Cedefop Call for Papers 2026

Harnessing Artificial Intelligence and Digital Technologies for Inclusive and Resilient Vocational Education and Training (VET)

1. Background and rationale

This call for papers builds on Cedefop's work on inclusion within the VET for youth teachers and trainers team. Cedefop places inclusion and the use of AI and digital technologies[1] at the core of its work on vocational education and training (VET), with a strong focus on ensuring that VET systems support equal access, participation, and successful outcomes for all learners. Its research and online VET toolkits[2] address key challenges such as tackling early leaving from education and training, supporting learners at risk, and empowering young people who are NEET, also by strengthening inclusive (digital) learning and working environments.

Selected papers will be published in a special Cedefop Working Paper series exploring how artificial intelligence (AI) and digital technologies are being used in VET to promote inclusion, resilience, and sustainable transitions in the context of Industry 5.0.

Artificial intelligence (AI) and digital technologies are increasingly reshaping education systems, labour markets, and skill formation. While the Industry 4.0 paradigm foregrounded automation and digitalisation, the transition towards Industry 5.0 places stronger emphasis on human-centred, inclusive, sustainable and resilient systems. Vocational education and training (VET) is central to this transition, given its role in supporting employability, social inclusion, and school-to-work transitions.

This structural shift unlocks profound potential for VET, enabling personalised learning, strengthening pedagogical quality through tools like AI tutors and adaptive systems, and reducing administrative burdens for pedagogical and non-pedagogical staff. However,

---

[1] For the purposes of this call, "digital technologies" refers to digital technologies that go beyond basic ICT use. This includes, but is not limited to, artificial intelligence, robotics and automation, the Internet of Things, advanced data analytics, cloud and edge computing, extended reality applications and related emerging technologies.

[2] VET Toolkit for Empowering NEETs and VET Toolkit for Tackling Early Leaving

capitalising on these benefits hinges on the necessity for immediate systemic alignment and robust ethical governance. This requirement involves overcoming structural challenges such as outdated curricula, mandating sustained teacher capacity building, and ensuring compliance with frameworks like the EU AI Act, which classifies educational AI applications as "high-risk", thus demanding rigorous accountability and fairness. To this end, the European Commission has provided practical recommendations on the use of AI in VET (European Commission, 2022, 2025b, 2025c).

Despite a growing body of research on AI in education, with the latest OECD Digital Education Outlook highlighting the benefits of its use for students, teachers, and the education system more structurally (OECD, 2026), evidence specific to VET remains uneven. Existing studies often focus on conceptual potential, small-scale pilots or general education settings, with limited attention to implementation at scale, social inclusion outcomes and the distinctive pedagogical and institutional characteristics of VET, including curriculum rigidity and teacher capacity constraints. Recent literature reviews (Rosyadi et al., 2023; Baako, 2025; Solak Beriğel et al., 2025) highlight the potential of AI for personalisation, automation, and increased efficiency in VET.

Nevertheless, current research tends to over-rely on theoretical or pilot studies rather than implementation research, gives insufficient attention to equity and inclusion dimensions, and conducts limited critical examination of governance, accountability, and potential negative consequences, particularly in light of emerging regulatory frameworks, such as the EU AI Act.

In particular, empirical research remains scarce on how AI and digital technologies can:
- be integrated into VET curricula to support digital and AI literacy as foundational skills, especially for vulnerable VET learners;
- enable learner-centred vocational pedagogies and adaptive learning, especially for learners at risk of dropping out;
- support the prevention and reduction of early leaving from education and training (ELET);
- re-engage early school leavers and young people not in employment, education or training (NEET);
- affect teachers' and trainers' professional practice, workload and wellbeing.

The aim of this call for papers is to address existing research gaps on the use of AI in VET to promote inclusion, in order to strengthen the evidence base needed for inclusive and future-oriented VET systems.

2. Objectives of the call

The call aims to:

- Strengthen **empirical and implementation-oriented evidence** on AI and digital technology use in VET;
- Examine **inclusion, equity, and intersectionality** in the design and impact of AI-enabled VET practices;
- Identify **conditions for effectiveness, scalability and sustainability** of digital and AI-based interventions;
- Inform **European VET policy and practice** in the context of digital transformation and Industry 5.0.

To address these objectives, Cedefop identified five main relevant themes:

- **Theme 1: Digital and AI literacy as foundational skills for VET learners.**
- **Theme 2: Learner-centred vocational pedagogies and adaptive learning using AI and digital technologies.**
- **Theme 3: AI and digital technologies for preventing and addressing early leaving from VET.**
- **Theme 4: Digital technologies, AI and NEET outreach, engagement and transitions.**
- **Theme 5: Teachers' and trainers' digital competence, professional practice, and wellbeing.**

A discussion on these themes drawing from a preliminary literature review conducted by Cedefop is available in the Annex. While these themes outlined above are of particular interest, the call is not limited to these research areas. Contributions addressing any related topic at the intersection of artificial intelligence, VET, and inclusion are welcome.

Authors are encouraged to adopt an inclusion, equity, and intersectionality lens (e.g. considering gender, disability, migration, socioeconomic, and geographical factors), and to critically engage with the ethical, governance, and regulatory implications of AI in VET.

Submissions should focus on European Union Member States, Iceland, and Norway. Contributions from other geographical contexts are not within the scope of this call unless they are explicitly comparative and directly relevant to EU VET policy and practice.

Selected papers will be published in a special Cedefop Working Paper series. An example of similar publication is available [here](#)**.** To promote peer learning and the wide dissemination of submitted papers, **Cedefop will also invite authors in a dedicated high-level policy learning forum in June 2027.** This forum will provide a structured space for dialogue between researchers, policymakers, and practitioners, enabling authors to present and discuss their findings, exchange perspectives across countries and sectors, and reflect collectively on policy implications.

By bringing together diverse stakeholders, the forum will support mutual learning, help identify transferable lessons and good practices, and encourage critical discussion on how research evidence can inform policy design and implementation. In addition, it will enhance the visibility and impact of the papers by embedding them in ongoing European policy debates and fostering networks that can support further collaboration and knowledge exchange.

3. Submission guidelines

Academics, researchers, experts, policy officials, professionals in fields relevant to the call, worker and employer representatives interested in the topics above are invited to submit an **abstract** of maximum 500 words, describing their research clearly outlining the research question(s), objectives, data and methods, the expected contribution to research and policy on VET and relevance to the thematic priorities **via the [abstract submission URL.](#)**

Abstracts should include the title, author name(s), institutional affiliation(s), ORCID identifier(s) if available, and up to five keywords. Abstracts will be assessed based on relevance to the call, originality, methodological rigour, clarity of presentation, and policy relevance for European VET.

Following Cedefop's review of the abstracts, selected authors will be invited to submit a draft full paper. Draft full papers should be in English, no **longer than 8,000 words,** double-spaced, 12-point Times New Roman or similar font with one-inch margins. This limit excludes tables, figures and references. Tables and figures should be embedded in the text where relevant and clearly labelled. References should follow the APA (7th) style, applied consistently throughout the paper.

Submitted papers will undergo a light peer-review process in line with Cedefop Working Paper standards. Submitted papers may be checked for plagiarism. By submitting a paper, authors warrant that all necessary permissions and releases have been obtained, that the work does not infringe any copyright or proprietary rights, and that ethical standards relevant to the research have been respected. The Cedefop Working Paper series publishes research on vocational education and training, skills, and labour market topics relevant to European policy development and is disseminated widely to inform policy debates and practitioners across Europe.

Cedefop welcomes a broad range of high-quality research contributions, including:

- **Original, unpublished research** (e.g. Empirical quantitative, qualitative, and mixed-methods studies, Longitudinal and cross-country analyses, Policy and programme evaluations, Design-based and participatory research, Systematic or critical reviews with strong VET relevance, Completed and ongoing European research projects (such as Erasmus+, Horizon, etc.).

- **Research that has already been published or accepted for publication elsewhere**, provided that the author(s) confirm that the agreement with the original publisher allows reproduction of the paper or extracts thereof (e.g. open access publications or publications with an expired embargo). Author(s) must clearly acknowledge and reference the first publication in the submitted manuscript.

- Purely conceptual papers will be considered only if they clearly advance VET-relevant theory and policy insight. Authors should indicate at submission stage if the paper builds on previously published work and briefly describe how the submission extends or complements it.

The geographical scope encompasses EU Member States and associated countries participating in EU research programmes (including Horizon Europe, Erasmus+, and other EU-funded initiatives). Research from other contexts will be considered only where explicitly comparative or demonstrating direct relevance to European VET policy and practice.

Publication in the Cedefop Working Paper Series does not preclude authors from publishing their work subsequently in peer-reviewed academic journals or edited volumes, with appropriate reference to the Cedefop publication. The Cedefop publication will be released under the Creative Commons Attribution 4.0 (CC BY 4.0) licence. Cedefop will be cited as institutional author of the compiled publication and will hold the copyright of the publication as a whole, while authors retain the copyright of their individual contributions and will be acknowledged as authors of the corresponding chapters.

Selected authors will be invited to present their work at a Cedefop's high level European event in 2027. The event will provide an opportunity to present their research findings, and exchange with peers and policymakers. Apart from the Cedefop Working Paper Series, the presentations from the event can be published optionally on **Zenodo**, the European Union's Open Research Repository, with corresponding links to the working paper, to increase dissemination and visibility.

Important dates

- Deadline for submission of abstracts: **15 April 2026** using **the abstract submission link.**
- Notification of acceptance: **30 April 2026**.
- Deadline for submission of draft full papers of accepted abstracts: **31 July 2026**.
- Deadline for submission of final full papers: **Three weeks following feedback from Cedefop.**
- Notification of invitation to Cedefop event: **early 2027**.
- Cedefop event: **June 2027 (tbc)**.
- Publication in Cedefop special working paper series: **Spring 2027**.

Contacts

For any queries about the call for papers and Cedefop event, please email Cedefop's **VET for Youth – Teachers and Trainers team**: vet.toolkit@cedefop.europa.eu

Annex. Thematic priorities and research challenges

The call for papers encourages, but is not limited to, research on the following themes:

Theme 1: Digital and AI literacy as foundational skills for VET learners

Context and research challenge

As digital technologies and AI become increasingly integrated in education and work, digital and AI literacy have emerged as foundational competences essential for accessing learning opportunities and participating in the labour market (European Commission, 2023a; Miao & Cukurova, 2024). The European Union has recognised digital and AI literacy as basic skills, with the AI Act now requiring providers and deployers of AI systems to ensure sufficient AI literacy among their staff (European Commission, 2025a). The EU has set a target for 80% of adults to have at least basic digital skills by 2030 (European Commission, 2023b).

Digital literacy enables learners to navigate online environments and access information, while AI literacy builds on this by enabling critical evaluation of AI outputs and effective use of AI tools (Kong et al., 2023; Ng et al., 2023). Moreover, research indicates that these competences function as enablers for the development of other skills, such as critical thinking, adaptability, and the capacity to transfer knowledge across contexts (Kong et al., 2023; Celik, 2023). For VET learners, developing these skills is particularly critical, as vocational pathways require both technical proficiency and the ability to critically evaluate and work alongside emerging technologies.

However, significant gaps in digital and AI literacy persist across social groups. Vulnerable populations (including those with lower socioeconomic status, older learners, women, ethnic minorities, and individuals in rural areas) face disproportionate barriers to developing these competences (Wang et al., 2024). As employers increasingly prioritise candidates with AI skills, individuals lacking AI literacy risk exclusion from quality employment, thus reinforcing existing inequalities rather than addressing them (Psifidou, 2026). Students without AI literacy may also struggle to navigate adaptive learning systems effectively (Bahçekapılı et al., 2025).

Despite EU policy frameworks emphasizing digital and AI literacy as basic skills (Council of the European Union, 2023), research in this field remains limited and VET systems face specific implementation challenges. Questions remain about integrating AI literacy into VET curricula without displacing essential vocational content, ensuring accessibility for diverse learners (Psifidou, 2026), and contextualizing AI literacy across occupational sectors. To this end, Cedefop is currently conducting a large-scale study mapping how digital and AI-related skills are embedded in initial curricula across eight EU Member States. Its findings expected in early 2027, will provide evidence on variations in digital and AI-related skills provision in initial VET across examined countries and sectors[3].

Topics of interest include:

- Research examining digital and AI literacy as foundational competences that enable access to learning, employment, and services for VET learners and graduates;
- Comparative analyses of AI literacy levels across different social groups (e.g., gender, socioeconomic status, migration background, disability) and their implications for inclusion;
- Research on the intersections between digital exclusion, AI literacy gaps, and the risk of becoming NEET or experiencing early leaving from VET;
- Research that analyses how AI literacy goes beyond basic tool use to support effective skills development and enhance adaptability, critical thinking, and problem-solving capacity;
- Effective pedagogical approaches for integrating AI literacy into VET curricula, including contextualised, occupation-specific applications;
- Impact evaluation studies on interventions designed to improve digital and AI literacy among VET learners, particularly for vulnerable groups.

---

[3] For more information please see the project page here.

Theme 2: Learner-centred vocational pedagogies and adaptive learning using AI and digital technologies

Context and research challenge

Learner-centred and personalised pedagogies are widely recognised as key to engagement and attainment in VET (Cedefop, 2015, Pane et al., 2015; Walkington & Bernacki, 2020). Many factors associated with early leaving from VET – such as disengagement, misalignment between learning pathways and learner needs, and insufficient workplace relevance – are directly addressed by learner-centred and adaptive pedagogies.

Digital technologies and AI offer new opportunities for adaptive learning pathways (Ravikumar et al., 2025; Baharin, 2025), including intelligent tutoring systems, data-driven instructional adjustments (Pane et al., 2015; Mavroudi et al., 2017), and AI-enabled personalised content creation (Lin et al., 2024). These technologies also enable more efficient competency-based assessment (Yan et al., 2025), and improved alignment between school-based and workplace-based learning (Cattaneo & Aprea, 2018; Leong, 2025). Computer-supported collaborative learning (CSCL) has shown promise in fostering both discipline-independent and discipline-specific competences (Schwendimann et al., 2018), while virtual and augmented reality applications enable simulation of work environments for vocational training (Pi et al., 2025).

Yet, empirical evidence on their effectiveness in VET for promoting inclusion remains fragmented, often limited to small-scale or sector-specific cases, with insufficient attention to pedagogical design, learner experience, and transferability across contexts.

<u>Topics of interest include:</u>
- Empirical comparisons between standardised and personalised/adaptive AI-powered learning models in VET;
- AI-supported outcome-based assessment for learners and curriculum adaptation;
- Evidence on whether digital competence development and AI-supported pedagogies may support inclusion, learner agency, and engagement (e.g. by

supporting learners with different abilities, learners at risk of dropping out), and under which conditions;

- Use of learning analytics, Virtual and Augmented Reality, and simulations, including sector-specific applications, to bridge school-workplace learning;
- Pedagogical strategies for AI-supported personalisation of VET and impact evaluation studies on the risks and benefits of learner-centred approaches supported digital and AI models.

Theme 3: AI and digital technologies for preventing and addressing early leaving from VET

Context and research challenge

Research on early leaving from VET (ELVET) has traditionally focused on identifying at-risk learners through behavioural and performance indicators (Cedefop, 2016a, 2016b, 2022). More recently, AI-powered early warning systems (EWS) and predictive analytics have shown potential to improve risk identification (Balfanz et al., 2007; Mac Iver, 2011; Faria et al., 2017) by detecting patterns linked to higher risk of early leaving (e.g. absenteeism trends, sudden drops in performance, frequent school changes); and by flagging combinations of factors that are hard to see manually (academic, social, behavioural). Despite these positive estimations of the role of AI in identifying those at risk of early leaving, evidence remains limited on how such AI-powered systems (would) function in real VET contexts, how educators interpret and act on predictions, and whether AI-supported approaches lead to effective prevention rather than merely earlier identification of risk (Cao & Mai, 2025; Soland et al. 2020). Moreover, the extent to which AI may match learners at risk with appropriate support measures (mentoring, tutoring, counselling, financial support), and identify which interventions work best for each group and context remains unknown (Psifidou, 2025a). Ethical concerns related to bias, transparency, learner agency and data governance remain insufficiently addressed.

Similarly, AI could play a powerful supporting role for monitoring those who have already abandoned the education system and haven't qualified in upper secondary education. AI could be especially powerful in that domain if when it is embedded in a centralised, well-governed monitoring system, and used to integrate and manipulate data from multiple

sources across education, training, and related services, analysing patterns more efficiently and supporting evidence-based decision-making.

If not integrated in an ethical, human-centred, and well-governed framework, AI could entail ethical and social risks (e.g. stigmatisation or labelling of learners, reinforcement of existing inequalities through biased data, as well as data protection and transparency challenges). For AI-supported prediction and monitoring to work well, systems need high-quality, interoperable data; strong institutional cooperation (education, VET, employment, social services), investment in capacity-building for practitioners, clear communication with learners and families, and ongoing evaluation and adjustment of AI models.

Topics of interest include:
- Comparative analyses of traditional versus AI-enhanced EWS, including accuracy and unintended effects;
- Research on AI supported centralised monitoring systems for identification and monitor of early leavers.
- Ethical, legal, and governance dimensions of predictive and monitoring systems in VET;
- Research linking AI-supported identification of learners at risk and early leavers with effective guidance, counselling, and other support measures;
- Impact evaluation studies on the risks and benefits of digital and AI – supported EWS and monitoring systems.

Theme 4: Digital technologies, AI and NEET outreach, engagement and transitions

Context and research challenge
NEETs are a highly heterogeneous group, requiring personalised and tailored support strategies (Cedefop, 2022, 2026; Eurofound, 2012, 2016). While digital inclusion and digital skills are increasingly recognised as prerequisites for social and labour market inclusion (Eurofound, 2021; Cedefop, 2023; Bahçekapılı et al., 2025), empirical evidence on the effectiveness of digital and AI-based interventions for NEET outreach, engagement, and transition into employment, education or training remains limited to date. This represents one of the most significant gaps in current research at EU level.

Preliminary studies suggest that AI can improve the relevance and timeliness of career advice by tailoring suggestions to individual skills and aspirations, helping users explore opportunities they may not have considered, and adapting content dynamically based on interaction patterns and recorded progress. However, stronger, comparative evidence on long-term outcomes is still needed.

Digital channels - such as apps, chatbots, and social platforms - can reach NEETs who are otherwise disconnected from formal services. Evidence (Matli & Ngoepe, 2021) shows increased initial engagement, but whether this translates into improved transitions into education or employment on a population scale is not yet clear.

Some evidence (Council & European Commission, 2021) points to stronger effectiveness when digital tools are combined with human support (e.g., career counsellors or mentors). Blended approaches may mitigate limitations of standalone digital interventions and support sustained engagement.

While digital and AI-based interventions for NEET outreach, engagement, and transition show promise, particularly in enhancing reach and personalisation, the empirical evidence on their effectiveness remains limited, fragmented, and uneven in terms of methodological rigour. Stronger, harmonised evaluation approaches are needed to build a robust evidence base that can guide policy and practice. The limited empirical evidence has important implications as policy-makers may struggle to prioritise investment in digital and AI tools without stronger proof of impact; practitioners may adopt tools with untested effectiveness, risking wasted resources or unintended consequences; and inequalities may be exacerbated if certain groups benefit more than others without clear understanding of differential effects.

Topics of interest include:
- Effectiveness of digital and AI-based approaches for different NEET profiles;
- Digital tools supporting NEET transitions into employment, education or training;
- Links between digital exclusion, digital skills gaps, and the risk of becoming NEET;
- AI-supported outreach, profiling, and engagement by public employment services (PES), and other support measures and stakeholders;

- Participatory and co-design approaches involving NEETs in digital programme design;

- Impact evaluation studies on the risks and benefits of digital and AI - based interventions to support NEETs.

Theme 5: Teachers' and trainers' digital competence, professional practice, and wellbeing

Context and research challenge

Teachers and trainers play a decisive role in the meaningful integration of AI and digital tools in VET. However, teachers' and trainers' capacity and competence to do so varies largely. Evidence suggests that higher levels of teachers' digital competence are linked primarily to professional context and subject-specific exposure, rather than demographic factors such as age, gender, or teaching experience (Noou & Retali, 2021).

Despite the existence of key EU-level initiatives and instruments, such as the European strategy on AI, the European guidelines on the use of AI and data in teaching and learning, the Commission guidelines on prohibited artificial intelligence practices, and digital competence frameworks (e.g. DigComp 3.0), evidence remains limited on how different forms of support, teachers' initial education and training, continuing professional development (CPD), and organisational conditions influence sustainable adoption (Cedefop, 2022, Antonietti et al., 2022; Würges & Aprea, 2024; Psifidou, 2025b). Moreover, little is known about the impact of AI integration on teachers' practices, and the effect on their workload, professional autonomy and wellbeing (Psifidou, Papazoglou and Pouliakas, 2026).

Research indicates that AI and digital tools can positively affect VET teachers' professional experience by reducing routine and repetitive tasks, enabling greater focus on pedagogical reflection and in-depth analysis of teaching practices (Li, 2024). This research highlights benefits for teacher evaluation practices, such as faster AI-supported feedback loops and improved use of real-time learner data to adapt teaching and training methods.

At the same time, the literature also points to important risks, including over-reliance on algorithmic recommendations, potential deskilling of teachers and trainers, limited transparency of AI-driven decisions, and the additional time and effort required to develop algorithmic literacy alongside other professional competences (Liu & Liu, 2025).

Overall, despite growing research on AI and digitalisation in VET, research remains fragmented, particularly regarding inclusion, effectiveness, and large-scale implementation of AI by VET teachers and trainers, highlighting the need for further empirical research to support evidence-based policy and practice (Psifidou, Papazoglou and Pouliakas, 2026). Cedefop's novel European survey of VET teachers will provide important new evidence on these aspects in 2027 to support teachers' high quality and systematic CPD.

Topics of interest include:

- Integration of AI literacy and digital competences in teachers' and trainers' professional development (both initial education and training as well as continuing professional development) and its effects;
- Types and intensity of support needed by school-based teachers and in- company trainers for sustained AI integration in VET;
- Teachers' beliefs, professional identity, and technology acceptance and their impact on learning outcomes in VET;
- Access and implementation costs of AI and digital tools, including time and workload implications for teachers and trainers;
- The impact of integrating digital tools including AI on VET educators working environment and wellbeing;
- Impact evaluation studies of professional development programmes on AI and digital technologies for VET teachers and trainers.

References

Antonietti, C., Cattaneo, A., & Amenduni, F. (2022). Can teachers' digital competence influence technology acceptance in vocational education? *Computers in Human Behavior*, *132*. https://doi.org/10.1016/j.chb.2022.107266

Baako, I. (2025). *A Bibliometric investigation of Artificial Intelligence in Technical and Vocational Education Training (AI-TVET): Trends and insights for a decade*. In Review. https://doi.org/10.21203/rs.3.rs-6431518/v1

Baharin, A. T. (2025). Exploring the Adoption of Generative Artificial Intelligence by TVET Students: A UTAUT Analysis of Perceptions, Benefits, and Implementation Challenges. *Journal of Information Systems Engineering and Management*, *10*(19s), 429–437. https://doi.org/10.52783/jisem.v10i19s.3052

Bahçekapılı, E., Berigel, M., & Neagu, G. (2025). Bridging NEET Status and Employability Through Digital Literacy: Implications for TVET Policies in the Digital Age. *Calitatea Vieții*, *36*(1), 5–22. https://doi.org/10.46841/RCV.2025.01.01

Balfanz, R., Herzog, L., & Mac Iver, D. J. (2007). Preventing Student Disengagement and Keeping Students on the Graduation Path in Urban Middle-Grades Schools: Early Identification and Effective Interventions. *Educational Psychologist*, *42*(4), 223–235. https://doi.org/10.1080/00461520701621079

Cao, W., & Mai, N. T. (2025). Predictive analytics for student success: AI-driven early warning systems and intervention strategies for educational risk management. *Educational Research and Human Development*, *2*(2). https://doi.org/10.61784/erhd3042

Cattaneo, A. A. P., & Aprea, C. (2018). Visual Technologies to Bridge the Gap Between School and Workplace in Vocational Education. In D. Ifenthaler (Ed.), *Digital Workplace Learning*. Springer International Publishing. https://doi.org/10.1007/978-3-319-46215-8

Cedefop. (2015). *Vocational pedagogies and benefits for learners: Practices and challenges in Europe*. Publications Office. https://doi.org/10.2801/294434

Cedefop. (2016a). *Leaving education early: Putting vocational education and training centre stage. Volume II, Evaluating policy impact*. Publications Office. https://data.europa.eu/doi/10.2801/967263

Cedefop. (2016b). *Leaving education early: Putting vocational education and training centre stage. Volume II, Evaluating policy impact*. Publications Office. https://data.europa.eu/doi/10.2801/967263

Cedefop. (2020). *Digital gap during COVID-19 for VET learners at risk in Europe*. https://www.cedefop.europa.eu/files/digital_gap_during_covid-19.pdf

Cedefop (Ed.). (2022). *Teachers and trainers in a changing world: Building up competences for inclusive, green and digitalised vocational education and training (VET): synthesis report*. Publications Office of the European Union. https://doi.org/10.2801/53769

Cedefop. (2022). *Vocational education and training as a life jacket* [Briefing note]. https://www.cedefop.europa.eu/en/publications/9168

Cedefop. (2023). *Going digital means skilling for digital* [Policy Brief]. https://www.cedefop.europa.eu/en/publications/9188

Cedefop (2026), Building inclusive futures for NEETs, VET solutions for Europe's young people not in employment, education or training, Forthcoming.

Celik, I. (2023). Exploring the Determinants of Artificial Intelligence (AI) Literacy: Digital Divide, Computational Thinking, Cognitive Absorption. *Telematics and Informatics*, *83*, 102026. https://doi.org/10.1016/j.tele.2023.102026

Council of the European Union & European Commission. (2021). *Young people, social inclusion and digitalisation. Emerging knowledge for practice and policy*. https://pjp-eu.coe.int/en/web/youth-partnership/young-people-social-inclusion-and-digitalisation

Council of the European Union. (2023). *Council Recommendation on improving the provision of digital skills and competences in education and training*. Official Journal of the European Union, C 1, 23.1.2024.

Eurofound. (2012). NEETs, young people not in employment, education or training: characteristics, costs and policy responses in Europe. Publications Office. https://data.europa.eu/doi/10.2806/41578

Eurofound. (2016). *Exploring the diversity of NEETs*. Eurofound. https://doi.org/10.2806/15992

Eurofound. (2021). *What just happened? COVID-19 lockdowns and change in the labour market*. Eurofound. https://doi.org/10.2806/308937

European Commission: Directorate-General for Education, Youth, Sport and Culture. (2022). *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators*. Publications Office of the European Union. https://data.europa.eu/doi/10.2766/153756

European Commission. (2023a). *Digital Education Action Plan 2021-2027*. https://education.ec.europa.eu/focus-topics/digital-education/action-plan

European Commission. (2023b). *The Digital Decade Policy Programme 2030*. https://digital-strategy.ec.europa.eu/en/policies/digital-decade

European Commission. (2025a). *AI talent, skills and literacy*. https://digital-strategy.ec.europa.eu/en/policies/ai-talent-skills-and-literacy

European Commission. (2025b). *Guidelines on the definition of an artificial intelligence system established by Regulation (EU) 20241689 (AI Act)*. Publications Office of the European Union. https://digital-strategy.ec.europa.eu/en/library/commission-publishes-guidelines-ai-system-definition-facilitate-first-ai-acts-rules-application

European Commission. (2025c). *Guidelines on the scope of obligations for providers of general-purpose AI models under the AI Act: Shaping Europe's digital future*. Publications Office of the European Union. https://digital-strategy.ec.europa.eu/en/library/guidelines-scope-obligations-providers-general-purpose-ai-models-under-ai-act

Faria, A.-M., Sorensen, N., Heppen, J., Bowdon, J., Taylor, S., Eisner, R., & Foster, S. (2017). *Getting students on track for graduation: Impacts of the Early Warning Intervention and Monitoring System after one year*.

Kong, S.-C., Cheung, W. M.-Y., & Zhang, G. (2023). Evaluating an Artificial Intelligence Literacy Programme for Developing University Students' Conceptual Understanding, Literacy, Empowerment and Ethical Awareness. *Educational Technology & Society*, *26*(1), 16–30.

Leong, W. Y. (2025). Artificial Intelligence, Automation, and Technical and Vocational Education and Training: Transforming Vocational Training in Digital Era. *Engineering Proceedings*, *103*(1). https://doi.org/10.3390/engproc2025103009

Li, Y. (2024). Constructing an AI-driven teacher training model for vocational education: Teachers' information literacy and teaching competence at the same time.

Applied   Mathematics   and   Nonlinear   Sciences,   *9*(1).
https://doi.org/10.2478/amns-2024-3087

Lin, M. P.-C., Liu, A. L., Poitras, E., Chang, M., Chang, D. H., Lin, M. P.-C., Liu, A. L.,
Poitras, E., Chang, M., & Chang, D. H. (2024). An Exploratory Study on the Efficacy
and Inclusivity of AI Technologies in Diverse Learning Environments.
Sustainability, *16*(20). https://doi.org/10.3390/su16208992

Liu, H., & Liu, X. (2025). The Role of Advanced Algorithms in Supporting Vocational
Education Teachers' Decision-Making in Intelligent Education Systems.
International Journal of High Speed Electronics and Systems.
https://doi.org/10.1142/S0129156425405728

Matli, W., & Ngoepe, M. (2025). Extending the unified theory of acceptance and use of
technology with the problems of digital access to (re)connect the disconnected
NEETs. *Innovation: The European Journal of Social Sciences*, *38*(3), 1147–1166.
https://doi.org/10.1080/13511610.2021.1978281

Mavroudi, A., Giannakos, M., & Krogstie, J. (2017). Supporting adaptive learning pathways
through the use of learning analytics: Developments, challenges and future
opportunities.   *Interactive   Learning   Environments*,   *26*.
https://doi.org/10.1080/10494820.2017.1292531

Miao, F., & Cukurova, M. (UNESCO). (2024). *AI competency framework for teachers*.
United   Nations   Educational,   Scientific   and   Cultural   Organization.
https://doi.org/10.54675/ZJTE2084

Ng, D. T. K., Lee, M., Tan, R. J. Y., Hu, X., Downie, J. S., & Chu, S. K. W. (2023). A review of
AI teaching and learning from 2000 to 2020. *Education and Information
Technologies*, *28*(7), 8445–8501. https://doi.org/10.1007/s10639-022-11491-w

Noou, K., & Retali, K. (2021). European Framework for Digital Competence of Educators:
Self-Assessed Digital Competence of Adult Educators in Public Vocational
Training Institutes in Greece. In *Trends in vocational education and training
research, Vol. IV. Proceedings of the European Conference on Educational
Research (ECER), Vocational Education and Training Network (VETNET)* (pp. 186–
194). Zenodo. https://zenodo.org/record/5348203

OECD & European Commission. (2025). *Empowering learners for the age of AI: An AI literacy framework for primary and secondary education*. https://ailiteracyframework.org/

OECD (2026). *OECD Digital Education Outlook 2026: Exploring Effective Uses of Generative AI in Education*, OECD Publishing, Paris, https://doi.org/10.1787/062a7394-en.

Pane, J. F., Steiner, E. D., Baird, M. D., & Hamilton, L. S. (2015). *Continued Progress: Promising Evidence on Personalized Learning*. https://www.rand.org/pubs/research_reports/RR1365.html

Papazoglou, M. (2025). *Embracing digital skills in vocational education*. European School Education Platform. https://school-education.ec.europa.eu/en/discover/expert-views/digital-skills-vocational-education

Pi, X., Yin, Y., & Liu, Q. (2025). *Research on Key Technologies of AI-Assisted Virtual Simulation Training System for Vocational Education* (edselc.2-52.0-105013620074). 248–253. https://doi.org/10.1145/3744367.3744407

Psifidou, I. (2025a). *Cedefop's European Vocational Teacher survey (EVTS)*. European Sectoral Social Dialogue in Education plenary meeting. https://doi.org/10.5281/zenodo.18432000

Psifidou, I. (2025b). *Strengthening initial teacher education for VET teachers*. European School Education Platform. https://school-education.ec.europa.eu/en/discover/expert-views/strengthening-initial-teacher-education-vet-teachers

Psifidou, I. (2026). *Generative AI and labour market inclusion: equaliser or divider for Europe's workforce?* Cedefop blog article. https://www.cedefop.europa.eu/en/blog-articles/generative-ai-and-labour-market-inclusion-equaliser-or-divider-europes-workforce

Psifidou, I., Papazoglou, M. & Pouliakas K. (2026). *VET teachers at a turning point: Pilot evidence from Cedefop's European Vocational Teacher Survey*. Cedefop working paper. Publications Office of the European Union. Forthcoming.

Ravikumar, D., Sahaai, M. B., Sharanya, C., Ravichandran, V., Lavanya, S., & Joel, M. R. (2025). Revolutionising training and vocational education with ongoing AI innovation. In M. M. van Wyk (Ed.), *AI Smart-Enabled Architecture and*

Infrastructure for Higher Education (pp. 101–127). IGI Global. https://doi.org/10.4018/979-8-3693-8915-7.ch005

Regulation 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (2024). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401689

Rosyadi, M. I., Kustiawan, I., Tetehfio, E. O., & Joshua, Q. (2023). The Role of AI In Vocational Education: A Systematic Literature Review. *Journal of Vocational Education Studies*, *6*(2), 244–263. https://doi.org/10.12928/joves.v6i2.9032

Schwendimann, B. A., De Wever, B., Hämäläinen, R., & Cattaneo, A. A. P. (2018). The State-of-the-Art of Collaborative Technologies for Initial Vocational Education: A Systematic Literature Review. *International Journal for Research in Vocational Education and Training*, *5*(1), 19–41. https://doi.org/10.13152/IJRVET.5.1.2

Solak BeriGel, D., Şilbir, L., & Şilbir, G. M. (2025). Integrating Artificial Intelligence (AI) Into Technical and Vocational Education and Training (TVET): A Prisma-Based Systematic Review. *Revista Calitatea Vieții*, *36*(1), 83–108. https://doi.org/10.46841/RCV.2025.01.05

Soland, J., Domingue, B., & Lang, D. (2020). Using Machine Learning to Advance Early Warning Systems: Promise and Pitfalls. *Teachers College Record: The Voice of Scholarship in Education*, *122*(14), 1–30. https://doi.org/10.1177/016146812012201403

Walkington, C., & Bernacki, M. L. (2020). Appraising research on personalized learning: Definitions, theoretical alignment, advancements, and future directions. *Journal of Research on Technology in Education*, *52*(3), 235–252. https://doi.org/10.1080/15391523.2020.1747757

Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications*, *252*, 124167. https://doi.org/10.1016/j.eswa.2024.124167

Würges, S., & Aprea, C. (2024). Implementation of digital tools in VET: Experienced support and technology acceptance. *Nordic Journal of Vocational Education and Training*, *14*(2), 78–104. https://doi.org/10.3384/njvet.2242-458X.2414278

Yan, J., Tian, H., Sun, X., & Song, L. (2025). Role of artificial intelligence in enhancing competency assessment and transforming curriculum in higher vocational education.