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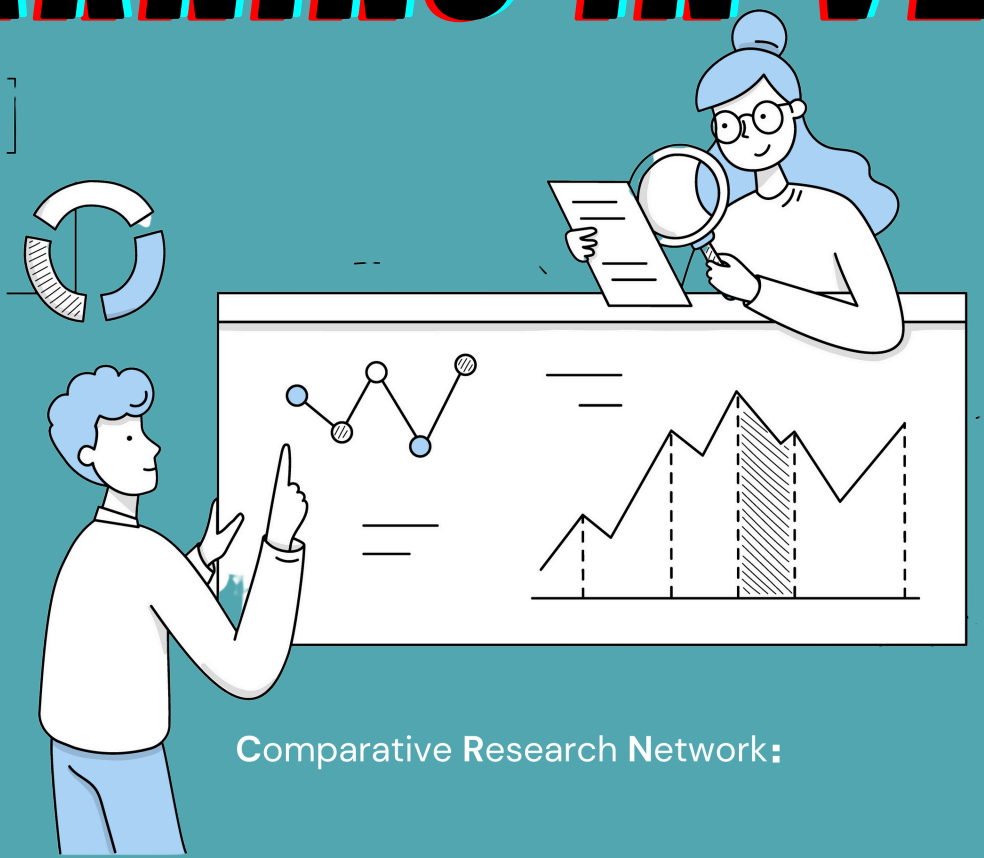
HOW AI IMPACTS HYBRID LEARNING IN VET



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EVOLUTION OF AI

Introduction

The rapid evolution of hybrid learning environments witnessed in recent times, is currently affecting and reshaping education in its totality. The Vocational Education and Training (VET) sector across Europe is not an exemption. Such changes have rendered a re-evaluation of the core competencies that educators in the VET sector require, necessary. At the same time, the emergence and impact of Artificial Intelligence (AI) has further altered the skillset required to facilitate high quality, effective learning and teaching in hybrid learning environments.

The fact that such environments make use of micro-credentials for recognition and validation purposes - tools that have been found to be flexible and dynamic and offer multiple benefits (Palmer, 2021) - means that educators need to be well-trained and able to make use of such tools as well. Drawing from what we have learnt throughout the Beyzo project (Beyzo, 2021), this position paper looks at the impact of AI on hybrid learning in VET and also at the need to establish a set of benchmarks that outline the core competencies required in the VET sector, allowing VET professionals to deliver high quality and effective teaching and learning in hybrid learning environments.

IMPACT OF AI

The Impact of AI into VET

In the rapidly evolving landscape of VET which sees teaching taking place in digital and hybrid environments, AI integration has emerged as a critical competence for educators (NG, Leung, & Su, et al., 2023). As traditional classrooms blend with technology-driven platforms, educators must now adapt to innovative teaching methodologies that leverage AI to enhance the learning experience. At the same time, industries increasingly adopt AI-driven technologies; therefore, VET instructors must equip students with relevant skills to meet the demands of modern workplaces. Competence in AI enables educators to not only understand the tools shaping modern work environments but also to integrate AI-enhanced teaching methods, creating personalized, more flexible learning contexts, thus catering to the diverse needs of their students in such environments.

It also empowers educators to prepare their students for workplaces shaped by AI and automation, making them more competitive. The above highlight the essential role of AI competence as a pedagogical tool.

Alongside the AI component, the current shift towards hybrid learning environments is partly driven by the emerging needs that have arisen directly because of the recent pandemic (Lemay, Bazelais, & Doleck, 2021). This shift has affected all levels of education globally. For the VET sector specifically, it has given rise to a need for a new skillset for trainers and educators.

The competencies comprising such a skillset are multifaceted and range from adapting more traditional teaching practices to a digital format to ushering learners towards this new reality, and from an understanding of how to build, manage, and facilitate learning in these new-era, technology-mediated environments to applying all that. In what follows, we will take a closer look at a number of these competencies:

- ***AI Literacy and technological proficiency:*** trainers and educators are expected to be proficient in the implementation of digital tools and platforms, both for delivering content as well as for engaging learners, facilitating interaction, and assessing learning. Such a skillset contains a clear understanding of how online learning management systems (LMS) (e.g. Moodle), video conferencing tools, and also digital communication platforms work. It is also vital that VET educators obtain a clear understanding of AI principles, like machine learning. Moreover, knowledge of AI tools, platforms, and applications relevant to their field of instruction, such as intelligent tutoring systems, adaptive learning platforms, and AI-based simulation tools, can be helpful in helping learners adapt more easily.

- ***Pedagogy and Instructional Design:*** the ability to effectively adapt pedagogical approaches is necessary when transitioning from more traditional pedagogies to hybrid modes of delivering learning. The ability to create interactive content that keeps learners engaged, pick the appropriate type of multimedia and use it effectively, and design courses that fit the particularities of digital learning are all paramount for such adaptation. Designing innovative courses that employ AI to support hybrid settings ensures that there is a seamless transition between various modes of teaching for both educators and learners. From a pedagogical perspective, integration of AI-driven learning platforms and materials can support personalized, self-paced learning and enhance student engagement in both in-person and hybrid environments. Additionally, tools that can provide real-time feedback can further advance the learning process.

- ***Learner Engagement and Motivation:*** maintaining learner engagement can be challenging for educators in hybrid environments, where there is no direct eye contact, learner cameras may be turned off at times and learners often have their attention distracted (Puthiya et al., 2023). The key to

- ***motivating learners and maintaining*** that for the duration of the course is for educators to create a sense of community among learners and foster collaboration, keeping learners engaged in the process. AI tools like gamification, real-life support, simulations, chatbots and virtual assistants, among others, can help educators and trainers to engage different types of learners.

- ***Assessment and Feedback:*** both formative and summative assessment can be used in hybrid settings. However, the way assessment is applied needs to be adapted (Khan & Khan, 2019). Therefore, trainers and educators must be adept in designing valid, reliable assessment that can be administered online in a controlled way. They must also be able to use platforms that are appropriate for such purposes and which secure the integrity of online assessment (e.g. Proctorio). At the same time, providing feedback is crucial to support learner progress and to maintain engagement. Automated assessments, personalized feedback, learning analytics (helping educators analyze large volumes of data), adaptive feedback and plagiarism detection tools are some of the ways AI can help in this respect.

MICRO-CREDENTIALS

How can AI help educators implement micro-credentials in recognizing learner competencies

Micro-credentials are powerful in promoting flexible, inclusive learning opportunities and can be used to certify the learning outcomes of short courses, helping learners develop the skills and competencies needed for their professional development (European Commission, 2022). These mini qualifications are ideal for hybrid learning environments (Wheelahan & Moodie, 2021). Moreover, their flexibility, accessibility, modularity, portability and the opportunities they provide for rapid upskilling render them perfectly in alignment with the needs of the modern VET sector (Varadarajan, Koh, & Daniel, 2023).

Some benefits that micro-credentials carry are the following:

- ***Flexibility and Accessibility:*** on-demand courses, formal courses, self-directed learning and training are only some of the modes where micro-credentials can be implemented. Such flexibility makes them more easily accessible to VET learners, as it allows them to develop competencies whether at home, before or during employment, and always at their own pace.

- ***Modularity***: offering micro-credentials as modular units rather than entire courses lends even more flexibility to this system, and is well-suited for hybrid learning settings, as it allows learners to develop their skillset gradually. VET learners can attend modularized VET courses and combine smaller units as per their emerging needs (Cedefop, 2015).

- ***Portability***: establishing a pan-European framework for micro-credentials in VET education could lead to the recognition of competencies across Europe. Issues of verification aside, this would go a long way into encouraging mobility and continuing professional development in VET (European Training Foundation, 2022) and beyond.

- ***Alignment with Industry Needs:*** the VET sector requires a close match between education and industry. Micro-credentials have the capacity to be designed in such a way so that they align closely with industry standards. By ensuring that the acquired competencies stay relevant, this helps VET learners stay competitive in a touch labor market.

AI can prove a significant aid for educators to use micro-credentials in order to recognize learner competencies, by ensuring efficiency, personalization, and scalability.

Examples include:

- ***Automated mapping of competencies:*** by analyzing performance across learning activities, AI can map that to certain competencies, helping educators to identify which skills a learner has mastered and award the corresponding badge.

- ***Personalized micro-credentials:*** AI can suggest specific micro-credentials, based on learners' goals, progress, and skill gaps. This would ensure that a learner follows the most efficient path toward earning micro-credentials that align with their strengths and career goals.

- ***Automated assessment:*** AI can automate assessments for various competencies, elevating objectivity and consistency in assessment methods. This in turn renders the process of issuing micro-credentials more valid. At the same time, AI can help educators in assessing big numbers of learners.

- ***Enhanced feedback mechanisms:*** AI systems can provide instant feedback on learner performance in assessments and tasks. This real-time feedback helps learners quickly identify areas for improvement. Upon reaching proficiency, AI can then trigger the awarding of the relevant micro-credentials.

BENCHMARKS

Developing Pan-European Core Competencies Benchmarks

The establishment of pan-European benchmarks for the core competencies required in hybrid learning environments is vital to ensure consistency and quality across the European VET sector. What is more, these benchmarks should consider AI integration into hybrid teaching and learning environments, by ensuring that benchmarking is data-driven, takes advantage of predictive analyses for skill demand and considers updated industry standards, among others, all of which render the benchmarking process more dynamic and technology-driven.

Overall, developing such benchmarks should be a collaborative endeavor and involve educators, industry representatives, policymakers, and other stakeholders. In doing so, those involved must keep the following in mind. First, there needs to be applicability of these benchmarks across Europe. To achieve this, the diversity of educational settings and practices should be taken into account. Doing so will strengthen the recognition of competencies and also encourage mobility.

Second, it is necessary that micro-credentials accreditation is integrated within existing working frameworks, like the European Credit Transfer and Accumulation System (ECTS) (Europa, 2022) which is widely used in formal higher education and the European Qualifications Framework (EQF) (Europass, 2024). This step would improve transparency, comparability and portability of one's qualifications across countries.

Another consideration is that there need to be constant cycles of reviewing and adaptation. This will keep this framework abreast of any changes in the ever-evolving world of hybrid education (Bateman, 1989).

RECOMMEN-
DATIONS

Conclusions & Recommendations

AI has got immense potential with regards to transforming education and ensuring that the transition to hybrid learning environments in the VET sector is a challenging, yet exciting endeavor, while at the same time carrying multiple opportunities for educators and learners. Further to that, an effort should be made to render hybrid VET education accessible, portable and recognizable across Europe. AI can certainly help with that.

The establishment of pan-European core competencies benchmarks is a step towards that goal. In doing so, educators will be better placed to deliver high-quality teaching, and learners will be able to receive such education, taking into advantage the benefits of flexibility and modularity discussed above. At the same time, micro-credentials is a dynamic system that supports professional development and enhances the quality of VET across Europe. To achieve all this, steps need to be taken at institutional, national and EU levels.

Thus, this paper concludes with a number of recommendations. A serious effort should be made to develop a standardized micro-credentials framework, which would ensure competency recognition across Europe. To maximize applicability, this framework would need to be in alignment with valid and widely accepted European recognition frameworks. Towards that goal, a pan-European collaborative working group comprising of stakeholders, policymakers, industry representatives and VET educators and experts should be formed and work towards developing the benchmarks framework.

An effort should then be made to implement it, first locally and then across Europe. This will in all probability be time-consuming, might face resistance or reservations and will benefit from cycles of reviewing, monitoring and adjusting; perseverance and a clear plan hence are key. In addition, both the short- and long-term impact on teaching and learning quality in VET needs to be evaluated, to further improve the system.

A final recommendation is that consistent with other sectors in education, continuous professional development opportunities should be made readily available to VET educators. An effort should be made to integrate AI tools into all the above, taking advantage of its multiple benefits as these have been discussed elsewhere in this paper. The transition and wide use of hybrid environments requires a skillset different to that needed in physical settings. Thus, support should be given to educators to develop competencies of their own, to integrate themselves more efficiently within this changing landscape.

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