pattern.

Creative arts: For example, in Creative Arts, realising the importance of skills acquisition, they sequenced learning to **prioritise practice face-to-face** early in the autumn term whilst ensuring that knowledge based aspects were delivered where possible online.

In visual arts learner resource packs were provided for home study and in performing arts the online live lessons ensured students continued to develop their dance and physical fitness at home and provided opportunities for students to develop their online performance skills in music and performing arts. Industry partners, such as Band on the Wall gave opportunities for students to live-stream performances early in the academic year, when they still had face-to-face support from their teachers in preparation for their performance.

Formal **six weekly reviews** with senior leadership of the new delivery models identified what worked well for students, what wasn't working, and emerging good practice was shared across the curriculum departments. The regular reviews enabled curriculum leaders, with support from senior leaders to reshape and restructure their curriculum in-year and were able to **respond rapidly** to changes and external challenges. The reflective model has also supported in-year adaptions where necessary to improve learner experience. Evidence used has been student attendance and punctuality, learner progress with assessments and grades compared to target grade, 'stop and ask' activities with learners and focus groups with teachers.

"The formal six weekly reviews by senior leadership provided a clear focus for us and as a team, we were reviewing our models almost on a weekly basis, and making changes as we learned what worked best for our students", Stuart Steen Assistant Principal – Creative Arts.

4. Using and creating open digital learning resources

a. The practice of curation of educational resources

The process of finding, aggregating and selecting relevant content has always been a key skill in learning design. As the web has developed and the volume of content has grown, these content curation skills are arguably becoming more important. In particular, educators need the ability to filter the huge volumes of new content prior to evaluating, selecting and adding value to content. The growth in content volumes and constantly changing information is one of the reasons why curation is considered poised to transform learning. The **pace of change** these days means that teaching staff

simply can't create all the content that learners require. However, there is a huge amount of content readily available on the web that can be accessed and made available to support learners.

Much like with blended learning, the term "curation" is **not yet broadly used** in the context of educational resources. However, concept itself is already being applied in many educational contexts. For example, language teachers are experimenting with providing learners in a small group setting with curated content in the form of "individual recommendations for learners". The practical employment of Internet-based resources has several main aspects:

- **seeking out** and bringing content together;
- **summarising** available resources in an easily approachable manner;
- **adaptation** of existing material;
- **creating** own educational resources;
- employing a work environment / programs / sites for **illustrative purposes.**

In more structured teaching contexts curation can be difficult because of **strictly regulated programs**. When the content of the teaching programs and the training materials has to be pre-approved by state authorities / training company, that leaves little room for the individual trainer to improvise. In that case, the regulation of materials happens through the cyclical process of experience-suggestions-implementation-repeating. The considerable administrative responsibilities of the teaching staff and strict regulation of the teaching profession also limit the willingness to curate educational resources. Many trainers point out that the lack of time and resources are obstacles, and finding the time for skills development can be very challenging.

When collecting information, trainers increasingly use **automated processes**, assisted by algorithms. Being able to use automated processes to aggregate and filter relevant content is a key skill, signifying the difference between someone who can enter a search term into Google and someone who understands the importance of advanced search and filtering, and can use this to bring back much more relevant content.

When curating educational resources, some trainers put great emphasis on the preparation of the materials, their design, sharing that especially during the digital curation; when all eyes are on the shared screen, the focus on the visuals of the presentation materials becomes much stronger than ever before. Others approach the curation from the perspective of giving a well-thought structure, a red thread. An important aspect of curation, mentioned by the interviewed professionals was aiming

to maintain a good balance between content and discussions, theory and practical exercises, whereby the latter are always a bigger challenge.

Others see **the preparation of the learners** themselves, of their expectations and their attitude as a big part of the success of the curation – so they start curating the effective learning even before the resources are in play – e.g. they start to give transparency of what to expect in the training, to prepare enough breaks, to set clear timeline and to manage time effectively, to make clear how to prepare for the training session and to offer preventive tips – how to avoid distraction during the training. Questions-and-Answers sessions are seen as an important part of the effective curation, as a part of the training with great opportunity for learning input especially when done digitally, because then everybody could ask questions anonymously. The digital interaction with the learners and the collaboration with the group online are also seen as important factors.

When developing educational resources, **feedback** plays a key role - developing a new material, testing it and improving it continuously. One trainer shared a valuable insight – in a face-to-face setting he used to spend a lot of time enriching the training programme with all types of activities and interesting information, but when the training switched to a digital format, he started cutting down and reducing the information in order to focus on few important aspects.

In the interviews, a mention was made of a notion of what some of the educators called **"serendipity"**, others - an "imposter syndrome": curating effectively but remaining somehow convinced that it is by pure chance or happy coincidence that the curation was so effective. By increasing the knowledge about critical curation and empowering educators to believe they are more in control of the success of their teaching, their stress and insecurity might be reduced.

a. Open Educational Resources

Open content or open educational resources (OER) is described as small individual assets shared on the web or larger, packaged and structured resources. What makes learning resources truly open is the deliberate application of an open license, which sets out who can use the resource and how. **Creative Commons** licences have had a big impact on making learning materials open (although other open licences exist).

Web-based technologies allow educators to make their learning content accessible to learners and other educators outside their own organisation. There are various motivations for sharing learning

content in an open way - from top-down institution-wide policy, to individual educators altruistically sharing with colleagues and open learners.

It has already been **quite common** for educators to generously share educational material with colleagues (e.g. from the same VET school or among colleagues teaching the same subject in the region). However, this has been customarily done on an ad-hoc basis and mostly through conventional channels like e-mails, not through wide sharing via OER depositories.

In Sweden, where the practice of creation of OER is more common, the national agencies for VET and CVET created guidelines for teachers in creation of OER concerning:

- Pedagogical environment - didactic issues
- Extra adaptations for distance learning
- Special assistance
- Remote assessment
- Transitions within and between schools and school forms

b. Tips for Using OER

Based on a resource called „Open Educational Practice and Open Educational Resources“ (https://www.uos.ac.uk/sites/default/files/OER-getting-started.pdf) by the British educational non-profit Jisc, the following key recommendations can be identified for the use of OER:

1. **Start small**. Engage in open educational practice gradually, taking steps that fit your workflow and circumstances. You could begin by looking at what others have done, maybe borrow an idea here or an image there, and remember to acknowledge the work of others as required. When you’re ready you can share your own material in return. Open practice can be thought about as a journey or a ladder where you can move at a pace appropriate to your needs and capabilities.
2. **Be realistic**. The US-based Open Professionals Education Network points out in its guide “Find OER” (https://open4us.org/find-oer/): “It is unlikely that you will find OER that perfectly fit your needs”. In many ways, the whole point of OER is to be built on and adapted for new situations.
3. **Understand the Licensing**. Understanding the freedoms offered by open licenses - typically Creative Commons - can make life easier. For example, the symbol CC-BY means you may use or modify a resource with attribution. The license symbol tells you what you can do with material you find on the web. It helps you guide your learners and it helps you share your own work with confidence.

4. **Be social**. Open educational practitioners tend to be enthusiastic networkers and the community is generally very keen to encourage others who are starting out.
5. Think ***Critical Digital Literacy***. Even taking small steps towards being an open educational practitioner is an excellent way to develop valuable digital literacy skills.

5. Use of Neuroscience and Artificial Intelligence

a. Neuroscience

In the interviews, most trainers and teachers mentioned that they had at least heard about the concept of neuroscience but had **no concrete plans** how to implement current research findings into their teaching. “Brain-friendly” teaching and learning is on the radar and put into practice by some, even if it is not based on research but rather on popular scientific literature on mental training and motivation. Trainers share some knowledge about the role of the limbic system and express interest to raise awareness among trainees about the subconscious brain processes forming stereotypes and limiting beliefs.

There are many indications that neuroscience has arrived in further education. The term **neurodidactics** is used in this context. There are handouts and books on the subject that show teachers and trainers in all educational institutions how learning takes place from a neuronal point of view and which processes are initiated or hindered in the various models. For newly trained vocational teachers in teacher training at university level, several courses integrating neuroscience are already available, e.g. as neurodidactics in a course about learning theories. Similar course topics are available in some of the universities’ continuing education programmes for teachers. Some adult educator training courses also already include neurodidactics into their curriculum.

One practical application of neuroscience is provided by the Bulgarian platform znam.be. It includes a questionnaire based on neuroscience to help students discover their ‘why’ – the purpose they intend to pursue in their professional lives. The platform can suggest a profession based on the identified interests of the students.

a. Artificial Intelligence (AI)

The application of AI in learning is expected to grow exponentially in order to cope, among others, with the substantial need for re-skilling/re-training/upskilling of displaced workers and to meet the new opportunities in the labour market.

According to an article published on the website of the Swedish Ministry of Education, the interest in the possibilities of AI technology is widespread among education and training companies. Terms such as **personalisation, automatic correction** and **instant feedback** are used in marketing. There are also ideas about designing systems that can **track and adapt** the learning of an individual throughout their studies. AI presents both opportunities and challenges. AI could potentially support teachers in:

- analysing large amounts of student **user data** over time for decision support;
- **assessing** student knowledge;
- identifying students **at risk** of not meeting proficiency standards;
- identifying students who are particularly **advanced**;
- **adapting** teaching strategies and subject content to each student's needs.

As the CIPD Learning and Skills at Work Survey 2021 put: "Despite the seismic shift to digital learning, take-up of technologies that have the potential to make learning more engaging and effective, remains low. The proportion using mobile apps, chatbots, VR and AR animations or games is largely unchanged from last year". This finding was further supported by the comments of an expert in one of the interviews, that although there are many ideas for AI in learning, only **few are realistic** at the current stage and even those are far from being in a phase that would allow for broad implementation. The current status of many of these developments is rather that they "mimic to be AI", e.g. they are **script-based** but the learners get the impression that someone/something is interacting with them.

Learning Experience Platforms, which develop learning paths recommend learning content and personalise learning experiences and adaptive learning platforms are just starting to evolve, and have a long way to develop.

Some of the technologies which already achieved recognition include:

- **chatbots** for answering common inquiries - for example, Bolton College in the UK has developed a service called Ada7, which uses chatbot technology to provide students with an assistant to answer questions about the college, as well as personalised responses to questions such as "what is my timetable?" and "what are my grades?". It could be argued that the ability to answer a range of questions with personalised responses makes it more of a digital assistant than a pure chatbot.
- **localisation** of learning content - machine translation (for example, DeepL Translator - https://www.deepl.com/translator) is often used for course materials, although the final version is always checked and corrected by a human;

- **analysing** class interactions – for example, the platform Teach FX (https://teachfx.com/) captures the interactions in class, analyses TTT (teacher talking time) and STT (student talking time), and gives suggestions for improvement.
- **AI-assisted marking and feedback** aims to help with marking beyond what has previously been possible with multi-choice software. Although the technology can be similar, there is a distinction between automated marking software (which aims to assist with providing a student with a grade or mark) and automated feedback software, which could be used to help the student with writing an assignment. This is a relatively immature space, although several commercial software applications do offer automated marking features that can either provide the marker with an estimated mark to aid the process or release the mark directly to the student to automate it fully. Pearson has developed PTE Academic (https://pearsonpte.com/) and Versant (https://pearson.com/english/versant) tests to provide unbiased, fair and fast automated scoring for speaking and writing exams. The AI is built on the foundations of consistent expert human judgments irrespective of where the students live or their accent, background or gender. PTE Academic is the only secure English language test for overseas students that is evaluated with the help of AI, and it is accepted by 98% of UK universities. In January 2020 England's qualifications agency Ofqual set up a study and competition to investigate the use of AI in marking. The ongoing study focuses on opportunities for improvement, not by replacing human judgement but by using AI to support markers in the role they play. The competitive element is to use a set of expertly marked and moderated papers to train various AIs and then test them against a further cohort of essays. AI used as a monitoring tool in this context could improve marking and consistency overall, and spot errors.
- **Adaptive learning systems:** There is a class of systems known as 'adaptive learning systems' or 'intelligent tutor systems'. These are fairly specific types of system that change the pace, order or level of the learning based on some algorithm. They are some of the most mature AI-based education technology systems and have been shown to be very effective in some domains. However, they are not suitable for all types of courses or domain areas. They are most suitable when the domain knowledge can be very clearly defined and can be learned in a step-by-step way. These systems are usually self-contained online systems, where the learner takes the course at their own pace. Typically, the learner will be presented with a learning activity, which may be reading material, an activity or a video. Then, their understanding of a portion of the knowledge will be evaluated, for example via a test, and then

they will be guided onto the next step based on the result of the test. Within this type of system, the learner is working at their own pace and this can make incorporating group activities a challenge. In the UK, Basingstoke College of Technology has been using CENTURY's AI solution, which creates an individual path for each learner with personalised learning steps.

In addition to the uses already present in one form or another, there are a number of **potential uses** of AI which are expected to transform the VET landscape:

- **Dialogue-based tutors:** combining adaptive learning systems and chatbots with the aim of helping students learn through conversation rather than working through text or video-based content. Examples of these include AutoTutor and Watson Tutor which provide augmented online textbooks (Pearson).
- **Recommendation engines:** Users already are accustomed to being provided with recommendations from AI-driven services on a daily basis, whether it's recommending purchases from shopping sites, films to watch on streaming services or books to read. Recommendation engines typically make their recommendations based on a combination of approaches known as collaborative filtering (what other similar people read) and connect-based filtering (other content that's similar). Such an approach could be used, for example, in a virtual learning environment (VLE) to personalise learning by recommending content from within the VLE.
- **AI-assisted content creation:** AI-driven tools that create questions from existing content, such as Quillionz and Quizbot (https://learningtools.donjohnston.com/product/quizbot/) are already present. Content selection and summarisation tools are used in other fields. For example, Microsoft uses AI for its news aggregation services with AI tools that select and summarise news stories. It is possible to see how these tools could be used to automate learning content in the same way. Although it is more focused on corporate training, **WildFire** claims to be the world's first *content creation service*, automating the whole process of creating online learning courses. WildFire has been used to automate the production of 138 modules of learning, delivering this in eight weeks and at just 10% of the cost of more traditional methods.

6. CPD of VET trainers

a. Overview

In all partner countries, there is a general consensus that educators need a **new skillset** to adapt to the challenges posed by the new teaching environment. **Digital literacy** is prioritised as a result of the necessity to deliver trainings in an online format. Media literacy is also a topic gaining in prominence, and its connection to digital literacy is well-established. Slower to come to focus than the technical skills, but still significant, is the realisation that educators need to update their **didactic competences** as well to fit the new context.

As a result of the significant efforts by public and private actors, in all partner countries there are CPD offers available for all educators at least on a number of these subjects. However, because **of time pressures**, educators cannot always take part in these upskilling opportunities. Some countries try to alleviate the situation by making the requalification mandatory, but meaningful participation in a learning project requires the motivation and the ability to concentrate.

As a result, the greatest demand is for **practical, easy-to-implement solutions**. General theoretical understanding of the concepts of learner-centred education, curation of digital resources, and the use of open educational resources, is best left to the formation of educators in a university context. What is needed as a CPD offer, is an example of how to apply these concepts in the (virtual) classroom.

a. Austria

There are various initiatives to cover these issues in professional development. The most important ones in the sector are covered by the teacher universities (PHs) for school teachers and wba/erwachsenenbildung.at (digiprof) for adult educators. Various training and support offers for trainers emerged on-the-spot to support them in the new e-learning context. An important free offer for trainers and adult educators was provided by the platform of adult education in Austria erwachsenenbildung.at with their free *Digiprof* webinars for adult educators interested in moving their classes online. Coincidentally, at the same time as the first Lockdown was taking place in Austria, the EBMooc ("adult educators' MOOC") was also taking place, with the goal of teaching digital skills to adult educators. There'll be a new free MOOC for adult educators, EBmooc-focus, starting in September 2021 with a focus on adult education in online rooms. *die Berater*® has started providing trainings for online training delivery first for their own trainers and now for other adult educators, too. At first, focus was on using conferencing tools such as Zoom or MS teams, later on enhancing online

trainings with quiz apps, padlets and LMS. Of course, continuous (technical) support and coaching also played an important role. For teachers in public VET schools, the Ministry of Education and various teacher training institutions offered online platform with references for online teaching (e.g. https://www.lernendigital.at), also including links to OER libraries. Distance teaching MOOCs and other learning offers for digitalisation of education can now be easily found for this target group.

Several platforms have been made available to collect and provide tools for e-learning in school-based VET and for VET teachers (e.g. eeducation.at, eduthek.at, ausbilder.at for dual apprenticeships, virtuelle-ph.at for teacher education). One university, the PH Linz, offers a master course (M.Sc.) "Neuroscience and Education" for educators in schools and universities, adult educators and L&D professionals. For adult education and VET train-the-trainer trainings, there are several workshops, literature and learning offers available on the topic of neuroscience, also in the context of online and blended learning. See for example the Erasmus+ projects "Pimp Up Your Brain" and "Neuroandragogy against exclusion" with contributions from Austrian partners.

b. Bulgaria

A survey of 1002 Bulgarian teachers conducted an analysis of the frequency of teachers' participation in training courses for continuous professional development over a five-year monitoring period. 82.93% took part in 5 or more training courses, 43.71% - in 10 or more courses, whereas 32.93% took part in more than 10 trainings. This is clear proof of Bulgarian teachers' high activity in continuous professional development courses. No similar data exists on trainers in the VET sector. Presumably, the data is relevant to VET school teachers, but less so to VET adult trainers, as the area is less regulated.

Regarding the subject of critical digital literacy, **media literacy** is a topic gaining in prominence for some time. Trainers and teachers are being educated at this very moment, since a realisation is shared that the change in the learners must be prepared by a change in teachers.

c. Germany

Not all subjects covered by this report are known to the same extent and correspondingly, they are not always the subject of further education. Digital literacy and collaborative learning are already part of many training courses and there is also a great awareness of their importance and benefits for learners and trainers. When it comes to content curation, it is difficult to identify specific offers on content curation for trainers. However, there are courses on content curation in the cultural and

creative sector. This means, above all, that classical curation, for example in museums or libraries, is extended with digital tools.

No CPD offers have been found on OER or content curation. However, a recent survey was conducted in November – December 2019 by the German Institute for Vocational Education, BIBB (https://open-educational-resources.de/online-umfrage-zu-oer-an-berufsbildenden-schulen/). The survey investigated the status quo of the dissemination, acceptance and use of OER at vocational schools in Germany. The management level as well as teachers and trainee teachers from different subject areas at vocational schools were addressed nationwide. 972 complete responses were received. The results suggest that the **exchange of educational materials** is actively practised among colleagues. However, for the vast majority of the vocational school teachers surveyed who create their own materials, this ends their willingness or the possibility of making them available to a wider circle of users. Only a small number is willing to share their own materials on public platforms. Rather sporadically, open licences are also used here. About a third of the respondents were familiar with the term OER. Of these, around half said they knew of platforms where they can find or distribute OER. Those who are familiar with the term OER generally have a positive attitude towards it. The collaborative creation is highlighted as enriching and the aspect of timeliness as well as the possibility of customisation are seen as particularly positive. According to the survey, the biggest obstacle to the creation of OER is the **time resources** of vocational teachers.

Overall, educational stakeholders and politicians are aware that there is still a lot of catching up to do when it comes to digitalisation. The pandemic has highlighted the problems like under a magnifying lens. This is why the Federal Ministry of Education and Research (BMBF) in collaboration with BIBB, the German Economic Institute, and training providers have been funding the development and testing of further training for teachers and in-company trainers through the qualification initiative 'Digital Change – Q 4.0' (Digitaler Wandel Q 4.0). It focuses on the development of specific qualification programmes primarily for in-company trainers, but also for VET school teachers and experts involved in apprenticeship examination.

Digitalisation has a strong impact on skills and the role of teachers and trainers in VET. It affects not only their technical but also their didactic and pedagogical competences. They need to get familiar with a whole range of digital media, from learning programmes and platforms to specific technical tools and applications, and to adapt their teaching and training methods. In response to these challenges, the digital change Q 4.0 initiative was launched in 2019 to set up and test innovative

continuing education and training concepts. These training concepts aim to strengthen the **media and IT skills** of teachers and trainers, as well as their ability to adapt the content of the training process to digital changes.

This initiative is planned to continue until 2022, after which it will be determined how the qualifications will operate longer term, for example becoming nationwide recognised additional qualifications, further training modules, or as part of the German Trainer Aptitude Ordinance (AEVO) (ReferNet Germany 2020). BMBF is also funding a sub-programme of the qualification initiative ('MIKA Seminars' – Media and IT Competence for Training Personnel), focusing specifically on the promotion of digital skills among training personnel. These seminars enable participants to learn which digital technologies can be appropriately applied in in-company training, practise the use of digital tools, and create individual 'digital tool boxes' that they can use in their daily in-company training (Foraus.de no date159).

d. Sweden

The Swedish education system, from preschool to higher education, is currently undergoing a **digitisation** process based on national policy documents, including the National Digitization Strategy for the School System (2017). The strategy emphasizes the digital competence of pupils and teachers, one of the EU's eight identified key competences for lifelong learning.

Further other 7 key competences have since 2016 been built in the curriculum of VET education, however the most emphasis has been on **L2L and entrepreneurship**.

The universities offering teacher training programs have developed specific training programs for teachers for developing their teaching regarding key competences. One of the reasons why teachers are showing interest is the use of **problem-based learning** as a method of teaching and learning.

The interviewed teachers all agreed that they are open to learn more and to acquire new digital competences which are relevant for their own teaching. They point out that they are interested in developing, improving and raising the overall quality of their teaching, especially in the digital environment but that the **lack of time** is an obstacle. Some interviewees point out that they feel that they need a push to find new tools and to understand how to use them. Meanwhile, others point out that they prefer to do their own research and update themselves. Another aspect is to learn how to better use the already implemented digital tools and their features and functions to raise the overall quality.

e. United Kingdom

There is an extensive range of professional development and CPD opportunities available to educators, but relatively **low take-up**. COVID-19 has had an enormous impact of self-directed digital CPD where all tutors have had to move their programmes into the virtual world.

Further Education Colleges usually have departments with responsibility for digital/e-learning and their staff provide support and tuition of the tutors. In the workplace, COVID has dramatically changed the way learning and development is delivered and will be delivered in the future. Blended Learning is now viewed as the way forward for both formal and non-formal learning.

Curation and self-directed learning at a glance

7. Challenges and opportunities

According to Christopher Pappas, there are three types of curation: collaborative and social curation are linked in that they collate user opinions to rate the quality of content and filter out the best examples. Semantic curation uses interesting to the learners keywords to assess appropriate content. This is similar to Josh Bersin's concept "learning in the flow of work" – a curative approach that becomes more and more tailored to learners' strengths and weaknesses with time. Curation presents a number of challenges and opportunities, as the educators are quick to point out.

As a traditionally verbal, face-to-face practice, teaching is faced with difficulties by contemporary educators in terms of them being able to utilize the benefits of modern technology to their work. For instance, teaching has traditionally been a foremost verbal practice, where teachers and learners address each other orally in class with comments, instructions and assessments that are lost as soon as they are spoken. Digital communication changes this: different forms of written or **recorded communication** distributed across various digital platforms are increasingly applied within school settings and can be analyzed by the participants themselves or by researchers. **Staying updated** and navigating through the multitude of resources today is becoming increasingly complicated, and the **communication barrier** inside online classrooms presents entirely new challenges to both them, and their students. The very ability to participate in online education is often put to the limit, as **Zoom fatigue** was mentioned in most of the interviews.

Choosing appropriate educators, as well as managing **preparation time** and selecting appropriate **methodologies** have become main challenges to curation, and the level of **commitment** to the

educational process in both parties is decreasing with technologisation. In addition to that, new and modernized **equipment** is hard to come by in many rural areas. Students' performance is hindered by the limitations of online practices that require **teamwork**, and trainers struggle not only in finding meaningful ways to deliver **soft skills** with their content, but in working successfully and communicatively together, too.

There are a number of additional challenges: there are issues of staying up to date with the institutional **rules of copyright** which change rapidly in our digital world. Time management, lack of real time **feedback**, as well as students who become **passive** or multitask during an online format pose further issues to the teaching process. There is less and less tolerance for content that is not carefully curated, and the **small talk** natural to any classroom, when digitalised – loses its value. It has been estimated that sessions should be no longer than 2.5 hours, and mini breaks need to take place every 45 minutes to keep the students' attention. Last, but not least, educators have to deal with the extra burden of having their teaching assistants become redundant during online classes.

While educators are quick to point out the challenges they are faced with, they also see the opportunities presented by curation. A curtion opportunity exists precisely due to the sheer **abundance** of materials, as well as the ability of learners to use resources for **independent study** and enhance their skills. The COVID crisis also facilitates people's interest in topics of **mental health** and wellbeing that are easily accessible online. With innovative tools that **gamify** and digitalise educational materials, or the use of **robotics** and **visualisation methods** for teaching, there is much space for improvement. There are more **international learners** as long-distance support resistance is getting smaller and international content is far more accessible. Moreover, learners have increased readiness to pay more for a face-to-face teaching experience.

8. Tools

The desk research and interviews, conducted in each partner country resulted in compiling several online tools categorized in three main groups depending on their purpose:

1) Tools used to facilitate Online Collaborative Learning
2) Tools used for Learning Content Curation
3) Tools used to assist Self-directed Learning

Some tools could be used for several purposes and therefore belong to more than one category. All examples which were compiled, accompanied with short descriptions can be found below.

a. Online Collaborative Learning

- Several main platforms stand out as used by training providers for conducting distance or online education: **Zoom, Microsoft Teams, Google Classroom, Google Meet, BigBlueButton** and **Skype** are used to conduct classes and communicate with the learners,
- Learning Management Systems are employed like **Moodle, Blackboard,** and some national development like **e-Learning Shell** (A Bulgarian LMS developed by the University of Ruse, used mainly in the higher education sector).
- **Google Docs** allows users to create, share and co-edit ordinary documents.
- **bulb** is a web-based digital portfolio where students and educators curate and create, share and showcase their work.
- **Prezi** (used for presentations that can be shared in-progress, allowing them to be edited by a group.
- **Think Binder** was used for organizing a study group online. With text chat and video chat functions, it allows people to interact online as they would in a traditional study group. It has cloud storage space and bookmarking facilities for resources which are relevant to the group, and an interactive whiteboard section for those who want to visualise their ideas.
- **Simple Surface** is an interactive whiteboard tool which allows you to create and link ideas very easily. Whilst the tool is largely text based (as a real whiteboard is), the simplicity can be useful for creating workable lists which can also be colour-coordinated. “Surfaces” can then be shared with other users to allow collaborative editing.
- **Miro** is a digital collaborative whiteboard platform with a variety of templates that facilitate mapping, planning, sharing etc. It is perceived as rather complex for most people, so sufficient time should be given for technical introductions until everyone can work with the tool fairly well.
- **Mural** is a collaborative working tool which integrates with Microsoft Teams and offers good opportunities for collaboration, which comes very close to face-to-face collaboration. It is also perceived as rather complex for most people, so sufficient time should be given for technical introductions until everyone can work with the tool fairly well.
- **Mind42** is a mind mapping tool similar to Simple Surface. Map editors can work together on a map at the same time and maps can be shared with the public.
- **Asana** is an online collaborative team working and learning platform.
- **Trello** is a project management tool that can be used for planning and managing learning, work and projects.

- **No Alternative Facts Gamification Platform** is a gamification platform created to enable Peer-to-Peer collaborative learning.
- **Padlet** is a hosting real-time collaborative web platform in which users can upload, organize and share content to virtual bulletin boards called "padlets."
- **Flipgrid** is a simple, free, and accessible video discussion experience for learners:
- **Milanote** is a tool, allowing for collaboration with students or the creation of pdfs of the created board
- **Samba Live** is a video communication tool for audio meetings right from your browser with no downloads.
- **Whereby** is video meeting tool with no app or software download.
- **Jitsi** is a set of open-source projects that allows you to easily build and deploy secure video conferences.
- **Slack** is a proprietary business communication platform with chat rooms organized by topic, private groups and direct messages.
- DropboxPaper is a free tool for real-time collaboration and sharing; another widely used software solution is Microsoft® OneNote.
- **SLIDO** can be used during f2f sessions, bridging live with digital collaboration.
- **Quizizz** https://quizizz.com/ - the platform offers gamified quizzes, polls, and lessons created by teachers all over the world
- **Teachfx.com** – the platform captures the interactions in class, and analyses TTT (teacher talking time) and STT (student talking time), and gives suggestions for improvement.
- **LearningApps.org** - is an application to support learning and teaching processes with small interactive modules. The aim is to collect reusable building blocks and make them available to everyone. Blocks (called Apps) include no specific framework or a specific learning scenario.
- **Slideshare.net** – a platform enabling the presentation of learning content in a visual form through presentations, infographics, documents or videos.
- **Closed social media groups:** many learners are familiar with social media and therefore hardly encounter any technical problems. The threshold to use them is relatively low. However, some refuse to use such groups for anything other than private purposes.
- **Gamified e-learning platforms:** Not all trainers have experience with gamified learning. Those who do are quite positive about it. However, it is relatively demanding to develop gamified learning programmes and platforms.

b. Learning Content Curation

- Scoop.it is an easy-to-use content curation platform that's used a lot within the learning community. You can put in your key words and fine tune with filters. You can also add your own trusted content sources. It can be embedded in your intranet without coding. It is good for finding relevant knowledge and sharing it with individuals or entire teams by sending emails to their inbox or via devices; publishing content to colleagues with one click; collaborative working.
- Pocket is a free service that discovers content personalised to your interests and enables you to 'save it' for later. Content is kept in one place and can be shared. It can be used in browsers and on devices. It is good for receiving new relevant content that you might miss, thanks to the personalisation. The more you use Pocket, the more relevant the recommendations in your feed will be.
- Symbaloo is a personal start page that allows you to navigate the web and compile your favourite sites all into one visual interface. With an account, you can save your bookmarks in the cloud and access them from anywhere with any device. It is good for managing your weblinks in an easy-to-find way. By default, your Symbaloo 'webmix' is private and secured in the cloud, but you have the option of sharing your resources with others so it's good also for collaborative working.
- List.ly is a user-generated curation site where the content is in the form of lists. Enables you to create and share lists on List.ly and on your website. It is good for finding and sharing top tips across your team and creating your own lists that colleagues can add to.
- Juxtapost is a fast, free and simple way to bookmark images that you see on the web, for use later. The postboard collaboration tool enables sharing of online content among selected people or entire teams. Also, very helpful when creating mood boards for learning.
- Learnist is an pp-based curated learning where you can create boards of articles, images, video, and other media. Primarily for self-directed learners, it allows you to find relevant content that you can compile on your own board. It is used for tapping into experts' knowledge; collaborating; sharing.
- Diigo (pronounced Dee'go - an abbreviation for Digest of Internet Information, Groups and Other stuff) is a social bookmarking website. By installing an extension to your browser, you can bookmark and tag web pages. Users can also can highlight specific content, just like a highlighter pen and attach 'sticky notes'. It is good for storing specific pieces of content, sharing and collaborating.

- Flipboard is a content aggregation app that's also available for desktop computers. Users can save and organise website content across a range of subjects to their Flipboard 'home page'. It's essentially your own curated, personalised content for you to save and share. It is good for bringing together all the content you want from trusted sources, to keep and share with others in a magazine format.
- Pinterest is a content 'pinned' by registered users either in individual pins or on 'boards' of topics. Users are able to pin (ie save) content on Pinterest and create their own boards. Users can search for pins, boards and people. Try searching for 'workplace learning' or specific experts. It is good for discovering the best online content; pulling it together and sharing it via pins or topic boards.
- Feedly is available on PCs, apps and as a cloud-based service. It compiles online news feeds that the user can customise and share with others. It has a business content application that provides secure access to private content from your company's internal portals, content management systems and SaaS applications. It is used for discovering what 'thought leaders' and teammates read; working with your teammates to curate, comment, and prioritise the best stories about specific topics and ideas; empowering your teams with stories as they happen; engaging and sparking discussions.
- sCOOLing is used for curation of videos and supporting didactic material for German as a foreign language.
- Wakelet (used for both curation and self-directed learning) allows for aggregating online resources into a curated collection with different layouts. Wakelet is especially interesting for educators because other people can be invited to contribute to a collection without a user account.
- Anders Pink is a platform and app for automatic filtering (before curation)
- TaskCards is based in Germany and is GDPR compliant in contrast to Padlet
- Webjets and its successor Weje (used for both curation and online collaborative learning) allows to combine contents to logical structures (e.g. a mindmap, a table).
- Revue is actually a newsletter service provider, but free for up to 50 subscribers. It provides a good template for curated collections: a short intro at the beginning, then all the desired topics with links, embedded videos, tweets or images. As soon as the newsletter is sent out, it is also available as a page on the web and can be presented and shared as such
- Telegra.ph can be used for „quick and dirty"curation, it creates a simple website without registration, which can be shared but cannot be edited later. Texts, images, links and embedded videos can be used

- Social bookmarking tools for curation such as Pocket and Diigo
- Beyond.so is built for curation (it is a social content curation platform), still in beta version and on invitation only
- Innential and Jooseph are used for learning path design (new developments, there is currently no indication about fees or data security available)
- Canva provides more diverse opportunities for curating presentation materials (as opposed to just using PowerPoint)
- LinkedIn Learning provides video courses taught by industry experts in software, creative, and business skills
- **Camtasia** (https://www.techsmith.com/video-editor.html) – a simple Screen Recorder and Video Editor

c. Self-directed Learning

- **Moodle**, **Udemy, 360Learning** (with collaborative learning functions), **LearnUpon, Looop** etc are self-directed in a way that you invest and direct your time and pace for learning – you choose on what topics, but with the disclaimer shared by the trainer that this only functions if the learner is self-motivated enough.
- Educational content is often available in the form of **TED talks, YouTube Videos, Podcasts**
- **BBC Bite –size** is a free online study support resource for school-age pupils in the United Kingdom. It is designed to aid pupils in both schoolwork and, for older pupils, exams.
- **LearnDirect** is the largest online course provider in the UK.
- **LMS and LXPs** eg. Moodle
- **MOOCs** eg. https://www.edx.org/xseries/harvardx-fundamentals-of-neuroscience
- **Duolingo** has become one of the top ways to learn a new language on your own. Whether users are preparing to travel somewhere or want to learn more about a specific culture, they can pick up basic phrases and sentences on the app. Duolingo can be used for self-directed learning for languages that you may not have teaching resources for — like Portuguese, Japanese and Arabic.
- **Mimo** is an app that teaches people how to code and introduces the fundamentals of programming. This app focuses on real-world projects like coding a homepage or voting features.

Learners can develop their own portfolio projects to see if programming is a career, they might be interested in.

- **StoryShare Learn** is a mobile-first learning experience platform that makes it easy to deliver video learning and quizzes, while better understanding the impact of training content on business results and learners.
- **Calendly** is a tool where you at any time can book 10 minutes with the teacher to ask individual questions.
- **Ucha.se** – video lesson platform, offers 21 000 video lessons, tests and presentations at a cost of 8 EUR per month.
- **Khan academy** – it offers free hands-on exercises, video tutorials and a personalized learning board that allow students to learn at their own pace in the classroom or outside.
- **Znam.be** – includes a questionnaire based on neuroscience to help students discover their 'why'. It suggests a profession based on their interests.

9. Competences

a. Online collaborative learning

A survey carried out by Fosway Group reported that 97 % of organisations are now using virtual classrooms in their L&D, and 53% report that these are their most successful learning platforms during COVID-19. The top 5 success factors include:

- **group exercises** and effective live collaboration
- **active learning** and high levels of personal, face-to-face interaction
- **differentiating** learning experiences from other virtual meetings
- professional **production values**
- **ease of use**

Partners identified three main factors necessary for Online collaborative learning:

- Relationship skills (teacher-students dynamic)
- Environment facilitation (one stimulative of creativity and participation)
- Planning skills (curation; teaching structure)

These can be summarized as requiring the following:

- **Digital skills** and competence with relevant platforms

- Ability to employ various teaching **methodologies**
- **Interactivity**
- Giving and receiving **feedback**, and making adjustments based on that
- Maintaining the **attention and interest** of the learners, and tracking the levels of these
- Ability to understand the learners' **emotional condition**

Keys to successful collaborative learning:

- Offering **engaging activities** at any given moment is a great positive to the process of collaborative learning.
- **Perseverance** during technical issues and good communication skills add to a pleasant online environment.
- Good **preparation** for the class combined with humility and presence. Be aware of others' perspectives and ask them questions to deliver more engaging content.
- **Enthusiasm** and emotional connection.

b. Curation of digital educational resources

The process of curation requires to **search** > **criticise** (what is worth keeping; what is fake) > **filter** & **grade** (tag; label categorize) > **synthesise** & **adapt** > **share**. An educator must also add value to the content – search, sense, share (Diepolder, 2020), or even better – select, arrange, update, promote. An educator must have a clear picture of their target groups' **learning experiences and goals**, as well as motives and drives. Think not only about the success of the learning experience, but also its attractiveness. (Linke, L.P. 2020).

In his online Content Curation Guide, Robin Good (2017) mentions the following competences and characteristics of "good" content curators (not limited to teaching and learning):

- **General Traits**
  - Curiosity
  - Subject-Matter expertise
  - Strong ethics
  - Transparency — Disclosure
  - Empathy
  - Personal voice
  - Pattern recognition

- Organization
- Attention to details
- Being systematic
- Patience

- **Communication Skills:**
  - Strong editorial focus
  - Effective writing
  - Contextualizing
  - Synthesizing
  - Presenting
  - Visualization
  - Vetting & Verification
  - Comparing
  - Referencing
  - Crediting
  - Listening
- **Technology Know-How**
  - Online search
  - Collecting
  - Archiving - Preserving
  - RSS feeds
  - Online publishing
  - Information design
  - Social media publishing
  - Use of digital images and video
  - Content scheduling / automation

Keys to successful content curation:

- **Research skills** and knowledge of the necessary search engines and databases
- Choosing from variable resources and **readiness to learn** new things every day
- **Result-orientation** and conveying information clearly
- Relating training content to **everyday life** experiences
- Possessing a **growth mindset**

c. Self-directed learning

Self-directed learning is a core function for maintaining employability. It is still a collaborative process (teachers must facilitate it). An educator must:

- provide a wide range of **resources** for learning, including him-/herself
- be open to and facilitate learner **expression** of opinions and attitudes
- assist and advise learners in setting, monitoring, and reviewing challenging **targets**
- offer **individualised** guidance about learning
- arrange **practical** opportunities for applying knowledge
- provide expert monitoring and **feedback**
- enable self and peer-**assessment**
- set a culture of **high expectations**

Keys to successful self-directed learning:

- Appropriate methods for **engagement/assessment** of the students, derived from successful approaches in similar fields
- Proper selection of **training materials**, explicitly tailored to the audience
- Proper **presentation** of the selected materials (ensuring the learners are aware of their nature and purpose)
- **Feedback** and follow-up
- Providing enough **time** to complete tasks

Educator Engagement Strategy

1. *Needs of the trainers*

COVID has raised awareness but also trainers are more aware of what they can't do. They express a number of more or less urgent needs, including how to:

- **select** easily accessible digital resources and tools, and make better use of software including PowerPoint, videos, Canva etc;
- **design and develop** engaging content and collaborative experiences
- **keep the learners focused**. The constant question is how to win and navigate the learner's attention.
- **organise** and facilitate groups online (think leading cohorts vs. pure online delivery)
- establish **ongoing communication** with students.
- build a strong '**virtual presence'** with students. Evidence shows the natural lack of social interaction with learners can lead to disengagement and alienation, and that establishing 'teacher presence' is an important component of remote schooling.
- get **feedback** on the impact of the curation of specific session in a virtual environment.
- get some real-time information on student comprehension and **progress**
- deliver **practical subjects** – like ceramics
- know what can be put on (organisational/school-owned) learning platforms without breaking **copyright** laws
- understand the concepts of **OER** and freely available tools and resources, how to find them and how to assess them
- understand the concepts of **curation** (think link lists vs. usefully curated content) and testing/incorporating them into their own workflow
- tackle increased challenges in safeguarding and supporting **equitable outcomes**. Home environments can exacerbate disadvantage, and greater use of online learning brings its increased safeguarding risks.
- **self-care**: the educators share they often struggle how to keep their energy high and the energy of the trainees. It is even physically exhausting with all the sitting in front of the camera.

In order to meet the trainers' needs, the partners themselves will be required to:

- take their time to understand and test the **concept of curation** themselves

- consider how much of the training should be **"live"** and how much can be delivered in the form of a curated course
- prepare **"a brand with a face"**- a more personal approach, where the trainers know who exactly stands behind all these efforts and resources, with personal attention and approach.
- Create an innovative **Train-the-Trainer format**, with supporting Toolbox and Learning Experience Platform, for competence development in facilitating collaboration for learning and digital content creation
- Provide educators and trainers with useful **skills** and action-oriented **methods** on how to develop critical digital literacy skills for learning and digital learning content creation
- Enhance the digital and self-directed learning competences of **adult learners** (final beneficiaries), thus increase the use of digital technologies by educators and trainers, especially through the application of critical digital literacy skills, learning content curation and collaborative learning techniques.

2. Needs of the organisations

Sometimes organisations have an (international) account for a specific online tool that is very limiting for the trainers themselves e.g. not showing the cameras of the participants or not offering a possibility for interaction. The need of certain companies for **web security** is also very challenging for the use of some web-based collaborative platforms that might not be allowed in the company browsers.

Apart from the usual financial constraints, there are strict **due diligence** regulations applied to any digital materials before they can be used eg. in terms of accessibility, security etc. This can be frustrating for tutors wanting to try new approaches and techniques. Organisationally a commercial sense of ownership on content means that colleges are reluctant to share content developed internally with others.

Many companies now have started to **record** the training sessions and want to play them to future learners, but the question remains – how to keep the learner motivated to not just watch the lecture, but to digest it and to be self-directed in the follow up steps of personal development after the training.

Lastly, one of the biggest needs of the organisations has been and still is the **transfer to practice**.

The partnership can tackle these challenges by several methods:

- increasing the knowledge of the key role of **self-motivation** and the awareness of the benefits of self-directed learning, where learners are empowered in the knowledge and competences gain.
- assisting organisations in selecting **Learning Management Systems**: tools for evaluating student performance measures with statistical methods in data sets covering the results that show time-on-task and student performance outcome
- supporting the ICT infrastructural requirements of organisations through developing an **ICT Equipment Training** of staff in digital skill: participation of individual teachers in externally organised programmes, but also more flexibly to hire external trainers for whole-school training, to fund teaching release time for their most skilled teachers to provide year-round, school-based training.
- providing organisations with training and guidance on how to develop a digital professional development project tailored to local needs and on how to create space for informal sharing and learning among teachers.
- creating a **guidance for the management** how to introduce digital cooperative learning among educators and including the guidance into the internal quality system.
- providing methods for teachers to **collaboratively design lessons** and observe one another teaching in order to better understand how students learn and to improve instruction.
- providing **best practices** that demonstrate collaborative practices tend to be more successful when teachers have shared goals to achieve.

3. Opportunities for added value

The main messages communicated to educators and organisations for the Cur8 approach should include:

- the importance of **digital competences** for development and employability;
- **community of practice** with other trainers and educators, as well as the possibility for knowledge exchange and feedback;
- **saving time** by getting to know "Cur8-approved" online tools for curation and online learning - "everything tested and approved - under one roof" in contrast to the digital chaos of tools out there;
- **personal benefits** of using curation for one's own self-directed learning;
- a focus on **reliability of the sources** of all materials and tools.

4. Communication media, channels, and plans

The most appropriate communication routes will be via the partners personal, professional and organisational networks. By engaging people through the interviews partners have already raised some level of awareness and they asked those who responded if they could recommend any of their contacts who might be interesting in being involved.

The main target group for the communication of the project activities includes **VET trainers, C-VET/CPD professionals, coaches, HR personnel,** and **career advisers**.

The main communication channels will include:

- **email**
- the project website
- partners **websites** and social media
- internal company **newsletters**
- external newsletters
- **personal contacts** - both live and virtual
- **presentations** to interested parties
- **webinars** with various CPD providers and trainers
- participation in **events and conferences** organised by partners
- strong **cooperation** with colleagues who work in projects on similar online learning topics

The regularity of communication will vary by country and project phase. It will start with with general product information, and become more often once concrete results are available.

5. Main actors and beneficiaries to contact

a. Austria

The main actors for Austria to reach are die Berater®'s in-house trainers, educators and coaches (direct information and via our own company-wide learning platform).

On a next level, there could be addressed VET trainers, L&D professionals and adult educators who are involved in die Berater®'s learning offers (e.g. "DigiCoach").

Potentially interested public bodies include:

- further education bodies (public universities) for VET teachers
- DigiProf team for adult educators (sponsored by the Ministry of Education)

- VHS-Verband for adult educators
- national EPALE team

The concrete contacts already engaged have been provided in the Dissemination plan.

b. Bulgaria

The most relevant actors in Bulgaria are the 1006 vocational training centres, providing training leading to a VET qualification to individuals aged 16 or older. A third of the participants in VET training were informed about the possibilities by the Employment Agency. As the main target group consists of unemployed in need of upskilling, there are considerable challenges.

The National Agency for Vocational Education and Training (NAVET) exercises, among others, the following functions:

- exercising control over the activity and assessment of the quality of the training in the licensed institutions in the system of the professional training;

- developing and proposing to the Minister of Education and Science the state educational standards for acquiring qualification by professions;

- assigning the conduct of scientific research in the field of vocational education, training and orientation;

- methodically supporting the vocational training centres, which carry out validation of professional knowledge, skills and competences in the system of vocational education and training.

The Employment Agency (EA) is also an important actor in the field of VET, since its local units – the Labour Bureaus – are the main channel through which unemployed adults are directed towards requalification opportunities.

In addition, contacts were identified in organisations such as Khan academy and Varna airport.

c. Germany

The main actors in Germany include:

- VHS Göttingen, Göttingex-based adult education centre that covers a wide range of topics – from formal C-VET qualification to informal offers. The trainers are primarily free-lancers and work on an honorary basis for the VHS and often work also for other organisations.

- DIE – Deutsches Institut für Erwachsenenbildung - The institute, which is funded by the federal and state governments conducts research on issues of adult learning and teaching, continuing education programmes, continuing education institutions and the political and institutional context of lifelong learning.
- BIGS e.V., regional educational network with 30 members in the South of Lower Saxony – the network represents the main actors of further education in the region.
- Gesundheitsnetzwerk Südniedersachsen, Health Network of Lower Saxony with 103 members, based in Göttingen – one of the three main fields of activity is to provide CPD programmes for the stakeholders in the healthcare sector.
- Verpackungscluster Südniedersachsen e.V., packaging cluster of various organisations that provides, among others, CPD to its members.
- Arbeitgeberverband Lüneburg-Nordostniedersachsen e. V., Employers' association with 750 member companies.
- Beschäftigungsförderung Göttingen: Vocational training for disadvantaged people.
- Agentur für Arbeit in Göttingen: offers further qualification for organisations and gives advice in setting up a qualification concept. Also takes over parts of qualification costs.

The contacts for the project include:

- BIGS e.V., regional educational network with 30 members https://www.bildungsgenossenschaft.de/
- Gesundheitsnetzwerk Südniedersachsen, Health Network of Lower Saxony with 103 members, based in Göttingen – one of the three main fields of activity is to provide CPD programmes for the stakeholders in the healthcare sector (https://gesundheitsregiongoettingen.de).
- Verpackungscluster Südniedersachsen e.V., packaging cluster of various organisations that provides, among others, CPD to its members (http://www.verpackungscluster.de/).
- Arbeitgeberverband Lüneburg-Nordostniedersachsen e. V., Employers' association with 750 member companies https://arbeitgeberverbandlueneburg.de/ that offer seminars, webinars, events and courses.
- Göttingen-based REVEAL which is a research and evaluation network representing 22 EU countries (https://reveal-eu.org/).

- Goethe Institut - cultural institute of the Federal Republic of Germany with a global reach, that promotes knowledge and cultural cooperation (https://www.goethe.de/).
- Destination Workplace - international consultancy, providing corporate support with the help of digital innovation and AI (https://www.linkedin.com/company/destination-workplace/)
- Frechau – technological consultancy company, based in Germany (https://www.xing.com/pages/ferchau)
- Profil M Beratung für Human Resources Management GmbH & Co. KG – leadership programmes in Germany and globally – (https://www.linkedin.com/company/profil-m-beratung-f%C3%BCr-human-resources-management-gmbh-&-co.-kg/)
- One Up One Down Mentors – AI-powered women's mentorship platform, based on near-peer mentoring. (https://oneuponedown.org/)
- School of Mindful Facilitation - design and facilitation of train-the-trainer educational events of high quality in a holistic and mindful way. (https://mindfulfacilitation.de/)
- European Central Bank, Diversity and Inclusion HR department, Designing and organising workshops, trainings and speaker events for specific target groups (e.g. area heads, management, all staff (https://www.linkedin.com/company/european-central-bank/)
- FemGems Club – support system for early-stage female founders (www.femgems.club)
- Nexpera GmbH – recruiting company (https://www.linkedin.com/company/nexpera-gmbh/)

d. Sweden

The main institutions in Sweden include:

- Folkuniversitetet: Provides adult education, courses and vocational education in different sectors.
- Studiefrämjandet is one of Sweden's largest study associations. They provide adult and vocational education and a wide range of study circles, courses, cultural experiences and lectures.
- ABF: Arbetarnas Bildningsförbund (ABF) is Sweden's leading educational association. They offer study circles, courses, lectures and cultural events in all the country's municipalities.
- Nackademin provides Vocational education that offers accurate and relevant training that combines theory and practice (LIA).
- YrkesAkademin provides vocational education and workplace training in different sectors

- National Agency for Higher VET (YH-myndigheten). YH -myndigheten analyse the labour market's needs for VET, decide which courses should be included and grant state funding to education providers. They also promote validation in training. The Authority supervises and handles complaints about the education and training programmes within their remit. They also review the quality of education, produce statistics and monitor the results of education. YH-myndigheten is also the national coordination point for the European Qualifications Framework (EQF), which aims to make it easier to compare educational and vocational qualifications across the EU.

Contacts already engaged include:

- Nackademin
- Folkuniversitetet
- ABF
- Studiefrämjandet
- YrkesAkademin

e. United Kingdom

The main actors in the UK include:

- Workplace trainers – L&D strategy
- Training Consultants – management training + community empowerment
- Further Education Tutors (C-VET) – vocational subjects: marketing, sport and fitness, public services
- Further Education digital managers – digital learning strategies

JISC (www.jisc.ac.uk) is a main public body in the UK for higher, further education. In addition, there are skills sectors' not-for-profit organisation for digital services and solutions. The Chartered Institute of Personnel and Development (CIPD) is the main professional institute for HR and L&D professionals.

Some of the contacts already involved include:

- Loughborough College (Further and Higher Education) www.loucoll.ac.uk
- MyTrainingResources https://mytrainingresources.co.uk/

- Leicestershire Branch CIPD www.cipd.co.uk
- Active Aims https://www.activeaims.co.uk/
- Nottingham College: https://www.nottinghamcollege.ac.uk/
- Salad Skills (Apprenticeships) https://saladskills.co.uk/
- University of Nottingham
- Berry Recruitment
- Slimming World Ltd.
- Derby City Council
- Gloucestershire County Council
- F-star Therapeutics Ltd.
- JISC: https://www.jisc.ac.uk/about/who-we-are-and-what-we-do

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