DigiSET – The Academy of Digitally Sustainable European Teacher

Project Number: 101249272
ERASMUS-EDU-2025-PEX-TEACH-ACA

WP2 – COUNTRY REPORT
<TÜRKİYE>

Teacher Competences for Sustainable Digital Literacy:
National Context, Policies, and Professional Development

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Date: 28/4/2026
Version: 1.5

"Based on *Academic Integrity and Transparency in AI-assisted Research and Specification Framework* (Bozkurt, 2024), the authors of this paper acknowledge that the paper was reviewed, edited, and refined with the assistance of ChatGPT, Gemini and Claude (Versions as of March 2026), complementing the human editorial process. The human authors critically assessed and validated the content to maintain academic rigour. The authors also assessed and addressed potential biases inherent in the AI-generated content. The final version of the paper is the sole responsibility of the human authors."

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or EACEA. Neither the European Union nor the granting authority can be held responsible for them

Project contribution to Agenda 2030

Acknowledgment
This report is a deliverable of the project 'DigiSET - The Academy of Digitally Sustainable European Teacher', funded within the Erasmus+ Programme with applicant Universitat Fur Weiterbildung Krems and Grant Agreement No. 101249272

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Content

1. National Policy Framework for Digital and Sustainable Education

First, below is a brief overview of the official legislation and policy documents in Türkiye related to the teaching profession.

Table 1. Overview of Key Legislation and Policy Documents on the Teaching Profession in Türkiye

Source	Document Title	Description
MoNE	Teaching Profession Law (Law No. 7528, 2024)	This law, which stipulates the establishment of the National Education Academy, regulates the selection, training, appointment, career steps of teachers, as well as sanctions related to acts of violence committed against teachers.
MoNE	Regulation on Candidate Teaching and Career Steps in the Teaching Profession (2024)	Prepared in line with Law No. 7528, this regulation was published in the Official Gazette and ensured the continuation of the career-step implementation in the teaching profession.

Highlights:

- In the 2024–2025 academic year, the total number of teachers in formal education in Türkiye reached 1,187,409, representing an increase of more than 18,000 compared to the previous year (Milli Eğitim İstatistikleri - Öğretmen Sayısı)
- Compared to previous years, teacher salaries have been strengthened and class sizes have been improved (OECD *Education at a Glance 2025*)

1.1 Digital Education Strategy and Teacher Competences

Digital education in Türkiye is shaped by a centralised, infrastructure-led policy agenda in which the Ministry of National Education coordinates large-scale initiatives such as FATİH, EBA, and, more recently, the Digital Teacher Competencies Framework developed with IPA III and UNICEF. National strategies have predominantly positioned teachers as users of digital tools for content delivery, rather than as designers of digital learning or autonomous producers of content, although the new Digital Teacher Competencies Framework begins to broaden this framing. Three drivers therefore shape teacher competences in the digital domain which are a state-led infrastructure agenda, international alignment pressures, and growing academic attention to the pedagogical limits of a hardware-centered approach. Below is a brief overview of key documents and initiatives related to teachers' digital competencies in Türkiye.

Table 2. Overview of Key Digital Education Policies and Teacher Competence Initiatives

Source	Documents/ Examples	Description
Education Information Network (EBA) https://www.eba.gov.tr/dijital-teknolojiler https://mebi.eba.gov.tr/	National digital platform	The COVID-19 pandemic accelerated digital infrastructure development and the expansion of remote learning provision, most notably through EBA. EBA is a national digital platform offering large-scale content, interaction, and personalization for students and teachers, while also including teacher-focused content and professional-development modules. However, the emergency transition simultaneously exposed persistent inequities in access and pedagogical readiness, particularly among rural and socioeconomically disadvantaged populations (Ökten, 2024; Turhan & Çoruk, 2024).
FATİH Project (Movement to Increase Opportunities and Improve Technology) https://yegitek.meb.gov.tr/meb_iys_dosyalar/2018_11/06102826_NYHAN_YZET.pdf	National Educational Technology Project	The FATİH Project supplied interactive whiteboards, tablets, and broadband connectivity to schools, but infrastructure and content gaps remain (Demir, 2024). However, evaluations consistently document an overemphasis on hardware provision relative to pedagogical preparation of teachers and challenge the sustainability of top-down implementation approaches (Cengiz, 2020; Çevikbaş & Çevikbaş, 2015; Demir, 2023).
Ministry of National Education / IPA III Teacher Education Digital Ecosystem Project / UNICEF	Digital Teacher Competencies Framework (2023–2025)	This framework was developed based on the MoNE General Competencies for the Teaching Profession, the National Qualifications Framework, and the European Framework for the Digital Competence of Educators. It identifies three main areas like digital literacy, digital technologies in learning and teaching, and inclusive, sustainable, and ethical use along with 17 competencies and 14 sub-competencies.
Ministry of National Education / EBA	Teacher Education Digital Ecosystem Project- Project Implementation Handbook-Teacher Education Digital Ecosystem Project (2025)	Within the scope of the project, a Digital Teacher Competencies Framework tailored to the Turkish context was developed. Based on this framework, a Digital Competency Training Package consisting of 10 modules was created to strengthen teachers' skills in digital literacy, the use of technology in teaching, and inclusive and ethical digital practices. The package offers 120 hours of online content.
ÖBA (Teacher Informatics Network)	Digital Competency Training Package	Developed under the Teacher Education Digital Ecosystem Project, this training package focuses on improving digital competencies for all teachers in alignment with the Digital Teacher Competencies Framework. The course consists of 10 modules and includes 120 hours of interactive content. It is implemented with the support of EU pre-accession financial assistance and in cooperation with UNICEF Türkiye.

MoNE	2024–2028 Strategic Plan	The MoNE 2024–2028 Strategic Plan, signed on 29 December 2023, provides the overarching institutional planning framework within which digital education is situated. While the strategic plan emphasizes the expansion of digital content and the development of teachers' digital competences, it also acknowledges several structural challenges. These include the absence of clearly defined standards for distance education, insufficient digital content for guidance and counseling services, and ongoing difficulties in integrating educational technologies into pedagogical practices. Under Objective 5.2 (Technology Integration in Education), the plan designates YEGITEK as the responsible body for expanding digital content infrastructure and teacher digital competence training, with associated performance indicators including the number of enriched digital content items on EBA and the number of teachers completing digital competence programmes (MoNE, 2023). Objective 7.3.4 further commits to the establishment of 'innovative classrooms', indicating continued investment in technologically enhanced learning environments at the school level.
MoNE New Curricula	The Türkiye Yüzyılı Maarif Modeli (MoNe, 2024)	Curriculum reform also matters to discuss teachers' competences. The Türkiye Yüzyılı Maarif Modeli (MoNe, 2024) emphasizes digital literacy, including the ability to critically access, evaluate, and use digital information, as well as the pedagogical integration of technology into teaching and learning processes. Teachers are expected not only to use existing digital resources but also to adapt and produce content in line with diverse student needs. The model further highlights digital citizenship, data security, and responsible technology use. It is thus obviously seen that there are several key drivers shape teaching practices in terms of digital transformation in Turkey.
YEGITEK's Digital Content Strategy Document (2023)	Digital Content Strategy Document (2023)	YEGITEK's Digital Content Strategy Document (2023) outlines the strategic framework for the development, acquisition, and distribution of digital content via EBA. At the time of publication, EBA hosted 70,184 digital content items. Content is acquired through three institutional mechanisms which are Production, Grant, and Procurement, with no provision for open licensing or OER creation by teachers, a point with direct implications for Section 1.4 below (YEGITEK, 2023).
Eurydice: Digital Education at School in Europe Report (MoNE Eurydice Unit, 2023)	Digital education at School in Europe report	This report examines teachers' digital competence with reference to the European Commission's DigComp and DigCompEdu frameworks. It highlights that the pedagogical use of digital technologies in teaching and learning processes, teachers' competence, and their perception of digital technology as a value are key determining factors.

Highlights:

- Digital education in Türkiye is centrally coordinated by MoNE through national education plans and digital transformation strategies; however, alignment with international frameworks remains partial, and implementation is uneven across regions and school types (Ataman & Orhan, 2023; Kadıoğlu, 2023; Yalap & Gazioğlu, 2023).
- National policy has mainly positioned teachers as users of ICT for content delivery and access, rather than as professionals developing critical digital literacy, OER creation, or ethical AI use capacities (Bonato, 2023; Erişen et al., 2018).
- Large-scale initiatives such as FATIH and EBA have expanded infrastructure, device access, and digital content availability across the education system (Ökten, 2024; Yavuzalp et al., 2015).
- At the same time, both policy and research increasingly show that infrastructure alone is not enough; effective digital transformation also requires continuous, pedagogically grounded teacher professional development (Ökten, 2024; Yavuzalp et al., 2015).
- Teachers' competence, readiness, and attitudes are central to the meaningful use of digital technologies in education (Pamuk, 2022).
- However, top-down reforms, a highly centralized system, exam-oriented culture, and broader social barriers continue to constrain digital integration and long-term adoption (Mafratoğlu et al., 2025; Turan Bora et al., 2025).
- Overall, the literature points to the need for a clearer and more sustainable framework for developing teachers' digital competences in authentic learning environments (Pamuk, 2022; Mafratoğlu et al., 2025; Turan Bora et al., 2025).

Below is a brief overview of major projects and reports related to the topic.

Table 3. Overview of Key Sustainability Education Policies and Documents

Source	Document Title	Description
Board of Education, Ministry of National Education	DIGI ESSA 4 SCHOOLS Project – Türkiye Country Report (2023)	This EU project, involving Türkiye, the Netherlands, Italy, Portugal, Romania, and Spain, comparatively examined the strengths and weaknesses of schools' digital self-evaluation practices across six countries. In Türkiye, 410 teachers, school administrators, inspectors, and parents participated in the study.
Ministry of National Education / EBA / IPA III Teacher Education Digital Ecosystem Project	IPA III Teacher Education Digital Ecosystem Project – Situation and Needs Analysis Report (2024)	This report examines the current state of teachers' digital competencies in Türkiye. In alignment with the European Framework for the Digital Competence of Educators (DigCompEdu), the analysis shows that the frameworks used to define teachers' digital skills are addressed through four main areas, including professional development, knowledge application, and knowledge sharing.
Ministry of National Education / European Union / UNICEF	IPA III Teacher Education Digital Ecosystem Project (General Initiative)	Teachers' digital competency levels in Türkiye are generally reported to be at a moderate-to-low level, with limited mastery of basic digital tools. To address this gap, the IPA III project, carried out by the Ministry of National Education in partnership with the European Union and UNICEF, aims to provide 120 hours of digital training to 200,000 teachers. The national framework has been designed in alignment with DigCompEdu.

1.2 Sustainability in Education Policy

Sustainability occupies a visible place in Türkiye's policy, but its integration into teacher preparation remains fragmented. The Twelfth Development Plan (2024-2028), the MoNE Strategic Plan, national SDG reporting, and the Environmental Education and Climate Change Course articulate sustainability goals at curricular and institutional levels. However, sustainability is not yet established as a teacher competence area, and its connection to digital education is only weakly articulated in national documents. The result is a landscape in which sustainability is strategically endorsed but not systematically translated into teacher training, competence frameworks, or professional development pathways. Below is a brief overview of major projects and reports related to the topic.

Table 4. Overview of AI in Education Policy Documents and Initiatives

Source	Document Title	Description
Presidency of Strategy and Budget Twelfth Development Plan (2024–2028), October 2023	12. Development Plan	This plan was prepared within the framework of a growth model centered on green and digital transformation. It addresses education as a distinct area and includes a specific section on the Sustainable Development Goals (SDGs) (Section 3.5.10). The Ministry of National Education is directly associated with 22 actions in the plan.
Ministry of National Education, Strategy Development **Presidency**	MoNE Strategic Plan (2024–2028)	Among the main objectives of this plan is the strengthening of individuals' knowledge, skills, and competencies. The plan addresses personal, environmental, and professional development from a lifelong learning perspective. General, vocational, and technical education programs have been designed in line with the requirements of the age and integrated with the principles of access to resources and equal opportunity.
Presidency of the Republic of Türkiye / UN Türkiye Surdurulebilirkalkinma	Türkiye's Voluntary National Review (VNR) Reports on the SDGs, 2017 and 2019	Türkiye submitted its Voluntary National Review Report twice to the High-Level Political Forum (HLPF). The second report was titled *Strong Foundations for Common Goals*. These reports evaluate Türkiye's policy and institutional framework for all SDGs, with particular emphasis on SDG 4 (Quality Education).
Board of Education, Ministry of National Education Curriculum for the Environmental Education and Climate Change Course (2022-)	Curriculum for the environmental education and Climate Change Course	Under this curriculum, approved by the Board of Education, an elective course of 72 hours in total, taught 2 hours per week, has been offered since the 2022-2023 academic year for grades 6, 7, or 8 in lower secondary education. The course consists of six units: Human and Nature, Circular Nature, Environmental Problems, Global Climate Change, Climate Change and Türkiye, and Sustainable Development and Environmentally Friendly Technologies. In this course, teachers guide students through processes of exploration, inquiry, awareness raising, and taking responsibility.
Ministry of National Education 2024-2025 Academic Year Circular of Activities: Sustainability Section, August 2024	Sustainability document	These circulars instructed schools to expand sustainability education and practices to raise awareness about climate change and environmental problems. For schools to be certified with the Green Flag, awareness training became mandatory in the areas of energy saving, energy monitoring, water conservation, waste management, environmental awareness education, and the expansion of green spaces.
Ministry of National Education "MESLEKİ VE TEKNİK EĞİTİM POLİTİKA BELGESİ" YAYIMLANDI	Vocational and Technical Education Policy Document (2024), Official Gazette: 10 August 2024, Issue No. 32628	Put into effect through a presidential circular, this document foresees that curricula, course materials, and digital content at the secondary and higher education levels will be updated in cooperation with industry in line with digital and green skills. Within the framework of the Twin Transition goals, the document emphasizes both supporting economic growth and strengthening environmental sustainability. It includes 74 strategies under 3 main themes.

Highlights:

- Türkiye has a clear policy-level commitment to sustainability in education, reflected in the Twelfth Development Plan, the MoNE Strategic Plan, and SDG reporting; however, this commitment remains more strategic than fully integrated at the implementation level.
- Sustainability is addressed mainly through specific initiatives and subject-based curriculum elements, such as the Environmental Education and Climate Change Course and school-based sustainability activities, rather than as a fully embedded cross-cutting teacher competence area.
- The link between sustainability and digital education is still weakly articulated in national policy. Current documents do not yet provide a comprehensive framework that connects sustainability, digital literacy, and teacher competence development in a systematic way.
- As a result, sustainability competence development for teachers in Türkiye remains ad hoc rather than systemic, with growing attention in policy discourse but limited institutionalization in teacher education and professional development.

1.3 AI in Education Policy

Türkiye has moved from dispersed AI initiatives to a structured national framework with the adoption of the AI in Education Policy Document and Action Plan (2025-2029), which explicitly addresses teachers' AI literacy, ethical AI use, and curriculum alignment. Implementation has proceeded in parallel through large-scale teacher training on the ÖBA and HEMBA platforms, a dedicated AI handbook for teachers, and pilot elective courses in schools. Although the framework aligns with UNESCO, OECD, and EU AI Act reference points, institutionalization remains incomplete: teacher competence specification, formal integration of international frameworks, and independent evaluation mechanisms are still emerging. The environmental impact of AI is not yet substantively addressed.

Below is a brief overview of major projects and reports related to the topic.

Table 5. Overview of Key OER-Related Policy Documents and Platforms

Source	Document Title	Description
Ministry of National Education / YEĞİTEK Artificial Intelligence in Education Policy Paper and Action Plan (2025–2029)	AI in Edu Policy paper and Action Plan	Entered into force on 17 June 2025, this document was prepared within the framework of the National Artificial Intelligence Strategy and the 11th Development Plan. It provides a broad roadmap ranging from ministry governance and school processes to teacher training and student learning outcomes. The document includes 4 goals, 15 policies, and 40 action steps, and aims to improve teachers' AI literacy, align curricula with artificial intelligence, and establish standards for the ethical use of AI in education. Its four main goals are: Building an AI Culture in Education, Expanding the Presence of AI in Curricula, Supporting AI-Assisted Management and Decision-Making in Education, and Strengthening Technology, Infrastructure, and Data Analytics.

		Of the action steps, 17 are planned within 1 year, 10 within 1–3 years, and 13 within 3–5 years.
National Artificial Intelligence Strategy 2021–2025 (updated Action Plan 2024–2025)	Action plan	This strategy coordinated by the Presidency's Digital Transformation Office and the Ministry of Industry and Technology maps six strategic priorities and lays out 24 objectives and 119 concrete measures, including targets like 10,000 additional AI graduates and embedding AI topics into curricula. The 2021–2025 Action Plan was updated into a focused 2024–2025 Action Plan in line with the 12th Development Plan, concentrating on generative AI development, Turkish large language models, and workforce transformation.
Board of Education, Ministry of National Education Directive on the Ethics Board for Artificial Intelligence Applications (October 2025)	Ethics Board for Artificial Intelligence Applications	This directive regulates the working procedures and principles of the Ethics Board for Artificial Intelligence Applications and its sub-commissions, which were established to evaluate and monitor AI projects within the Ministry from an ethical perspective. The Higher Board is tasked with preparing the Ethical Guide for Artificial Intelligence Applications in Education. As a notable provision, teachers in educational institutions are now required to complete an Ethics Declaration Form for AI applications.
Ministry of National Education / YEĞİTEK Department of Artificial Intelligence and Big Data Applications	Recommendations of MoNE	This booklet was published to support the safe and responsible integration of artificial intelligence technologies into the education system. It aims to promote decision-making processes that are transparent and traceable, grounded in human rights, privacy, and security principles.
Ministry of National Education / YEĞİTEK Artificial Intelligence Tools Used in Education: Teacher Handbook	AI Handbook for teachers	Prepared by the YEĞİTEK General Directorate, this handbook explains in detail how AI tools can be used across different subject areas such as Turkish, mathematics, science, physics, chemistry, and biology. It also examines how AI tools can be integrated into the educational processes of preschool students, primary school students, and students with special educational needs.
Artificial Intelligence and Education: A Guide for Teachers on Practical Prompt Engineering and Innovative Learning Strategies with Generative Tools (2025)	Guide for teachers on practical prompt engineering	This guide was prepared to help teachers use AI tools effectively in classroom practice. It explains techniques for giving effective prompts to AI tools through examples and accessible language. It includes practical workflows, original prompt examples for different subject areas, 8 prompt formulas, and up-to-date AI platforms. The guide was designed in an interactive format.
Denizli Provincial Directorate of National Education / MoNE FATIH Project Unit	Artificial Intelligence Applications in Education (2024)	Prepared under the coordination of the MoNE FATIH Project Unit, this presentation/guidance document was designed to introduce teachers to the definition, history, and areas of use of artificial intelligence, as well as the concept of prompting.
Ministry of National Education / YEĞİTEK Report of the International Forum on Artificial Intelligence Applications in Education (2024)	Report of the International Forum on Artificial Intelligence Applications in Education (2024)	Prepared by YEĞİTEK following the forum held in Istanbul on 24–25 May 2024, this report addresses three main themes: the place of artificial intelligence in education policies, AI applications, and AI technologies. It particularly examines how AI-supported tools can be used in language education, digital educational games, and teachers' professional development. Based on this report, YEĞİTEK committed to preparing a comprehensive roadmap for AI integration in Türkiye's education system.

Ministry of National Education / YEĞİTEK Türkiye Education Technologies Summit 2025 (TETZ) – Education Ministers Session Summary Report (December 2025)	Türkiye Education Technologies Summit 2025 (TETZ) – Education Ministers Session Summary Report (December 2025)	Prepared following a summit attended by education ministers from 11 countries, this report covers the integration of AI technologies into education systems, digital transformation processes, the development of teachers' digital competencies, personalized learning approaches, data security and ethical principles, and national AI policy approaches as well as shared challenges across countries.

Highlights:

- Türkiye has moved from fragmented initiatives to a formal national AI-in-education policy framework, especially with the adoption of the *AI in Education Policy Document and Action Plan 2025–2029*, indicating that AI literacy is now recognized as a strategic education priority (YEGITEK, 2025b).

- Implementation began before full policy formalization, as shown by large-scale teacher participation in AI literacy courses on ÖBA and HEMBA, the publication of a dedicated teacher handbook, and the introduction of elective AI courses and pilot initiatives at school level; this suggests growing institutional readiness rather than a purely declarative policy shift (YEGİTEK, 2024a; YEGITEK, 2025b).

- The Turkish policy framework shows clear alignment with major international reference points in AI and education, including UNESCO, the EU AI Act, and the OECD, which strengthens its normative legitimacy and international comparability (Cukurova & Miao, 2024; European Parliament & Council, 2024; Miao et al., 2021; OECD, 2019).

- Despite this progress, institutionalization remains incomplete, particularly in the areas of structured teacher competences, formal integration of international frameworks, and independent evaluation of outcomes; therefore, the current landscape is better characterized as *policy advancement with partial implementation* rather than full systemic consolidation (Özek & Sincer, 2024; YEGITEK, 2025b).

- The next critical step is not policy creation but implementation quality, especially through stronger monitoring, evaluation, and competence-based integration mechanisms to ensure that AI-related reforms become sustainable in practice (YEGITEK, 2025b).

1.4. Open Educational Resources (OER) in Education Policy

Türkiye does not have a dedicated national OER policy aligned with the UNESCO 2019 Recommendation, and OER-related provisions are distributed across broader frameworks rather than formally legislated. National digital platforms such as EBA, ÖBA, YÖK Dersleri, and METU Open Courseware provide extensive free access to educational materials, yet most of this content is not released under open licenses, which limits legal reuse, adaptation, and redistribution.

Below is a brief overview of major projects and reports related to the topic.

Table 6. Overview of AI in Education Policy Documents (continued)

Source	Document Title	Description
Higher Education Open Access and Institutional Repository Policy https://www.yok.gov.tr/Sayfalar/Haberler/acik-erisim-ve-acik-bilim-calismalarina-baslandi.aspx	YÖK Open Access Policy (2014): YÖK Open Science announcement (2018)	This policy focuses primarily on research open access (institutional repositories, journal articles), not on open *teaching* materials in the full OER sense. It reflects the dominant frame in Turkish HE policy — open access to research outputs rather than open licensing of educational content itself.
TUBITAK Open Science Policy	TÜBİTAK Open Science Policy	The emphasis is on open *science* rather than open *education* in the OER sense. The two concepts are treated separately in Türkiye's policy ecosystem, which is a notable interpretive gap compared to the UNESCO 2019 framework that integrates them.
Ministry of National Education Strategic Plan (2024–2028)	MEB Strategic Plan	The MEB Strategic Plan for 2024–2028, published in January 2024, emphasizes continuously updating curricula to meet contemporary needs and expanding digital content production though without explicitly naming OER or open licensing frameworks. The plan promotes digital content production heavily (especially through EBA),but does not adopt the UNESCO OER language of free licensing and 5R permissions (Retain, Reuse, Revise, Remix, Redistribute). Content made available through EBA is state-produced and accessible for free, but it is not openly licensed, it cannot be remixed or redistributed outside official channels. This is a critical distinction between "free access" and genuine OER.
The AI in Education Policy Document (2025–2029)	The AI in Education Policy Document	The AI in Education Policy Document frames digital content transformation broadly, including updating curricula and expanding digital content production through AI-supported platforms. The document references open digital learning environments but, again, without explicit OER licensing language.

Highlights:

- The first important interpretive point is that Türkiye has no dedicated national OER policy document, unlike some countries.

- OER-related provisions are instead distributed across several broader policy frameworks, a pattern common in countries where OER has grown pragmatically rather than through formal legislative mandate.

- The OER landscape in Turkey spans development (infrastructure, policy, stakeholders, and licensing), integration into curriculum and teaching, and measurable impact on educational outcomes.

1.4.1 Key Platforms (Practice Without Explicit OER Policy)

1.4.1.1 EBA – Eğitim Bilişim Ağı (K-12) The MEB's central educational content platform for K-12. Vast amounts of video, interactive, and textbook content, free at point of access but not openly licensed. The Education Information Network (EBA) platform provides publicly accessible digital resources for all school levels. EBA functions de facto as a national OER infrastructure, offering free access to e-books, interactive content, and live teaching resources. EBA's content ecosystem has a multilayered structure shaped by the contributions of different stakeholders. Content is mainly produced by YEGİTEK and supported through collaborations with public institutions, private sector actors, and international partners. In addition, teachers can also upload content to the system, and these materials are evaluated according to specific quality criteria. The entire process is managed within YEGİTEK's content development and quality assurance framework. EBA expanded significantly during the pandemic and became one of Türkiye's most important initiatives for public access to digital educational content (Çobanoğlu & Çam, 2022; Ökten, 2024). However, Türkiye still does not have an official national OER strategy based on open licensing principles, aligned with the UNESCO Recommendation on Open Educational Resources (2019), or focused on teachers' competences in creating, adapting, and sharing OER. In addition, the role of teachers as open content creators is not included in national competence standards or professional development frameworks. This limits Türkiye's contribution to open knowledge ecosystems and its alignment with international OER policy directions.

YEGİTEK's Digital Content Strategy Document (2023) shows that content acquisition in EBA is organised through three main channels: Production, Grant, and Procurement. However, this structure does not include mechanisms for teacher-led open content creation or open licensing practices such as Creative Commons. The document also defines technological, educational, and contextual quality standards and adopts WCAG 2.0 / ISO/IEC 40500:2012 as the accessibility standard for digital content (YEGİTEK, 2023). Although this accessibility approach is important, the absence of open licensing across all 70,184 content items indicates that, despite its large scale, EBA does not fully align with the global OER movement.

1.4.1.2 ÖBA The Teacher Informatics Network ÖBA is a digital platform designed to support teachers' professional development through in-service training, online courses, and certification programs.

1.4.1.3 TÜBA National Open Courseware Consortium https://acikders.tuba.gov.tr :The National Open Courseware Consortium (UADMK) was established under TÜBA's initiative on 25 May 2007, with 45 universities signing the consortium protocol. Between 2010–2011, with support from the Ministry of Development, 80 courses in Natural and Social Sciences were produced and published for open access. TUBA Content is released under Creative Commons licenses; this is the closest thing in Türkiye to a formally OER-compliant national initiative.

1.4.1.4 YÖK Higher Education Courses Platform https://yokdersleri.yok.gov.tr: YÖK described this platform as a product of its "Open Science and Open Access" policy, stating

that "education is a public service" and that the platform opens up the courses and knowledge of academics to all students.

1.4.1.5 METU OpenCourseWare https://odtuzem.metu.edu.tr/tr/odtu-acikdersmalzemeleri :METU joined the National Open Courseware Consortium as a founding board member, as part of a project inspired by MIT OpenCourseWare, involving nearly 50 universities, YÖK, and TÜBİTAK.

Summary Table

Table 7. Summary of OER Compliance by Platform and Policy Document

Document / Platform	Level	OER Compliant	Link
YÖK Open Access Policy (2014)	HE	Partial (research focus)	https://www.yok.gov.tr
TÜBİTAK Open Science Policy (2019)	Research	Partial	https://www.tubitak.gov.tr
TÜBA Açık Ders Malzemeleri	HE	Yes (CC license)	https://www.acikders.tuba.gov.tr
YÖK Dersleri Platformu	HE	No CC license	https://yokdersleri.yok.gov.tr/
EBA (MEB K-12 platform)	K-12	No CC license	https://www.eba.gov.tr/
MEB Stratejik Plan 2024–2028	K-12	No OER language	https://sgb.meb.gov.tr/
AI in Education Policy 2025–2029	K-12/HE	No OER language	https://yegitek.meb.gov.tr/
UNESCO 2019 OER Recommendation	International	Reference norm	https://www.unesco.org/en

Highlights:

- “Free access” ≠ “Open Educational Resource”: MEB content does not carry Creative Commons or similar open licenses. Therefore, teachers and learners cannot legally reuse, adapt, or redistribute this content outside the platform. However, according to UNESCO’s 2019 OER Recommendation, these are among the core characteristics of open educational resources.

- Absence of a standalone OER law or mandatory regulation: Unlike countries such as Slovenia, Poland, or Brazil, Türkiye does not have a legal framework requiring publicly funded educational materials to be released under open licenses. The UNESCO 2019 OER Recommendation, which Türkiye has signed, calls on member states to develop exactly such regulatory frameworks. However, this call has not yet been translated into domestic law or formal MEB policy.

- The divide between research-oriented open access and education-oriented OER: Both YÖK and TÜBİTAK have open access policies. However, these policies are mainly oriented toward scholarly publishing, including institutional repositories, journal articles, and datasets. They are not directly connected to an OER approach for teaching and learning materials used in primary, secondary, or higher education. In the Turkish context, these two policy domains have not yet been integrated.

- The tension between centralization and openness: One of the main tensions highlighted in academic discussions on OER in Türkiye is the difference between the centralized production of educational content through institutions such as MEB and EBA, and the more distributed, participatory, and community-based model that is central to OER. The current structure in Türkiye relies largely on centralized, top-

down content production. This, in turn, limits the development of a genuine OER culture.

- The continuity problem of the TÜBA/UADMK initiative: The TÜBA consortium was an early and promising OER initiative between 2007 and 2011, based on Creative Commons licensing. However, newer and larger platforms such as EBA and YÖK Dersleri have not continued this open licensing model. This suggests that the OER approach has not been institutionally embedded in mainstream educational policy.

1.5 Gap Analysis: Sustainable Digital Literacy

In Türkiye, while various initiatives and projects have been implemented to enhance teachers' digital competencies, these efforts remain fragmented and are not supported by a comprehensive, legally grounded national framework. Key areas such as OER production, AI literacy, and the systematic evaluation of in-service training require further development to ensure sustainable and effective digital transformation in education. The table below presents a comparative analysis of key gaps between Europe and Türkiye in the field of teacher competencies and digital education policies.

Table 8. Gap Analysis: Comparison of European and Turkish Approaches to Sustainable Digital Literacy

Gap	Europe	TR
Existence of a national teacher competence framework	DigCompEdu (22 competences, 6 areas, 6 levels). Self-assessment through SELFIE for Teachers. All EU member states are in the process of adapting it.	A Digital Teacher Competencies Framework exists (IPA-III / UNICEF project), but it is not underpinned by a standalone national law or regulation. No formal policy-level adoption of DigCompEdu, GreenComp, LifeComp, EntreComp, or the UNESCO AI Competence Framework for Teachers.
Teacher OER production capacity	Digital content creation constitutes Area 2 (Create) of DigCompEdu. Teachers are encouraged to produce CC-licensed materials.	The IPA-III Digital Competence package includes content creation; however, it lacks components on licensing, sharing, and reuse.Overemphasis on hardware provision and content access at the expense of pedagogical integration, critical digital literacy, and lifelong learning support (Dag, 2016; Demir, 2023; Yavuzalp et al., 2015).
Continuity of in-service training		A considerable number of in-service training activities are carried out. Limited longitudinal evaluation of major digital education initiatives such as FATİH, constraining evidence-based policy adaptation (Cengiz, 2020; Yilmaz, 2011).
Legal guarantee for teacher professional development	In many EU countries, professional development is a legal right and/or obligation. Teachers are entitled to a minimum number of hours per year.	Absence of an integrated teacher competence framework explicitly addressing digital sustainability, including AI literacy, OER creation, environmental impact awareness, and digital equity dimensions.

The policy landscape in Türkiye reveals several critical gaps with respect to sustainable digital literacy for teachers:

- Persistent urban-rural and socioeconomic disparities in digital infrastructure and competence development, undermining equitable distribution of digital learning opportunities (Geçgel et al., 2020; Ökten, 2024).

- A national AI in Education Policy and Action Plan (2025–2029) has been formally adopted by MEB YEGİTEK; however, systematic operationalization of teacher competence development for AI-mediated learning environments including alignment with the UNESCO AI Competence Framework for Teachers and integration into ITE curricula, remains in its early stages, and in-service training at scale is yet to be fully implemented.

2. Teacher competence frameworks in use

As of 2026, teacher competence frameworks in Türkiye comprise several documents that complement one another but have not yet been fully integrated. The Digital Competence Training Package, developed with EU IPA-III funding and in collaboration with UNICEF Türkiye, was prepared in alignment with the Digital Teacher Competencies Framework and consists of a ten-module online course offering 120 hours of interactive content. Launched in October 2025, the training aims to reach at least 200,000 teachers on topics ranging from basic digital literacy to digital assessment and evaluation (UNICEF). The National Education Academy, established through the Teaching Profession Law (2024), has assumed legal authority over defining and updating teacher competences. The Academy is tasked with planning and delivering training aimed at developing professional knowledge, skills, and digital competences, and launched its first preparatory training courses on 13 April 2026 (Meb, Ministry of National Education.)

2.1 National teacher competence standards

In Türkiye, teacher competences are formally defined by the Ministry of National Education through the General Teacher Competence Standards, which provide a structured foundation for teacher preparation, professional development, and evaluation.

Table 9. National Teacher Competence Standards and Key Documents

Source	Document Title	Description
Ministry of National Education General Teacher Competence Standards (2017)	Standards for general teacher competence	This framework defines teacher competences in Türkiye across three domains: professional knowledge, professional skills, and attitudes and values. Digital competences are positioned under the professional skills domain and are mainly framed as the ability to use ICT tools, access and evaluate digital information, and support students' use of technology.
MoNE Strategic Plan 2024–2028	MoNE Strategic plan	The strategic plan explicitly identifies the absence of a Teacher Digital Competence Framework as a key weakness in its SWOT analysis. In response, Strategy S-7.1.1 commits to developing such a framework, indicating that the gap identified in academic research has been recognized at the policy level.

Highlights:

- Türkiye's teacher competence framework shares structural similarities with frameworks employed in high-PISA-performing countries; however, techno pedagogical integration, defined as the capacity to design digitally enriched, inquiry-oriented learning environments, remains less systematically emphasized than in comparable frameworks (Ataman & Orhan, 2023).

- MoNE's quality framework in the context of 21st-century skills, conclude that digital competence as defined in national standards is predominantly associated with technical skills and formal information acquisition, while broader critical digital literacy dimensions including ethical use, content creation, and digital citizenship, are underspecified (Erişen et al, 2018).
- Overall, Türkiye has made notable efforts to establish teacher competence standards, but persistent challenges remain. The lack of a clearly defined and independent digital competence standard, the fragmentation arising from multiple

overlapping frameworks, and ongoing gaps in training, infrastructure, and classroom practice continue to constrain progress.

2.2 Adoption of European frameworks

Türkiye's research community has engaged substantially with the European Digital Competence Framework for Educators (DigCompEdu) as an analytical instrument for assessing teacher digital competence levels, most notably in studies by Suzer and Koc (2024), who applied DigCompEdu in a large Turkish city context, and Kuş and Mert (2023), who assessed digital competence of educators according to the European framework. These studies reveal that a significant proportion of teachers operate at integrator and expert levels as defined by DigCompEdu, with notable variation across gender, subject area, and urban-rural location. However, DigCompEdu has not been formally adopted as a policy instrument, nor has it been integrated into national teacher certification systems or professional development frameworks. Engagement with these instruments below in institutional contexts remains minimal, confined largely to academic research and internationally funded projects. This represents a substantial alignment gap for Turkey's participation in EU-level initiatives aiming to develop digitally sustainable teacher competencies, including DigiSET.

Table 10. Adoption of European Competence Frameworks in Türkiye

Framework	Adoption Level	Notes
DigCompEdu (2017)	Recommended	MoNE's 2025 "Digital Teacher Competencies" document explicitly states that DigCompEdu, the UNESCO ICT Competency Framework for Teachers, and UNICEF's digital competence framework were reviewed alongside national sources during its preparation. The competence levels of the new framework were also structured on the basis of DigCompEdu. It can therefore be said that DigCompEdu in Türkiye is no longer merely a European framework cited as a reference point. It has become a direct source shaping national teacher competence standards. That said, the adaptation remains concentrated in the domain of digital teacher competence. DigCompEdu is transforming not the entire competence system of the teaching profession, but its digital dimension in particular.
GreenComp (2022)	Not used	Although sustainability is addressed within Turkish education policies, GreenComp has not been formally adopted. Sustainability-related competencies are mainly reflected in curriculum initiatives and project-based activities rather than through a structured competence framework. GreenComp has not been formally embedded in MoNE's national teacher competence standards by name. However, official evidence points to emerging uptake at the project and pilot level: YEĞİTEK's BUSTIC EDU project included GreenComp-informed training for teachers and piloted a sustainability-based curriculum in selected schools. The Türkiye Century Education Model also foregrounds sustainability, livable environments, and green skills. The most accurate characterization is therefore an adaptation rising at the level of policy discourse and project implementation, but not yet fully institutionalized in the national teacher competence framework.
LifeComp (2020)	Not used	The Türkiye Century Education Model (Türkiye Yüzyılı Maarif Modeli) defines social-emotional learning competences as a skill set that permeates all curricula. This approach overlaps considerably with the underlying logic of LifeComp. It can therefore be said that, rather than functioning as a directly imported policy framework, LifeComp's core

		content is addressed in Türkiye through locally developed conceptualizations.
EntreComp (2016)	Not used	Entrepreneurship skills are included in curricula and national initiatives; however, the EntreComp framework has not been directly integrated into teacher education or policy frameworks. Implementation remains at a general skills level rather than within a structured competence model. Although entrepreneurship and innovation-focused projects are being carried out locally under MoNE in Türkiye, these have not appeared to be embedded holistically within the teacher competence system in a manner consistent with the logic of EntreComp yet.
AI Competence Framework for Teachers (UNESCO, 2024)	Not used	Although Türkiye's AI in Education Policy (2025–2029) reflects alignment with the vision of UNESCO, this specific framework has not yet been formally embedded in teacher competence standards, certification systems, or professional development programs. It represents an adaptation that has become visible in official policy documents but has not yet reached the stage of full institutionalization.

2.3 Gaps in current competence frameworks

Türkiye is moving toward the profile of a digitally capable and AI-aware teacher, but it is less advanced in framing teachers as sustainability leaders or entrepreneurial change agents. From the perspective of a "Digitally Sustainable European Teacher," the national emphasis is therefore strong on digital transformation, moderate on ethics and inclusion, and comparatively weak on sustainability and entrepreneurship as core teacher competences.

Highlights:

- National standards do not yet reflect teacher digital competences within a multidimensional structure that integrates cognitive, affective, technical, and ethical dimensions (Güngör & Saraçoğlu, 2025).
- Current competence frameworks do not define technopedagogical competences beyond basic ICT use in sufficient detail. This limits the integrated use of technology in teaching, learning, and assessment processes (Köksal & Canlı, 2024).
- Official competence standards do not yet include AI literacy, OER creation and sharing, and sustainability competences as explicit and systematic dimensions. The scarcity of validated, contextualized competence assessment tools further constrains the systematic development and recognition of teacher digital competences at the institutional level.
- Key gaps in Türkiye's teacher competence frameworks include the absence of a dedicated digital teacher competence framework that operationalizes DigCompEdu or comparable instruments at the national policy level, insufficient specification of technopedagogical competences beyond basic ICT use (Köksal & Canlı, 2024), and the absence of AI literacy, OER creation, and sustainability dimensions from official standards.
- The frameworks do not address equity-oriented digital competences that would enable teachers to respond pedagogically to socioeconomic and regional disparities in student access and digital skill development. Furthermore, the predominance of technical skill metrics over pedagogical integration criteria limits the frameworks' capacity to guide holistic professional development.

3. Initial Teacher Education (ITE) and Continuous Professional Development (CPD) and its Certification

3.1 Initial Teacher Education (ITE) provision

Initial Teacher Education in Türkiye is provided primarily by faculties of education within universities, under the coordination of the Council of Higher Education (YÖK) and in alignment with MoNE's General Teacher Competence Standards. Digital pedagogy is addressed through programme-level ICT and instructional technology courses, but coverage varies across institutions, and the critical or transformative dimensions of digital teaching remain underrepresented. Sustainability, AI in education, and OER creation are either absent from the formal curriculum or available only as electives in a small number of institutions. ITE in Türkiye therefore supports basic digital readiness but does not yet systematically prepare future teachers for AI-mediated, sustainable, or open pedagogical practice. CPD is coordinated primarily through the Millî Eğitim Akademisi (NEA), ÖBA (Teacher Informatics Network), MoNE provincial directorates, and YEĞİTEK, delivered via face-to-face seminars, online platforms (EBA/ÖBA), and blended modes https://oygm.meb.gov.tr/www/tanitim/icerik/7). Despite scale, CPD is widely characterized as fragmented, episodic, hardware-centred, and lacking follow-up support, falling short of 21st-century competence demands (Dag, 2016; Bonato, 2023; EBSAM, 2025).

Table 11. Overview of Adoption Level of Digitally Sustainable Teaching Topics in Initial Teacher Education in Türkiye

Aspect	Adoption Level	Notes
Education for Sustainable Development	optionally	Sustainability-related themes are present in broader policy discourse, but they are not consistently institutionalized as a clearly defined compulsory component of initial teacher education in digitally sustainable teaching terms (Ataman & Orhan, 2023; Kadıoğlu, 2023; Yalap & Gazioğlu, 2023).
Digital Pedagogy	optionally	Digital pedagogy is addressed through national digital transformation efforts and teacher digitalization agendas; however, the emphasis tends to remain on ICT use, access, and content delivery, rather than deeper pedagogical transformation across all initial teacher education programs (Bonato, 2023; Erişen et al., 2018).
AI in education	not available	AI in education does not yet appear as a clearly established and systematic component of initial teacher education. Current teacher preparation discourse focuses more broadly on digital technologies than on explicit AI pedagogy or ethical AI integration (Bonato, 2023). In BAU, we offer “AI in Edu” course as elective courses to the Educational Sciences Faculty students.
OER creation	not available	The references reviewed do not indicate that OER creation is an explicit or structured component of initial teacher education. The policy emphasis is more on using existing digital resources than on openly licensed resource creation and sharing

3.2 Continuous Professional Development (CPD) opportunities

Continuous Professional Development is coordinated by the National Education Academy (Millî Eğitim Akademisi), ÖBA, YEĞİTEK, and MoNE provincial directorates, complemented by universities and international partners such as UNICEF. Below is a brief overview of major projects and reports related to the topic.

Table 12. Overview of ITE Provision

Source	Document Title	Description
https://eurydice.eacea.ec.europa.eu/eurypedia/turkiye/national-reforms-general-school-education	Eurydice : National Reforms in General School Education (Türkiye)	For the 2025–2026 academic year, "Green Homeland" (Yeşil Vatan) themed activities are being implemented across schools, supported by a thematic calendar that assigns a specific environmental theme to each month. This initiative also reflects the link between sustainability activities and teacher capacity. It should be noted, however, that this refers to school-wide activities rather than a standalone sustainability CPD programme for teachers, a distinction that highlights an existing gap in the system.
https://yegitek.meb.gov.tr/www/egitimde-kullanilan-yapay-zeka-araclari-ogretmen-el-kitabi/icerik/3771	Eğitimde Kullanılan Yapay Zekâ Araçları: Öğretmen El Kitabı	The handbook published by the YEĞİTEK General Directorate comprehensively addresses how AI tools can be integrated into teaching and learning processes across a range of subject areas, including Turkish, mathematics, science, physics, chemistry, and biology, as well as for pre-school, primary school, and students with special needs. It serves as a practical CPD resource oriented towards classroom use, functioning as a direct teacher guide rather than a theoretical policy document.
https://ogedep.eba.gov.tr	ÖBA Dijital Yetkinlik Eğitim Paketi	The package covers topics including communication, collaboration, content creation, and responsible digital citizenship. The content creation module represents the closest component to OER, yet Creative Commons licensing and open sharing practices are not directly addressed within it, a documented gap in the CPD landscape.

Table 13. Overview of Adoption Level of Digitally Sustainable Teaching Topics in Continuous Professional Development in Türkiye

Aspect	Adoption Level	Notes
Education for Sustainable Development	Not available	Although there are several themes and suggestions in the reviewed docs, sustainability is not framed as a distinct, mandatory or clearly structured CPD topic for teachers within digital teaching/professional development. The main emphasis is on digital competence, technology use, and instructional capacity rather than ESD-specific teacher CPD.
Digital Pedagogy	optionally	Digital pedagogy is clearly present in Türkiye's teacher professional development landscape through the Digital Teacher Competence Framework, digital training modules, and in-service training on new technologies. However, the reviewed documents do not show it as mandatory for all teachers in continuous professional development
AI in education	optionally	AI in education is now officially recognized in national policy through the Education and AI Policy Document and Action Plan (2025–2029), and teacher-facing materials such as the prompt guide for teachers show growing institutional uptake. Still, the documents indicate policy support and resource development, not a universal mandatory CPD requirement for all teachers.

OER creation	Not available	Actually, the reviewed docs support digital content development, but they do not explicitly establish OER creation as a defined CPD topic with a clear open-licensing orientation. In other words, content creation exists, but OER-specific professional development is not visibly institutionalized.

Highlights

- Private school teachers report significantly better access to institutionally supported digital CPD than public school counterparts, reflecting structural disparity (Koç & Fidan, 2022).
- EBSAM (July 2025) recommends that NEA take institutional ownership of a coordinated CPD system formally linked to career advancement, salary incentives, and school-level needs analysis.

3.3 Certification and recognition

In Türkiye, teacher competences in digital education and sustainability are not certified through a dedicated national competence-based system, but rather through participation-based training and formal qualifications. Attendance certificates issued by MoNE document completion of in-service training but do not map to a progressive competence framework or to the National Qualifications Framework. Although the National Qualifications Framework provides a structural basis for micro-credentials, this potential has not yet been operationalized for digital professional development.

Below is a brief overview of major projects and reports related to the topic.

Table 14. CPD Opportunities for Teachers in Türkiye

Source	Document Title	Description
https://ogedep.eba.gov.tr/en/homepage/	Digital Ecosystem for Teacher Training Project (OGEDEP)	This project is conducted by the Ministry of National Education (MEB) in collaboration with UNICEF to improve teachers' digital competencies according to international standards.
https://ogedep.eba.gov.tr	ÖBA Digital Competency Training Package	ÖBA Digital Competency Training Package is accessible through the Teacher Informatics Network (ÖBA) and offers certified training on digital content creation, safe internet usage, and digital teaching methods.
https://dijitalogretmenler.com/	Digital Teachers Project	The *Digital Teachers Project*, implemented through the collaboration of ING Türkiye, Habitat Association, and Middle East Technical University, aims to strengthen teachers' digital competences and support their integration of technology into classroom practices. Since its launch in 2020, the project has delivered 10 training cycles, reaching out over 10,000 teachers and indirectly impacting nearly 250,000 students. The renewed phase of the project has expanded its scope to include preschool

		and high school teachers, with updated content and training design. Each year, the program targets 1,000 teachers. The project consists of two phases: first, participants receive online training in digital literacy; then, 100 selected teachers receive advanced training in virtual and augmented reality, along with VR equipment.
https://www.oba.gov.tr/	ÖBA (Teacher Informatics Network)	MoNE's primary digital education platform where teachers can complete various distance learning courses such as Artificial Intelligence, Web 2.0 Tools, and Educational Technology Applications to earn In-Service Training Certificates.

Teachers can also participate in various certification programs not only in digital skills but also in sustainability, climate change, and environmental awareness. These training programs are offered through collaborations between the Ministry of National Education, universities, and non-governmental organizations.

Below is a brief overview of major projects and reports related to the topic.

Table 15. CPD Providers and Programmes

Source	Document Title	Description
https://ekoiq.com/ogretmenler-icin-ucretsiz-ska-ve-iklim-seferberligi-egitimi/	Teachers 2030: SDG and Climate Action Training	The *"Teachers 2030: Sustainable Development Goals and Climate Action Training"* is a free, online program designed for K–12 teachers. Organized through the collaboration of UN SDSN Turkey, Boğaziçi University Lifelong Learning Center, and Schneider Electric, the training aims to enhance teachers' knowledge and practices related to sustainability in education. The program runs for a total of 21 hours covering topics such as the UN 2030 Agenda, Sustainable Development Goals (SDGs), and education for sustainable development, along with practical classroom applications and lesson planning. At the end of the program, teachers receive a participation certificate approved by Boğaziçi University.
https://iklimtema.org/	Climate Change Education and Awareness Project	The *Climate Change Education and Awareness Project*, developed by the TEMA Foundation in collaboration with the Ministry of National Education, is a nature-based education initiative aimed at increasing students' awareness of climate change and sustainability. It focuses on helping students understand weather, climate, the causes and impacts of climate change, and the relationship between human activities and natural systems. The program also promotes sustainable living skills and encourages

		students to develop practical solutions to reduce climate change impacts in daily life. Teachers are supported with a wide range of instructional materials, including activity guides, videos, presentations, posters, and e-books. After implementing the activities and completing an evaluation survey, participants can receive an online participation certificate.
https://www.oba.gov.tr/	Sustainability and Environmental Training on ÖBA	The Ministry of National Education periodically offers sustainability-themed courses through the Teacher Informatics Network (ÖBA). These include programs such as *Food Literacy Seminar*, *Zero Waste Education*, and *Introduction to Environmental Education and Climate Change Curriculum*. Teachers who successfully complete the course requirements and pass the final assessment are awarded an e-certificate.

Highlights

- Türkiye does not currently operate a formal micro-credentials system for teacher digital competences. In-service training completion is certified by MoNE through attendance certificates, which do not map to a progressive competence framework, modular qualification structure, or the National Qualifications Framework.
- There is no established pathway through which teachers can earn recognised credentials for digital competence development aligned with DigCompEdu or comparable frameworks.
- The potential for micro-credentialing linked to the National Qualifications Framework exists in principle but has not been operationalized for teacher digital professional development. This represents a structural gap relative to emerging EU practices in open badges and stackable micro-credentials for educators, which DigiSET aims to contribute to.
- The absence of a competence-linked certification framework also limits institutional incentives for teachers to engage in sustained CPD beyond mandatory in-service training requirements.

3.4 Gaps in current ITE/CDP

In Türkiye, the most strongly supported dimensions of digitally sustainable teaching in ITE and CPD are basic digital literacy and the pedagogical use of digital tools, reinforced by the ÖBA Digital Competency Package, the IPA III framework, and the National Education Academy. Critical gaps across initial teacher education and continuous professional development in Turkey include:

- Insufficient coverage of AI literacy, AI-mediated pedagogy, and ethical AI use in both ITE and CPD contexts.
- Absence of OER creation competences and open pedagogy frameworks from ITE curricula and CPD offerings.

- Limited treatment of sustainability as a cross-cutting dimension of digital teaching practice.
- Short-duration, hardware-centered CPD with inadequate follow-up and longitudinal support (Dag, 2016; Demir, 2023).
- Overemphasis on technical device use at the expense of higher-order digital pedagogical competences and critical literacy (Bonato, 2023; Köksal & Canlı, 2024).
- No formal competence-linked certification or micro-credential system, limiting recognition and progressive development.
- Structural disparities in CPD access and quality between public and private school teachers, and between urban and rural contexts (Koç & Fidan, 2022).

4. Analysis of the Four DigiSET Thematic Areas

4.1 Gender-unbiased AI in teaching

National attention to gender bias in AI in Türkiye is limited and uneven. The National AI Strategy and the research literature acknowledge gender equity as an important dimension of AI, yet explicit attention to gender bias in educational AI and dedicated teacher training on this topic are absent from both policy and professional development. AI ethics training for teachers addresses bias in general terms rather than as a gender-specific pedagogical concern. Preparing teachers to recognize and counter gender bias in AI-driven teaching and assessment therefore constitutes an underdeveloped competence area.

Table 16. Certification and Recognition of Teacher Digital Competences

Aspect	Evidence in Türkiye	Source(s)
National attention to gender bias in AI	Moderate attention in national AI strategy, mainly in financial inclusion; not a central focus	Angın et al 2025
Resources for teachers	No direct evidence of specific resources on gender bias in AI; general calls for gender equity	İlhan et al., 2025
Teacher training on gender bias in AI	No direct evidence of systematic training; general emphasis on ethics and bias in AI, not gender-specific	Ekizer, 2025; İlhan et al., 2025

Highlights:

- Türkiye's national AI strategy documents show moderate attention to gender, mainly in financial inclusion, but lack a comprehensive focus on gender bias in AI (Angın et al., 2025).
- There is a recognized need to address gender stereotypes in educational content, but no specific resources for teachers on gender bias in AI are identified (İlhan et al., 2025).
- Teacher training in AI ethics and bias is recommended, but explicit training on gender bias in AI is not documented (Ekizer, 2025; İlhan et al., 2025).

- There is *no direct evidence of systematic teacher training programs* in Türkiye that specifically address gender bias in AI. While the literature emphasizes the importance of equipping teachers with the skills to interpret and guide students in the ethical use of AI-including awareness of algorithmic bias and equitable access- these recommendations are general and not specific to gender bias in AI (Ekizer, 2025). The need for continuous and sustainable professional development in AI is highlighted, with a focus on ethical and professional dimensions, but explicit mention of gender bias as a training topic is absent (Ekizer, 2025). Additionally, the persistence of gender stereotypes in educational practices suggests that current teacher training may not adequately address these issues (İlhan et al., 2025).

4.2 Systems thinking for sustainability in education

Systems thinking is entering the curriculum primarily through the Century of Türkiye Education Model (Maarif Model) and ESD-related curriculum reforms, but implementation remains uneven across schools and disciplines (Arslan & Curle, 2024, Polat, Zincirli & Zengin, 2025). Teacher training programs are beginning to address systems thinking and sustainability competencies, but preparation is still insufficient, gaps persist in both curriculum coverage and the depth of teacher readiness to apply these approaches in the classroom (Polat et al., 2025). EFL teachers and those in similar disciplines recognize their role in fostering ESD competencies, yet practical barriers remain. Curriculum constraints and low parental awareness limit the reach of sustainability-oriented teaching (Arslan & Curle, 2024). Constructivist and inquiry-based learning strategies, which support research, reasoning, and reflective thinking, are the primary pedagogical vehicles through which systems thinking is embedded in ESD practice (Ateskan & Lane, 2018). A clear gap exists in connecting social justice to sustainability with content and teacher training, pointing to the need for more integrated and comprehensive professional development programmes (Arslan & Curle, 2024; Ateskan & Lane, 2018).

4.3 AI for adaptive learning

Türkiye has moved from aspirational discourse to operational deployment of adaptive learning, most visibly through MEBİ, the Ministry's AI-supported personalized learning platform launched in 2024, and through the expansion of personalized features on EBA. The AI in Education Policy Document and Action Plan (2025-2029) positions adaptive learning as a strategic objective rather than an optional innovation, and the accompanying ethics framework emphasizes fairness, data security, human-centeredness, inclusion, and responsible use. Framed in this way, AI is treated as a support for professional judgment rather than a substitute for it. However, teacher preparation for interpreting and pedagogically acting on adaptive learning data is not yet a systematic component of CPD.

Table 17. Overview of Certification Schemes

Source	Document Title	Description
https://mebi.eba.gov.tr	MEBİ platform: the operational adaptive learning tool deployed at national scale.	Türkiye has moved from aspiration to deployment. The clearest example is ***MEBİ***, the MEB's AI-supported personalized learning platform launched in October 2024. MEBİ offers adaptive tests, AI-driven content, and personalized study plans; by March 2025 it had reached 1,185,000 users from grades 9 to 12 and graduates, with over 55 million questions solved on the platform. Beyond exam preparation, the broader EBA

		platform has also been repositioned around personalization: EBA now specializes in personalized learning experiences, featuring a renewed design alongside success monitoring and evaluation reports.
https://yegitek.meb.gov.tr/meb_iys_dosyalar/2025_07/19150909_egitimde_yz_politika_belgesi_18072025_en.pdf	MEB AI Policy Document	This document defines adaptive learning as a concrete policy action, not merely a concept. At the policy level, adaptive learning is not incidental, it is explicitly named as a strategic objective. The MoNE AI in Education Policy Document and Action Plan (2025–2029) specifically foregrounds adaptive learning support for EBA/ÖBA, a personalized Turkish-language learning app, in-service teacher training, and automated assessment, so that classrooms can shift toward data-informed instruction.
https://www.oba.gov.tr	ÖBA Digital Competency Package	This platform is for teacher digital and personalization training; however, personalization pedagogy (how to interpret and act on adaptive learning data) is not yet a standalone, systematically assessed component of teacher professional development.
https://ttkben.meb.gov.tr/www/quotethical-guidelines-for-the-use-of-artificial-intelligence-in-educationquot-have-been-published/icerik/52	YAZEK Ethical Guidelines	Strongest and most formalized of the three dimensions: MEB published Ethical Guidelines for AI Use in Education in January 2026, including a mandatory online ethical declaration requirement for teachers and Ministry units.

Highlights

- Notably, Türkiye's adaptive learning discourse is increasingly tied to privacy, transparency, and human oversight, not only to efficiency.
- Core values in the ethics framework: fairness, data security, human-centeredness, inclusion, and responsible use: framing AI as supporting educational judgment, not replacing it.
- Policy design and implementation are highly centralized, with relatively limited flexibility for context-sensitive or school-level adaptation.
- Overall, although Türkiye demonstrates significant progress in developing guidelines and policies for AI-supported learning environments, important gaps persist in translating these developments into classroom practice and building sustained pedagogical capacity.

4.4 Inclusive teaching practices and learning difficulties

Inclusive education in Türkiye is supported by various policy documents and regulatory frameworks to improve equity and access. While these efforts ensure growing attention to

inclusive teaching practices and learning difficulties, challenges remain in the implementation and translating policy into classroom practices.

Table 18. Overview of Inclusive Education Policies and Digital Resources

Source	Document Title	Description
https://orgm.meb.gov.tr/meb_iys_dosyalar/2023_05/12081236_Ulusal_Eylem_PlanY_MayYs_2023.pdf	National Action Plan for Education through Inclusion/Integration (2023)	The foundational implementation document of Türkiye's inclusion/integration policy. It regulates full-time and part-time inclusion models, the obligation to prepare Individualised Education Plans (IEPs), support education rooms, and collaboration with Guidance and Research Centres (RAMs). It provides the framework within which teachers support students with special needs.
https://orgm.meb.gov.tr/meb_iys_dosyalar/2021_09/13145613_Ozel_EYitim_Hizmetleri_YonetmeliYi_son.pdf	Özel Eğitim Hizmetleri Yönetmeliği(2021)	The legal framework governing Türkiye's special education system. It regulates the diagnosis and referral of students, the preparation of IEPs, the implementation of support education rooms, and assessment processes. It defines teachers' legal obligations towards students with special needs. It also references a digital monitoring system through the MEBBİS-RAM Module.
https://nasenjournals.onlinelibrary.wiley.com/doi/10.1111/1471-3802.70002	Inclusive Education in Primary Education Teacher Training in Türkiye: An Absent Curriculum? (2025)	A peer-reviewed study from 2025 examining the extent to which inclusive education is covered in teacher training programmes in Türkiye. It documents that 75% of registered students with special educational needs are educated in mainstream classrooms, yet the majority of teachers have not developed sufficient expertise to meet these needs.
https://eurydice.eacea.ec.europa.eu/eurypedia/turkiye/ongoing-reforms-and-policy-developments		Documents that the 2026 Presidential Annual Programme aims to provide inclusive and quality education services in all schools and to expand opportunities for individuals with special needs.
https://yegitek.meb.gov.tr/meb_iys_dosyalar/2025_07/19150909_egitimde_yz_politika_belgesi_18072025_en.pdf	MEB AI in Education Policy Document and Action Plan (2025–2029	Directly addresses how digital tools can be used for inclusion: the document sets out as a strategic objective that AI systems must ensure fair and equitable access for all students, that accessibility tools be developed for students with special needs, and that the EBA/ÖBA platforms be strengthened with inclusive adaptive learning features.
https://orgm.meb.gov.tr/www/ozel-egitim-uzaktan-egitim-icerikleri/icerik/1317	Special Education Distance Learning Content	This lists digital learning content and accessible materials provided through EBA for students with special educational needs. It is an official source that directly documents the 'digital tools for inclusion' dimension, demonstrating the practical implementation of MoNE's digital content policy for students with special needs.

https://ogedep.eba.gov.tr	ÖBA- Digital Teacher Competency Training Package	Inclusive learning environments are explicitly included among the topics covered by this ten-module digital competence package. It is the most current and widely used in-service training tool aimed at developing teachers' inclusive pedagogy skills through digital tools.
https://documents1.worldbank.org/curated/en/099041525111526016/pdf/P510381-67f0f3eb-c00c-4952-82e2-11acd3ffce2b.pdf	World Bank Project Information Document Türkiye Education (2025)	Documents that 73% of students with special needs in Türkiye are educated in mainstream or vocational schools. It provides an independent international assessment of Türkiye's inclusion profile and is an important external source that also addresses the role of digital infrastructure in inclusion.

Highlights:

- Initial teacher education includes compulsory special education courses, but preparation remains largely theoretical with limited practical depth (Hazir & Harris, 2025). In-service training exists but is not systematically oriented toward inclusive pedagogy or differentiated instruction.

- Despite a strong regulatory base, the gap between policy and classroom reality is significant. The required coordination between families, schools, and RAMs is weak; teacher capacity is insufficient; and resource allocation across regions is uneven (Avşar-Tuncay et al., 2026; Ulubaş & Gök, 2026).

- The 2026 Presidential Annual Programme explicitly targets expanding opportunities for students with special educational needs and providing inclusive, high-quality services in all schools.

- We can claim that the legal architecture is well developed: the Special Education Services Regulation, Individualized Education Programs (BEP), Guidance and Research Centers (RAM), and mainstreaming/integration policies together form a comprehensive statutory framework.

5. Innovative practices and case studies

5.1 Case Study 1: ÖBA

Table 19. Case Study 1 – ÖBA: Key Features and Impact

Organisation/Project	Ministry of National Education (MoNE), General Directorate of Innovation and Educational Technologies (YEĞİTEK), implemented through the Teacher Education Digital Ecosystem Project and the Teacher Informatics Network (ÖBA)
Main Dimensions Addressed	Digital literacy, responsible digital behaviour, inclusive digital learning, digital communication and collaboration, digital resources, digital assessment, and sustainability in digital education. The national digital teacher competence framework also includes a specific strand on inclusive, sustainable, and ethical use of digital technologies.
Teacher Competences Developed	Teachers develop competences in basic digital literacy, selecting and planning digital tools for teaching, designing and managing digital learning environments, using digital assessment tools, supporting students' digital problem solving, and using digital technologies in ways that reduce carbon footprint and sustain continuity of learning.
Learning Approach	The model is not only online self-study. It combines a 10-module training package on ÖBA, needs analysis, a digital teacher competence framework, face-to-face school visits by facilitator teachers, and Teacher Learning Laboratories in pilot provinces where teachers receive hands-on guidance in producing digital content. This makes the approach blended, practice-oriented, and supported by peer facilitation.
Transferability to DigiSET	This case is highly relevant for DigiSET because it shows how a national framework can be translated into modular training, local facilitation, and lab-based practice. The strongest lesson is that digital competence development is more effective when online modules are paired with school-based mentoring, content creation tasks, and structured follow-up support. Sustainability can also be embedded explicitly, rather than treated as a separate theme.

This is currently one of Türkiye's strongest examples of large-scale digital teacher professional development. It reaches teachers through a structured package of modules on ÖBA and extends learning into the field through facilitator-led visits and pilot learning labs. What makes it innovative is the way competence development is staged: teachers first build awareness, then apply tools in planning, teaching, assessment, and digital content production, and finally are encouraged to update their competences through professional learning communities. The explicit inclusion of sustainability in the digital competence framework is particularly important for DigiSET, because it links digital transformation with continuity of education, resource-conscious practice, and greener uses of technology.

5.2 Case Study 2: Bilgeİş

Table 20. Case Study 2 – Bilgeİş: Key Features and Impact

Organisation/Project	Middle East Technical University (METU / ODTÜ), through the Bilgeİş project, co-financed by the European Union and the Republic of Türkiye. The platform was launched in 2016 as a large-scale online learning portal for professional development and later became one of the most visible Turkish examples of a nationwide pdMOOC

	environment. ODTÜ sources describe Bilgeİş as a project developed to strengthen the capacities of workers and employers through information and communication technologies, and institutional documents report that the portal offered around 100–111 free MOOCs together with free e-certificates
Main Dimensions Addressed	Digital competences, digital literacy, online self-directed learning, open access professional development, and scalable lifelong learning. While the platform was not designed specifically as a sustainability programme, it supports sustainable professional development by offering free, flexible, and reusable learning opportunities on a scale, reducing barriers of time, place, and cost. Research on Bilgeİş also characterizes it as a professional-development MOOC portal serving broad access and equity goals in Türkiye.
Teacher Competences Developed	Teachers can develop competences in basic and intermediate digital literacy, the pedagogical use of digital tools, online communication, content creation, productivity software, and self-regulated online learning. Because the portal is organized around professional development MOOCs, it also helps teachers strengthen habits of continuous upskilling, certificate-based learning, and independent competence building in digital environments. Studies of the platform note that the courses focus largely on ICT-related skills together with some soft skills, and that the environment supports learner-content and learner-learner interaction as well as assistant support.
Learning Approach	Minimalistic Learning theory principles followed. Training is delivered through free, open, asynchronous MOOCs hosted on the Bilgeİş platform. Courses are designed for flexible participation, accessible from different devices, and include short modules, auto-graded assessments, and in some cases assistant-graded assignments or projects. This makes competence development highly accessible for teachers who need self-paced, practice-oriented learning opportunities alongside their school responsibilities.
Transferability to DigiSET	Bilgeİş offers several useful lessons for DigiSET. First, it shows how large-scale, free, certificate-based online learning can lower access barriers for teachers' professional development. Second, it demonstrates the value of short, modular courses that teachers can complete according to their own pace and needs. Third, it suggests that a DigiSET training model could combine open online modules with structured peer or mentor support to strengthen completion, reflection, and transfer into practice. Finally, Bilgeİş illustrates how a national or cross-institutional platform can make professional development more sustainable by providing reusable resources over time.

Bilgeİş.net can be considered an important Turkish example of a MOOC-based professional development environment that is relevant for teachers as lifelong learners. Although its original target group was broader than schoolteachers alone, the platform's design makes it highly suitable for educators seeking flexible upskilling in digital competences. ODTÜ documents describe Bilgeİş as one of Türkiye's major open online course initiatives, and later analyses define it as a nationwide pdMOOC portal offering free access to professional learning opportunities. Its significance for teacher development lies less in a school-based mentoring structure and more in its model of open, scalable, certificate-based digital professional learning. For DigiSET, Bilgeİş is especially valuable as an example of how teachers can develop competences through self-paced MOOCs, repeated access to resources, and broad participation in an open learning ecosystem.

5.3 Case Study 3: Dijital Teachers

Table 21. Case Study 3 – Dijital Teachers: Key Features and Impact

Organisation/Project	As a Blended Professional Development Model for Teachers. Dijital Öğretmenler is a teacher professional development project implemented by ING Türkiye, Habitat Association, and Middle East Technical University (METU / ODTÜ). The project was launched in 2020 to strengthen teachers' digital literacy and support them in integrating digital skills into classroom practice. According to the project website, it has reached more than 10,000 teachers through ten training periods and has indirectly reached nearly 250,000 students.
Main Dimensions Addressed	The project focuses on digital literacy, digital intelligence, safe and ethical technology use, digital creativity and design, AI-supported production, digital assessment, and immersive technologies such as virtual and augmented reality. It also explicitly emphasizes teachers' responsible, safe, and ethical use of digital technologies and their ability to transfer these competences into classroom practice.
Teacher Competences Developed	Teachers develop competences in digital safety, digital awareness, content creation, infographic and video production, AI-supported content development, digital assessment, and the pedagogical integration of digital tools into teaching. The programme also aims to help teachers use digital technologies not only for producing materials but also for designing richer learning experiences for students. In the advanced phase, selected teachers further develop competences in virtual and augmented reality for education.
Learning Approach	The learning model is blended and multi-layered. The project combines interactive video lessons, online live sessions, and face-to-face advanced training. The main online phase lasts eight weeks and includes both asynchronous and synchronous learning. Teachers are grouped and supported by assigned academic mentors in live online sessions, while they also complete specially prepared interactive modules at their own pace. Following assessment, interviews, and academic review, 100 teachers are selected for an advanced face-to-face training phase led by METU academics, focusing on VR and AR in education.
Transferability to DigiSET	This case is highly relevant for DigiSET because it shows how teacher digital competence can be developed through a scaffolded blended model rather than through one-off workshops. Key lessons include the value of combining self-paced learning, live academic support, cohort-based participation, assessment-based progression, and advanced specialization pathways. Another important takeaway is that digital competence development becomes stronger when ethical use, AI awareness, and pedagogical integration are treated as core elements rather than optional add-ons.

Dijital Öğretmenler is a strong Turkish example of innovative teacher professional development because it approaches digital competence as both a technical and pedagogical capacity-building process. Teachers are not only introduced to digital tools; they are guided in how to use them consciously, safely, ethically, and instructionally. The programme is also notable for its staged design: a large-scale online phase ensures accessibility and broad participation, while a second, more intensive phase allows selected teachers to deepen their practice with immersive technologies. This structure supports both scale and depth. For DigiSET, the project offers a useful model of how teacher learning can be made flexible,

practice-oriented, mentor-supported, and responsive to emerging needs such as AI and immersive digital environments.

6. Conclusions and Implications

a. Implications of Türkiye's New Curricula

Türkiye's new curricula signal a significant shift from a content-transmission model toward a more holistic and competence-oriented vision of schooling. The Türkiye Yüzyılı Maarif Modeli places digital literacy, critical access to information, pedagogical use of technology, digital citizenship, data security, and responsible technology use within a broader educational framework that also values ethical development, inquiry, contextual learning, and adaptation to learner diversity (MoNE, 2024). This shift is important because it creates curricular legitimacy for a teacher profile that is not only digitally capable but also pedagogically reflective, socially responsible, and responsive to emerging societal challenges. In this respect, the new curricula move Türkiye closer to European competence-based educational thinking, particularly in relation to cross-cutting skills, learner agency, and value-oriented education, even though full alignment with European competence frameworks remains incomplete. At the same time, the implications of the new curricula should be interpreted with caution. While curriculum discourse increasingly foregrounds interdisciplinarity, sustainability, social-emotional development, and digital literacy, the report shows that these priorities are not yet fully mirrored in teacher competence standards, pre-service teacher education, or systematic CPD provision. In other words, the curricula are more advanced than the professional support structures currently available to teachers. This creates an implementation gap: policy ambition is rising, but the institutional architecture required to translate curricular reform into classroom practice is still under development (MoNE, 2023; MoNE, 2024).

b. Implications for Teachers

Within this policy and curricular transition, the role of the teacher is being redefined. Teachers are no longer positioned primarily as content deliverers; rather, they are increasingly expected to become designers of learning environments, facilitators of inquiry, mediators of ethical reflection, and guides for inclusive and digitally enriched participation. The report suggests that this shift requires stronger competences in inquiry-based learning, project design, interdisciplinary teaching, differentiation, assessment for learning, and student-centred pedagogy (Ataman & Orhan, 2023; Erişen et al., 2018; MoNE, 2024). For teachers in Türkiye, this also means that professional expectations are expanding across multiple domains simultaneously. They are expected to foster academic achievement, digital literacy, ethical awareness, active citizenship, and increasing AI awareness and sustainability-oriented thinking. However, the current competence ecosystem remains fragmented. Although digital competence training is expanding through the IPA III Digital Teacher Competencies Framework, the ÖBA Digital Competency Package, and the National Education Academy, sustainability, OER creation, and AI pedagogy are not yet institutionalized as equally strong and coherent components across the entire teacher development system (UNICEF, 2025; YEĞİTEK, 2025b).

6.1 Competence Implications for the Digitally Sustainable Teacher

6.1.1 Emerging Competence Areas

One emerging competence area is critical and pedagogically grounded use of AI in education. This competence is becoming increasingly important because Türkiye has moved

from dispersed AI initiatives to a formal national AI in Education Policy and Action Plan (2025–2029), which explicitly aims to improve teachers' AI literacy, align curricula with AI, and establish ethical standards for AI use in education (YEĞİTEK, 2025b). In addition, teacher-facing guidance materials such as the AI Teacher Handbook and the prompt engineering guide indicate that AI is beginning to be framed not merely as a technical innovation but as a pedagogical tool requiring professional judgment. The evidence therefore suggests that teachers need not only functional AI skills but also the capacity to evaluate AI critically, use it responsibly, and integrate it meaningfully into subject teaching.

A second emerging area is the design of inclusive digital learning environments. This competence is important because the Turkish context continues to be marked by regional, socioeconomic, and institutional inequalities in access, readiness, and support. The report repeatedly shows that digital education in Türkiye is unevenly implemented across regions and school types, and that teachers' ability to respond to learner diversity is therefore central to digital transformation. The Digital Teacher Competencies Framework already includes inclusive, sustainable, and ethical use as a core domain, and the new curricula also emphasize adaptation to diverse student needs. Yet inclusive digital pedagogy needs to be strengthened further so that teachers can move beyond access provision toward equity-oriented instructional design.

A third emerging area is integrating sustainability into teaching practice through systems-oriented and context-sensitive pedagogy. Sustainability is important because it is clearly present at the policy level in the Twelfth Development Plan, the MoNE Strategic Plan, the Environmental Education and Climate Change Course, and vocational policy linked to the twin transition. However, the report makes clear that sustainability is still mostly addressed through isolated initiatives and curriculum elements rather than through a fully embedded teacher competence model. This means teachers increasingly need the ability to connect sustainability with digital literacy, everyday life, local contexts, and interdisciplinary teaching. Such competence would be especially relevant for DigiSET because it would translate policy discourse into teachable practice.

A fourth emerging area is digital content adaptation and participatory resource design, which may serve as a bridge toward OER-oriented practice. The new curricula expect teachers to adapt and produce content in line with diverse student needs, and national digital platforms such as EBA and ÖBA already support large-scale content use and professional learning. However, the report shows that content creation in Türkiye is still largely framed within centralized systems rather than open, teacher-led knowledge ecologies. This suggests that a future-ready teacher in Türkiye should be able not only to use digital materials but also to adapt, contextualize, and collaboratively develop them for diverse learners and settings.

6.1.2 Underdeveloped Competences

The most clearly underdeveloped competence is OER creation, licensing, sharing, and reuse. Although Türkiye has broad digital content infrastructure and some higher education examples of open courseware, there is no dedicated national OER policy, no strong open licensing culture within mainstream school policy, and no systematic place for OER creation within official teacher competence standards or CPD. The distinction between free access and genuinely open educational resources remains unresolved in policy and practice. For DigiSET, this is a major gap because openness is not peripheral to digitally sustainable teaching; it is one of its constitutive dimensions.

A second weak area is interdisciplinary sustainability teaching as a teacher competence, rather than as a curriculum topic. The report shows that sustainability is present in policy discourse and selected curricular initiatives, but not yet institutionalized as a coherent teacher competence area in either ITE or CPD. This means teachers may encounter

sustainability as content, but not necessarily as a cross-disciplinary design principle guiding pedagogy, assessment, and school culture. From a DigiSET perspective, this gap is especially important because sustainability needs to be understood not only as environmental awareness but also as a way of linking digital transformation, ethics, inclusion, and long-term societal responsibility.

A third underdeveloped area is ethical and equity-oriented AI competence beyond procedural compliance. Türkiye has made visible progress by establishing an ethics board, producing guidance documents, and requiring an ethics declaration for AI applications. However, the report suggests that formal institutionalization is still incomplete and that competence development has not yet fully reached the level of systematic classroom enactment. Teachers therefore need stronger preparation not only in following ethical rules but in recognising bias, understanding human oversight, protecting privacy, and making pedagogical decisions that preserve fairness and learner agency.

A fourth weak area is teacher autonomy in resource creation and innovation. Much of the Turkish system still operates through centralized and top-down structures, especially in digital content production. This limits the emergence of teachers as autonomous designers, sharers, and improvers of learning resources. The report therefore indicates that one challenge is not simply skill deficiency but a structural culture in which teachers are more often positioned as users of centrally produced materials than as contributors to open and collaborative educational innovation.

6.2 Recommendations and Implications for DigiSET Framework Development

6.2.1 Implications for the Competence Framework

Based on the Turkish evidence, the DigiSET competence framework should include at least five interrelated competence areas: digital pedagogical design, critical and ethical AI use, inclusive and equity-oriented digital teaching, sustainability integration across teaching practice, and OER creation and collaborative sharing. These areas are directly relevant because the Turkish policy landscape is comparatively strong in digital transformation discourse and increasingly active in AI policy, but weaker in sustainability institutionalization and open education. A DigiSET framework that combines these dimensions would therefore be relevant to national needs and development in orientation. In terms of competence components, the Turkish case suggests that DigiSET should adopt a balanced knowledge, skills, and attitudes model. Teachers need knowledge of AI, sustainability, inclusion, accessibility, and open licensing; skills in instructional design, adaptation, assessment, and collaborative material production; and attitudes related to responsibility, openness, fairness, critical reflection, and professional agency. This is especially important because the report identifies a persistent overemphasis in Türkiye on technical and instrumental understandings of digial competence at the expense of multidimensional professional capacity.

Particular emphasis should be placed on three issues:

*First, DigiSET should treat ethics not as an add-on but as a transversal dimension across all competence areas.

*Second, it should explicitly include equity-sensitive pedagogy, given the documented urban-rural and public-private disparities in access and support.

*Third, it should make teacher-led openness and collaborative authorship visible as a competence expectation, because this is one of the clearest gaps between the current Turkish context and the broader European direction of digitally sustainable education.

6.2.2 Implications for Learning Outcomes

Following DigiSET training, teachers in Türkiye should be able to design and justify AI-supported learning activities that are pedagogically appropriate, ethically responsible, and aligned with learner needs. This outcome is necessary because national policy now explicitly promotes AI literacy and ethical AI use, but implementation quality remains the key unresolved issue. Learning outcomes should therefore move beyond awareness toward demonstrable instructional decision-making. Teachers should also be able to integrate sustainability concepts across subject areas using inquiry-based and context-responsive teaching approaches. In the Turkish context, this is particularly important because sustainability is present in policy and selected curricula but not yet fully embedded in teacher education as a coherent professional competence. A DigiSET learning outcome should therefore make the teacher's ability visible to connect sustainability to disciplinary learning, local issues, and digital tools.

A further outcome should be the ability to adapt digital teaching for diverse learners and educational contexts, including students with differing needs, institutional constraints, and levels of access. This directly responds to the report's emphasis on uneven implementation, structural disparity, and the need for more inclusive and equity-oriented digital pedagogy. Finally, teachers should be able to create, adapt, license, and collaboratively share educational resources in ways that align with OER principles. In Türkiye, this would represent not just an incremental skill but a transformative competence area, since current systems support content use and limited creation but not systematic openness, licensing literacy, or distributed sharing cultures.

6.2.3 Implications for Training Design

- DigiSET training in Türkiye should be designed as practice-based, scaffolded, and sustained over time, rather than as one-off awareness sessions.
- The programme should move beyond fragmented, episodic, and hardware-centred CPD models and instead adopt blended, staged, and mentor-supported structures.
- Training design should draw on stronger national examples such as the Dijital Öğretmenler model, which combines asynchronous learning, live support, assessment-based progression, and advanced specialization.
- DigiSET should include collaborative design tasks in which teachers actively develop and critique lesson plans, AI-supported learning activities, accessibility adaptations, and OER-oriented materials.
- Training should create opportunities for teachers to apply competences in authentic pedagogical contexts, since many of the identified gaps relate not only to knowledge but also to performance and enactment.
- The programme should explicitly support teachers in developing ethical judgment, interdisciplinary integration, and resource design skills through hands-on activities.
- DigiSET training in Türkiye should incorporate interdisciplinary workshops that connect sustainability, AI, inclusion, and curriculum design.
- Reflective activities should be embedded throughout the programme to strengthen professional judgment, ethical awareness, and contextual adaptation.

- Reflection should be treated as a core training mechanism, not as an optional or soft add-on, so that teachers move beyond purely instrumental or compliance-based approaches to digital innovation.

- Theoretical framework for training design should be clearly identified.

6.3 Potential for National Integration

In the short term, the DigiSET training programme could be integrated into Türkiye mainly through CPD channels rather than initial teacher education. The most suitable entry points are the National Education Academy, ÖBA, YEĞİTEK-supported training structures, and existing project-based professional development ecosystems, since these already offer national reach, digital infrastructure, and increasing policy support. DigiSET could also be embedded as a modular and advanced layer within the existing 120-hour digital competence package, especially in areas that remain underdeveloped such as sustainability, OER, ethical AI, and inclusive design. At the same time, several barriers need to be considered. Initial teacher education does not yet systematically include AI in education or OER creation, sustainability is only partially embedded, CPD remains uneven and fragmented, and regional as well as public-private disparities continue to shape access to quality professional learning. For this reason, the most realistic strategy would be a phased one: first piloting DigiSET through CPD partnerships, then aligning it with the National Education Academy and ÖBA and later connecting selected modules to teacher education programmes in institutions already working on digital pedagogy and AI in education.

6.4 Key Findings Summary

As Mevlânâ's well-known saying reminds us, *"What is truly yours is not what you know, but what you share."* Read together with Atatürk's strong emphasis on the central role of teacher quality in national development, this report points to a clear conclusion: meaningful educational transformation depends not only on access to technology, but on teachers who can use it critically, ethically, inclusively, and for the public good. In Türkiye, teacher competences are currently shaped by four interconnected drivers: a strong state-led digital transformation agenda, the formalization of AI in education policy, growing but still uneven attention to sustainability, and an expanding competence discourse influenced by European frameworks such as DigCompEdu. Yet these dimensions are not developing at the same pace. Digital pedagogy and AI literacy have gained stronger policy visibility, while sustainability competences, OER-related practices, and teacher autonomy in creating and sharing resources remain less institutionalised. Likewise, inclusion and ethics are increasingly recognised, but are not yet fully embedded in competence standards, teacher education, or classroom practice; gender bias in AI is acknowledged only moderately and has not yet become a systematic area of teacher training.

The report identifies five main competence needs:
pedagogically grounded digital design,
critical and ethical use of AI,
inclusive digital teaching,
interdisciplinary integration of sustainability,
and teachers' capacity to create, adapt, and share open educational resources.

These needs point to a broader professional profile in which the teacher is not merely a technology user, but a learning designer, ethical decision-maker, and mediator between innovation and educational equity. This is especially important in Türkiye, where regional,

socioeconomic, and institutional disparities continue to shape access to high-quality professional learning and digital opportunities. At the same time, several structural gaps remain: the absence of a fully integrated national framework for digitally sustainable teaching, the limited formal embedding of European and UNESCO-based competence models, weak OER policy and practice, an overly technical understanding of digital competence, fragmented and short-term CPD provision, lack of competence-linked certification, and continuing inequalities across school types and regions. These gaps are precisely where DigiSET can make its strongest contribution. Rather than assuming that digital transformation, sustainability, AI, inclusion, and openness develop equally across all systems, the Digitally Sustainable European Teacher framework should offer an integrative and flexible structure for contexts where some areas are policy-visible but others remain institutionally weak. In the case of Türkiye, DigiSET can be most valuable as a bridge between existing digital momentum and a stronger culture of sustainability, inclusive pedagogy, ethical AI use, and genuinely open educational practice.

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