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# A STUDY ON THE DIGITAL COMPETENCE OF GENERAL SECONDARY SCHOOL TEACHERS IN UKRAINE

THE EU AGENCY SUPPORTING COUNTRIES TO DEVELOP THROUGH LEARNING

This report has been prepared for the European Training Foundation by PPMI Group.

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# PREFACE

This analytical report presents the results of the implementation of a study on the digital competence of primary and secondary school teachers using the European Commission's self-reflection tool SELFIE for Teachers (SfT). The study covers all regions of Ukraine (23 oblasts and the city of Kyiv), excluding only the Illegally occupied Autonomous Republic of Crimea and the city of Sevastopol. It analyses teachers' self-assessed digital competence based on a self-reflection questionnaire results at the national and regional levels, examining variations across regions and education levels. The report provides evidence of teachers' needs to support national and regional professional development policies and practices for the development of digital competences of teachers, contributing to education system resilience, equity, and recovery. The results should be interpreted as self-perceived indicators of competence, offering a developmental baseline rather than evaluative judgments, and are intended to guide targeted professional learning for national and regional authorities, school leaders, teacher training providers, and international partners supporting Ukraine's digital education reforms. The study has been undertaken under heavily disruptive conditions caused by the ongoing large-scale military aggression. It also provides a set of policy messages to foster a regular use of the tool in the country.

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# ACKNOWLEDGEMENTS

The successful implementation of this study in Ukraine was made possible through the coordinated efforts, commitment, and support of a wide range of national, regional, as well as European institutions and stakeholders.

As the responsible organisation of this study, the ETF expresses its appreciation to the Ministry of Education and Science of Ukraine and the Ministry of Digital Transformation of Ukraine for their strategic leadership, policy guidance, and sustained commitment to implement this study to strengthen teachers' digital competencies. Their support ensured alignment with national education priorities and digital transformation strategies, contributing to its relevance, coherence, and effective implementation.

The ETF appreciates the European Commission's (DG EAC and EACEA) partnership, specifically their provision of the SELFIE for Teachers platform, valuable methodological support, and essential technical expertise for this study. Special recognitions go to Deirdre Hodson, Panagiotis Kampylis, Lilian Weikert García and Matthias Franz for their professionalism and high dedication to the project and study in Ukraine.

Special recognition goes to the regional education authorities and in-service teacher training institutions at the oblast level for their coordination and organisational support, as well as for facilitating engagement with educational institutions. Their contribution was instrumental in enabling effective implementation across diverse regional contexts and ensuring accessibility and relevance at the local level.

The project would not have been possible without the active participation and professional commitment of school leaders and teachers who engaged in this study. Their willingness to reflect on practice, share experiences, and contribute constructively provided valuable insights that inform ongoing efforts to strengthen digital education and teaching quality in Ukraine.

The collaboration and shared commitment among national authorities, regional stakeholders, and European institutions have allowed the successful implementation of this study despite the very adverse circumstances caused by the ongoing military aggression.

# EXECUTIVE SUMMARY

This report presents the findings of a nationwide analytical study on the self-perceived digital competence of public primary and secondary general school teachers[1] (ISCED levels 1–3) in Ukraine.

As Ukraine advances toward European Union membership, aligning education policy with the European Commission's Digital Education Action Plan is a priority.

This study serves two primary objectives:

1. Evidence-based Policy. To provide representative data on teachers' self-perceived digital competence and related needs, aiming to inform national and regional authorities for evidence-based policy development.
2. Capacity Building. To establish a framework for the regular, large-scale use of the SELFIE for Teachers (SfT) tool to monitor progress and ensure alignment with European standards (DigCompEdu), thereby supporting capacity building.

Headline Findings:

- **Overall Competence**. Ukrainian teachers predominantly perceive themselves at the "Integrator" level (B1)[2].
- **Strengths**. Highest proficiency is found in the two competence areas: "Professional Engagement" (communication, collaboration and professional learning) and "Digital Resources" (search, creation, adaptation, resource management and sharing if digital content for teaching and learning purposes).
- **Priority Areas**. Digital Assessment and Empowering Learners (personalisation and learning analytics) are the primary areas for professional development. Teachers in high-risk territories (areas closest to the frontline with severe security/infrastructure challenges) often exhibit higher digital competence, reflecting an adaptive reliance on digital tools for learning continuity.

The study was implemented between June 2025 and April 2026, with the primary data collection phase occurring from November 2025 to January 2026.

- **Target Population**. Teachers of grades 1–12 across all 24 administrative regions (Kyiv and 23 oblasts, excluding the Crimea).
- **Scope & Sample**. A stratified, school-based sampling design ensured national representativeness, covering 397 schools and collecting responses from 8,091 teachers, corresponding to an overall response rate of 84.1%.
- **Risk-Level Lens***.* Analysis accounts for education risk levels according to current martial law, distinguishing between regions based on security disruptions and infrastructure stability.

Overall, teachers' digital competence is balanced across the six competence areas of the DigCompEdu framework, at an 'integrator' level B1. At this level, teachers are no longer just exploring tools; they integrate digital technologies into their pedagogical practice in a meaningful way. They are confident in regular use but still need to diversify their strategies for specific pedagogical purposes and move toward more complex uses, such as data-driven instruction.

[1] ISCED 1: Primary education (grades 1–4).
ISCED 2: Lower secondary education (grades 5–9).
ISCED 3: Upper secondary education (grades 10–11/12).

[2] European Commission, Joint Research Centre. "DigCompEdu proficiency levels." *Official Portal of the Joint Research Centre*. https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-framework/digcompedu-proficiency-levels_en

- **Pedagogical Experience and Subjects.** Teachers with over 10 years of digital experience and Computer Science/STEM teachers reach the Expert (B2) level.
- **Gender**. No significant disparities were observed, with male and female teachers showing similar proficiency patterns.

### Policy Messages

The study highlights that "one-size-fits-all" training is insufficient. Moving to the «Expert» level requires:

**Differentiated Development**. Tailoring training to subject-specific needs and current competence levels on the basis of clear indications provided by the study.

**Frontline Support**. Providing flexible, high-bandwidth support models for teachers in high-risk territories.

**Pedagogical Shift**. Moving focus from "using tools for communication" to "using tools for assessment and inclusion."

**Systemic and systematic Integration**. Utilising the European Commission tool SELFIE for Teachers as a recurring self-reflection tool to foster a culture of professional growth within schools. Using the functionality of customisation to meet the group, school, regional, and/or national needs,

# 1. INTRODUCTION

## 1.1 Purpose of the Report

This report provides the following:

**Documentation of Study Implementation and Methodology**.

**Evidence-Based Analysis**. It provides a granular look at the self-perceived digital competence of 8,091 teachers at both the national and regional levels. This analysis is specifically framed through the lens of education risk levels, accounting for the variations in security, infrastructure, and operational stability across different oblasts.

**Operational Resilience and Lessons Learned**. A critical purpose of this document is to record the implementation of challenges encountered, such as security disruptions, participation fatigue, and regional coordination disparities. These insights form the basis for the “Lessons Learned” section, providing a blueprint for future large-scale digital assessments in crisis contexts.

**Strategic Policy Steering**. Finally, the report translates findings into actionable policy messages and recommendations. It aims to support the Ministry of Education and Science in Ukraine (MoESU) and international partners in designing targeted professional development programs that align with Ukraine’s European integration goals and digital transformation priorities.

## 1.2. Conceptual Framework

The study is anchored in the European Framework for the Digital Competence of Educators (DigCompEdu), which provides the scientific basis for defining and measuring digital proficiency. For comprehensive details on the framework’s development and validation, refer to the DigCompEdu – Joint Research Centre – European Commission.

**Analytical Structure.** DigCompEdu operationalises digital competence through 32 specific items across six functional areas. In this report, these areas serve as the primary lenses for analysing teacher practice.

**The Progression Model (A1–C2)**. The framework utilises a six-stage cumulative progression model. This allows the study to move beyond binary “yes/no” data, instead mapping the Ukrainian workforce along a developmental trajectory: By applying this standardised progression, the analysis identifies the specific “pedagogical ceiling” that currently keeps most of the workforce at the Integrator (B1) level and highlights the requirements for transitioning toward Expert (B2) status or beyond.

## 1.3 National Policy Context (Ukraine)

The development of teachers’ digital competence is a strategic pillar of Ukraine’s resilience and its alignment with European standards. This study is situated at the intersection of three primary policy drivers:

**Digital Transformation and European Integration**. Following Ukraine’s EU candidate status, national policy is focused on harmonising legislation with the EU Digital Education Action Plan (2021–2027). This includes the systematic implementation of tools like SELFIE for Teachers to meet the requirements identified during bilateral screening meetings with the European Commission. The goal is to move beyond ad-hoc digital use toward a standardised, evidence-based system for professional development aligned with the DigCompEdu framework.

**Resilience under Martial Law**. The ongoing military aggression has shifted digital competence from an "innovative goal" to a "functional necessity." Under martial law, the education system relies on hybrid and remote models to ensure continuity for displaced learners and those in high-risk zones. This context dictates the study's specific focus on education risk levels, as digital proficiency is now the primary mechanism for maintaining the resilience and stability of the national education system.

**Professional Standards and Development**. Digital competence is now a codified requirement within Ukraine's national professional standards for teachers. The current policy shift moves away from generic training toward targeted interventions. By providing data-driven insights, this study supports:

- **National Certification**: Aligning teacher appraisal with other measurable digital benchmarks.
- **Targeted Training**: Enabling the Ministry of Education and Science (MoESU) and regional institutes to design professional development based on the specific gaps (e.g., Assessment and Inclusion) identified in this report.

In summary, the national context has evolved from infrastructure-building to competence-monitoring, where the results of this study directly inform the next cycle of professional development contributing to the EU alignment agenda in education.

## 1.4 Analytical Focus on Regional Context and Risks

In addition to the national-level analysis, this report applies two complementary analytical lenses that provide a more nuanced understanding of teachers' digital competence across Ukraine. These lenses allow the analysis to reflect regional conditions and the varying educational conditions shaped by security challenges, infrastructure availability, and continuity-of-learning factors.

**Regional Analysis (oblast-Level)**. The report includes a detailed regional analysis at the oblast level, enabling the identification of patterns, strengths, and disparities in teachers' digital competence across different parts of Ukraine. This approach recognises that education systems operate within diverse socio-economic, demographic, and infrastructural contexts that influence access to digital technologies, professional development opportunities, and institutional support.

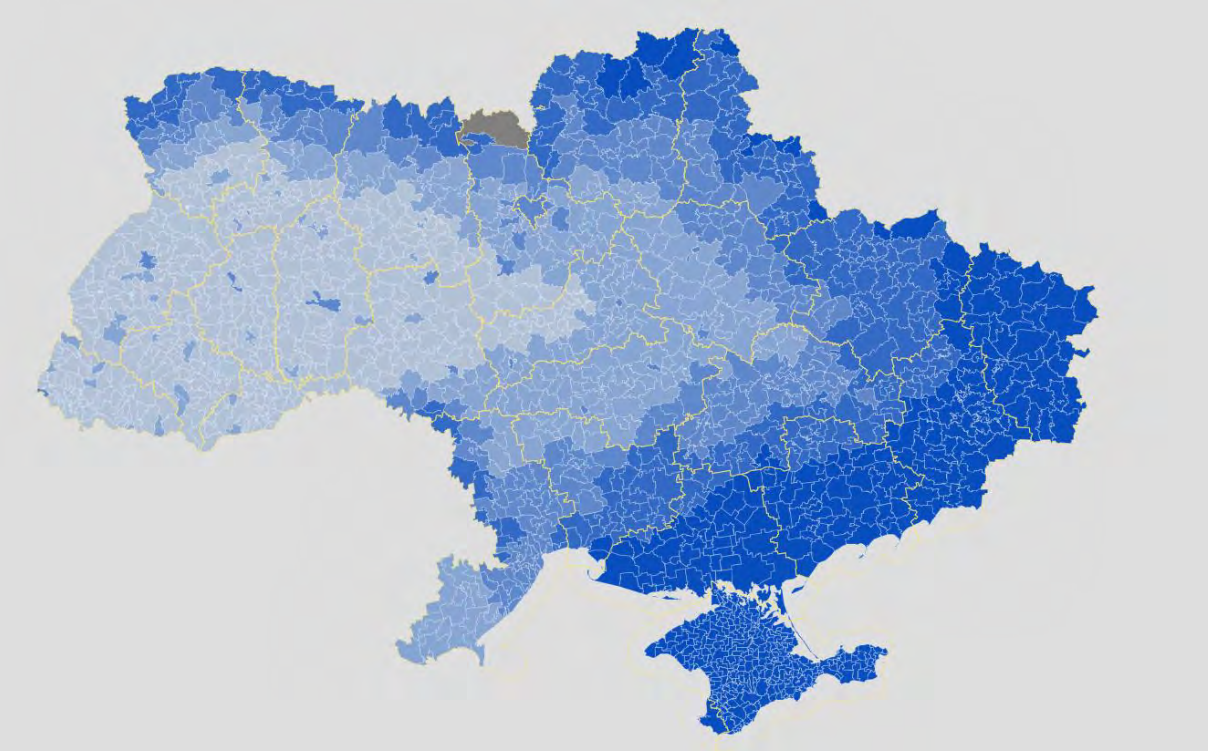
The regional analysis supports education authorities and policymakers in understanding local needs and tailoring interventions accordingly.

**Education Risk Level Analysis**. The second analytical lens examines digital competence development through the perspective of education risk levels due to martial law in Ukraine. This approach reflects the impact of external conditions affecting the stability and continuity of educational processes in different territories. Education risk levels are considered in relation to factors such as the security situation, damage to educational infrastructure,[3] access to digital connectivity, availability of learning resources, and disruptions to schooling.

This analysis acknowledges that teachers working in high-risk environments close to the war frontline often face additional challenges, including unstable internet access, limited availability of digital equipment, displacement of learners and teachers, and the need to rapidly adapt to remote or hybrid learning formats. At the same time, these contexts may also foster innovation and resilience in teaching practices, including the creative use of digital tools to ensure learning continuity.

[3] Dashboard of damaged educational infrastructure in Ukraine. https://saveschools.in.ua/

**Image 1: Map of Security Risks in Education in Ukraine[4]**



Source: https://offlineschool.mon.gov.ua/risk-map/index.html

By examining digital competence across different risk categories, the report aims to provide a more equitable and context-sensitive understanding of teachers' professional needs. The findings support the development of differentiated policy responses and targeted professional development initiatives designed to address specific challenges faced by educators in diverse operational environments.

Together, the regional and risk-based analytical perspectives strengthen the overall analytical framework of the report. They ensure that the interpretation of results reflects the complexity of the Ukrainian education landscape and supports the design of inclusive, flexible, and responsive strategies for the development of teachers' digital competence.

See the analytical part of the report and the summary in Chapter 3 of this report: "Research & Methodology".

### Strategic Insight: Policy-Data Integration

**Descriptive Finding**. The study is anchored in the DigCompEdu framework and the EU Digital Education Action Plan, adapted for Ukraine's unique security context.

**Interpretation**. Digital competence in Ukraine is no longer merely a professional "asset" but a fundamental requirement for national resilience and European integration.

**Policy Usability**. National and regional stakeholders should use the baseline data in this report to finalise the 2026 National Teacher Standards, ensuring that teacher certification tracks directly with the 6 DigCompEdu areas.

[4] Map of Security Risks in Education in Ukraine. https://offlineschool.mon.gov.ua/risk-map/index.html

# 2. STUDY IMPLEMENTATION

## 2.1 Project Coordination

The study utilised a multi-level governance framework to ensure data integrity and broad engagement across Ukraine's complex educational landscape.

### Governance

- **EU/National Steering Group**. Comprised of the ETF, DG EAC/EACEA, MoESU, Ministry of Digital Transformation, and the Institute of Educational Analytics. This body defined the methodology and ensured alignment with both EU standards and national digital strategies.
- **Implementation Management**. Led by ETF Experts (National Expert Lead and Econometrics) in direct cooperation with MoESU to oversee technical localisation and timeline fidelity of the study implementation.
- **Regional Coordination**. 23 regional coordinators (from regional education departments and in-service training institutes) managed local outreach and engagement.
- **School-Level Operations**. School Heads and SELFIE coordinators across 402 participating schools facilitated direct teacher participation.

**Table 1: Key Study stages in Ukraine**

| Phase | Timeline | Key Actions & Deliverables |
|---|---|---|
| Preparation | June – Oct 2025 | Establishment of Steering Group; methodological design; tool translation and national tailoring. |
| Capacity Building | Oct – Nov 2025 | Appointment and training of 23 Regional and 402 School Coordinators via webinars. |
| Data Collection | Nov 2025 – Jan 2026 | National launch of SfT study; real-time monitoring of participation rates across all levels. |
| Analysis | Jan – Feb 2026 | Data cleaning and econometric processing; regional and national findings synthesis. |
| Reporting | March-April 2026 | Dissemination of preliminary findings; final report and policy recommendations. |

## 2.2 Preparatory Activities

The preparatory phase focused on ensuring technical validity, quality translation, and high stakeholder engagement through two primary workstreams:

- **Technical Localisation and Sampling**. Between July and October 2025, the SELFIE for Teachers tool underwent a rigorous quality translation, pedagogical audit to align its terminology with Ukrainian national standards, and platform testing. In parallel, a representative multi-strata sample was finalised, resulting in the creation of 402 unique school links, one for each school randomly selected as part of the sample, to collect data. This granular setup ensured data integrity and secure entry points for all sampled schools.

- **Strategic Rollout and Capacity Building**. The operational phase launched on October 22, 2025, with formal endorsement from the Ministry of Education and Science integrating the study into the national agenda. A bilingual (English - Ukrainian) national kick-off workshop on 7 November 2025 served as a critical capacity-building milestone, providing 8,091 teachers and coordinators with technical orientation and participation guidelines. This structured mobilisation was essential for maintaining high response rates despite the complex digital and security context.

**Tailoring of the SELFIE for TEACHERS Tool**. The adaptation of the SELFIE for Teachers tool focused on quality translation, and terminological synchronicity to ensure its reliability within the Ukrainian context. Following European Commission guidelines, the process included reverse-translation audits and a pilot review by expert educators to eliminate linguistic ambiguity and align items with daily teaching practices. In collaboration with the Ministry of Education and Science, 35% of the 175 glossary definitions were reformulated to ensure compatibility with the national academic requirements and digital competence framework, while a customised section was integrated to capture data unique to Ukraine's 2026 upgrade of teacher training model curricular. This rigorous localisation provided a “native” reflection experience, directly linking the study's results to national legislative reforms and professional standards.

**Customisation of the questionnaire for the Ukrainian Educational Context**. To maximise the study’s benefits, 10 new questions have been added to the standard SfT questionnaire. These additions were developed collaboratively to align with the 2026 modernisation of the “Standard Program for Professional Development” and to address the specific priorities of the Ukrainian educational landscape.

**The customisation of the questionnaire focused on four areas:**

- **Artificial Intelligence (AI) integration**, ethics and overall readiness for emerging technologies.
- **Digital Innovation in STEM Education**, tech-integrated science and math instruction.
- **National Platforms and Data-Driven Teaching**. related to the use of state digital ecosystems.
- **Inclusion, Methodology, and Demographics**. reflecting on accessibility and collecting information on teacher profiles.

These customised components significantly enhanced the relevance and usability of the findings at both the national and local levels. By shifting from a generic assessment to one tailored to Ukraine’s specific digital ecosystem the data analysis provides school heads and policymakers valuable information for better training provision. Although technical limits prevented all these components from being fully used and automated across all SfT platforms, the collected data offers unique, evidence-based insights into the most pressing innovation needs of the Ukrainian teaching workforce (Annexes 1 & 2).

### Technical Insight: Contextual Accuracy & instrument validity

**Descriptive finding**: 35% of the standard glossary was reformulated, and 10 questions (AI, STEM, Inclusion) were added for this study in Ukraine.

**Interpretation**: The high teacher response rate (84%) confirms that the tool was perceived as professionally relevant and “native,” rather than an alien administrative task.

**Policy usability**: The localised SfT Glossary and AI/STEM indicators can be adopted as the standardised terminology for all future In-Service Teacher Training modules to ensure a unified digital language across all oblasts. The translated and localised SfT tool is ready to be used countrywide on a regular basis and can be integrated into the Model Teacher Professional Curriculum countrywide.

## 2.3. Implementation Stage

The implementation phase was based on a robust communication strategy and a decentralised, multi-level coordination model that ensured high engagement in Kyiv and across all 23 regions of Ukraine.

**National Launch and Engagement**. The study officially commenced with a national kick-off meeting on November 7, 2025. This event aimed to introduce the study as a country-wide initiative in Ukraine, familiarising teachers and school directors with the SfT tool, their specific roles, and the expected benefits of the tool. It also provided practical guidance on completing the self-reflection questionnaire and utilising individual feedback for professional growth. The event reached over 600 live participants and garnered over 12,000 views on YouTube. This high visibility ensured that the study's aims, methodology, and the SELFIE for Teachers tool were well understood by the broader educational community before the platform access was opened.

**Regional and Institutional Coordination**. Implementation was managed through a dual-layered coordination structure:

- **Regional Level**. Designated coordinators in all 23 regions supervised the rollout. They utilised shared monitoring dashboards to track institutional progress in real time. Regional teams initiated an extensive support regional network of schools, including webinars and dedicated communication groups, which transitioned from "how-to" sessions during data collection to "interpretation" sessions for analysing school-level reports.
- **School Level**. Operational success relied on a partnership between school leadership and designated SELFIE coordinators. While school principals provided institutional backing, deputy principals or ICT teachers typically managed the technical execution. These teams were responsible for facilitating EU Login creation, monitoring participation, and fostering a reflective professional culture within their staff.

**Data Collection Management**. The data collection period spanned from November 2025 to January 2026. Management of this stage focused on maintaining the required level of participation.

- **Monitoring**. The national team and regional coordinators maintained a daily feedback loop to address technical barriers and ensure schools reached the minimum participation threshold (10 teachers) required for anonymity, and (10-20-30) required for valid data collection.
- **Efficiency**. While the average school completed the exercise within 7–10 days, the decentralised support model allowed high-performing institutions to conclude the process in under three days.
- **Data Integrity**. Of the 402 sampled school groups, 397 generated valid datasets. This process resulted in immediate utility at the local level, as schools downloaded aggregate reports and individual teachers received personalised development feedback.

**Consultations and Dissemination**. Following data cleaning and processing, the findings underwent a multi-stage validation process. This included internal reviews by the Steering Group and a national consultation meeting in March 2026 with key education stakeholders. The phase concluded with a national dissemination event on March 17, 2026, bringing together teachers and school leaders to translate the data into actionable professional development strategies and follow-up initiatives.

## 2.4. Implementation Challenges

The study was conducted under unprecedented operational conditions. The following analysis links specific risks to their consequences and the mitigation measures implemented by the project team.

**Table 2: Main study implementation challenges**

| Risk Category | Count / Detail | Mitigation Measure |
|---|---|---|
| Security & Disruptions | Air raids and school closures interrupted self-assessment sessions. | Flexible timelines; 24/7 platform access allowing completion during safe windows. |
| Infrastructure Gaps | Electricity cuts, blackouts, and frequent internet outages prevent single-session completion. | Self-paced format with strategic use of the SfT auto-save function; regional offline" support guidelines and instructions, asynchronous support. |
| Workload & Fatigue | Initial perception of the tool as an "administrative burden" or audit. | Clear communication by coordinators emphasising self-reflection over evaluation. |
| Technical Barriers | Difficulties with EU Login and platform navigation among less digital-savvy staff. | Peer-to-peer support at school level and regional technical webinars, online helpdesk, synchronous/ asynchronous support. |
| Data Privacy | Hesitancy regarding the confidentiality of self-perceived "low" scores. | Transparency campaigns confirming anonymised aggregation and developmental use. |

Despite these systemic barriers, the study achieved high engagement through a decentralised coordination model with regional/school coordinators' engagement. These challenges do not diminish the data; rather, they provide essential context for the results, illustrating that digital competence in Ukraine is as much about technical proficiency as it is about operational resilience. The disparities noted – particularly in infrastructure and coordination capacity – serve as a baseline for further targeted policy recommendations.

### Operational Insight: Implementation Resilience

**Descriptive findings**. Despite systemic disruptions, a 98% school participation rate (397 out of 402) was achieved through a multi-level decentralised coordination structure.

**Interpretation**. The success of the study proves that decentralised management (Regional/Local/School Coordinators) is the most effective model for maintaining educational continuity and data collection during crisis.

**Policy usability**. This coordination model – specifically the use of National/ Regional Dashboards and regional/ school-level SELFIE coordinators – should be institutionalised as a "Best Practice" blueprint for future large-scale reforms or emergency educational monitoring.

# 3. RESEARCH METHODOLOGY

The present study comprises implementation research aimed at establishing a nationally representative baseline of how teachers in Ukraine perceive their digital competence. Given the ongoing disruptions to the educational system, this research serves as a critical evidence base to support national, regional, and risk-sensitive professional development policies, contributing to education system resilience and recovery. Rather than focusing solely on comparative results, the study aims to identify specific challenges and opportunities within the Ukrainian context for shaping targeted actions and teacher professional development programmes.

The main research questions guiding this work are:

- **RQ1**: How do teachers of primary and secondary general education in Ukraine perceive their digital competence?
- **RQ2**: What areas and topics of digital competence are more advanced or require further development among teachers of secondary general education?

## 3.1 Sample

The target population for this study comprised teachers within the general secondary education system in Ukraine, including primary, lower secondary, and upper secondary teachers (ISCED levels 1–3). To ensure a representative sample of the diverse educational landscape, a stratified school-based sampling approach was employed. This allowed the study to capture data across various geographic, demographic, and safety-related strata.

The initial sample design included a total of 402 school groups, corresponding to 422 individual schools. Small neighbouring rural schools with staff population fewer than 15 were combined into single groups; as a result, these groupings were treated as individual sampling units.

The sample was divided into three strata:

- **Stratum 1 (self-representative)**: 30 schools (a specifically defined target group of academic lyceums, alongside the random selection, to address the monitoring needs of the final stage of the NUS reform focused on upper-secondary profile education).
- **Stratum 2 (urban)**: 151 schools.
- **Stratum 3 (rural)**: 221 schools.

In each selected school or group of schools, a sample of teachers was drawn in multiples of ten (10, 20, or 30), depending on the total number of teaching staff in the school. To ensure the reliability and anonymity of school-level results, a minimum of 10 completed surveys was required for a school's data to be included in the analysis.

Participation in the study was voluntary. At all stages of the study, teachers had the right to withdraw as at the initial stage when informed about their inclusion in the sample, as during the survey itself. Participants could discontinue their participation at any time or decline consent for data processing, though all the data is anonymised in any case.

Following the data collection period, 397 schools successfully provided valid data sets. Four schools declined participation for institutional reasons, and one school was excluded for failing to reach the minimum teacher-level response threshold. The final study sample consisted of 8,091 teachers. This c

**Table 3. Study population and sample overview (General Education)**

| Description | Count / Details |
|---|---|
| Total Schools Selected | 402 school groups |
| Final Participating Schools | 397 (98.7% participation rate) |
| Strata Distribution | 30 Self-representative profile schools<br>151 Urban<br>221 Rural |
| Total Teacher Respondents | 8,091 |
| Weighting approach | Post-stratification based on the data from statistical form 83-RVK (2024–2025)[5] |
| Security Risk Classification | Insuperable, very high, high, moderate, satisfactory |

## 3.2. Data Collection

### Instrument

The data collection instrument was the online self-reflection tool SELFIE for Teachers. It consists of 32 components covering the six competence areas of the DigCompEdu framework. Respondents choose one of six statements for each item, reflecting proficiency levels[6]: A1 (Newcomer), A2 (Explorer), B1 (Integrator), B2 (Expert), C1 (Leader), C2 (Pioneer/Innovator). Each selection is assigned a point value (1-6), with a total possible score of 192 points. An additional "I am not aware of this competence" option is available (0 points).

Based on the total score achieved, respondents were assigned to one of the following proficiency levels:

- A1 – Newcomer: 0 – 32 points
- A2 – Explorer: 33 – 64 points
- B1 – Integrator: 65 – 96 points
- B2 – Expert: 97 – 128 points
- C1 – Leader: 129 – 160 points
- C2 – Pioneer: 161 – 192 points.

In addition to the core items, the tool captured demographic data and background information through post-questions. Furthermore, a set of Ukraine-specific questions on the use of Artificial Intelligence and STEM education was included in the customised section of the questionnaire (see Annex 2). The tool was administered in the Ukrainian language, ensuring linguistic and contextual appropriateness for the national teaching population.

5 State Scientific Institution "Institute of Educational Analytics" (SSI "IEA"): https://iea.gov.ua/uk/osvita/zagalna-serednya-osvita/statistichni-dani/

6 European Commission, Joint Research Centre. "DigCompEdu proficiency levels". *Official Portal of the Joint Research Centre*. https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-framework/digcompedu-proficiency-levels_en

### Process

Data collection was organised directly on the SfT platform through dedicated school groups links. This structure facilitated efficient participation management and allowed results to be grouped by schools while maintaining individual anonymity.

The survey was implemented between November 2025 and January 2026, capturing the state of teachers' digital competencies for the 2025–2026 academic year. Participation was monitored by school coordinators and a national support team to address technical issues and ensure robust response rates.

## 3.3 Data Processing and Analysis Methods

Quantitative data analysis was performed using specialised statistical software. The processing involved several key stages:

- **Master Dataset Construction**: Individual data sets from the 397 participating schools were merged into a single Master Raw Dataset. This set was enriched with technical, contextual, and geographical variables, including regional identifiers (oblast), settlement type (urban/rural), and derived analytical variables. In particular, specially computed variables were generated based on respondents' answers, including digital competence scores and corresponding proficiency levels across all DigCompEdu competence areas and their subcomponents.
- **Data Cleaning and Gender Imputation**: In line with Ukrainian legislation, gender is officially recorded only as male or female; no alternative categories are recognised in the administrative statistical framework. To ensure consistency with official statistics (83-RVK forms), which use binary gender classification, an imputation procedure was performed. Accordingly, responses ”Other” and ”Prefer not to say” (options provided by the SfT tool) were imputed into ”Male” or ”Female” categories based on the prevailing distribution to allow for accurate post-stratification weighting.
- **Weighting**: To ensure national representativeness and the validity of estimates at both national and regional levels, a post-stratification weighting procedure was applied. Weighting adjustments were calculated based on the distribution of teachers by region (oblast), settlement type (urban/rural), and gender, using official 2024–2025 statistical data (Form 83-RVK). In addition, a non-response adjustment was implemented at both school and respondent levels to correct differential participation rates. These adjustments are important for interpretation, as they ensure that observed differences between groups reflect population-level patterns rather than sampling or response biases, thereby strengthening the basis for system-level policy conclusions.
- **Security Risk Level Classification**: Given the operational environment in Ukraine, schools were categorised into four risk levels (Very High, High, Moderate, and Minimal) to analyse the correlation between security context and digital competence.

The analysis included overall proficiency level distribution, detailed area-specific profiling, and cross-area analysis to identify systemic patterns and inequities across demographics and regions. All analyses were conducted using weighted data. This ensures that reported patterns can be interpreted as nationally representative estimates and used with confidence for system-level policy analysis, including identification of structural inequalities, regional disparities, and context-sensitive policy needs in teachers' digital competence development.

Note on sources: Unless otherwise indicated, all tables, figures and charts in this report are based on data collected and analysed by the study team through the SfT platform. Individual sources are therefore not cited under each item.

# 4. NATIONAL-LEVEL FINDINGS

This section presents the national findings, intending to offer actionable insights for the Ministry of Education and Science to design and plan targeted professional development programs. The analysis first describes the participant characteristics and school environment, followed by the self-reflection results across the six DigCompEdu areas, and additional customised questions.

## 4.1 Teachers (Respondent) Profile

The study was implemented in Ukraine during the 2025–2026 academic year, with the main data collection phase conducted between November 2025 and January 2026. Despite the challenging operational context linked to the ongoing security situation, the study achieved a high level of participation among schools and teachers.

Out of the 402 schools initially selected for the stratified sample, 397 schools successfully completed the survey process. At the teacher level, 8,091 educators submitted valid responses, resulting in a teacher-level response rate of 84.1%. This exceeds the response rate anticipated during the survey planning stage (78–80%), indicating strong engagement of the teaching community with the self-reflection process.

The analysis was conducted using data collected through the SELFIE for Teachers, European Commission platform, which was subsequently merged into a consolidated dataset and weighed to ensure regional and demographic representativeness.

The gender distribution of respondents reflects the overall demographic profile of the Ukrainian teaching workforce. A clear majority of participants were female: 84.4% of respondents were women and 15.6% were men.

**Figure 1. Teachers' gender**


This distribution is closely aligned with the structure of the underlying population. According to official statistical data for the 2024–2025 academic year, the observed difference between the study sample and the national teacher population is approximately 1%, largely attributable to respondents selecting "Other" or "Prefer not to answer" in the survey instrument. These responses were redistributed in line with the methodological procedures described above for weighting and comparability purposes.

In terms of temporal stability, the gender composition of the teaching workforce in Ukraine remains highly stable. According to the Ministry of Education and Science dashboard data[7] over the past five

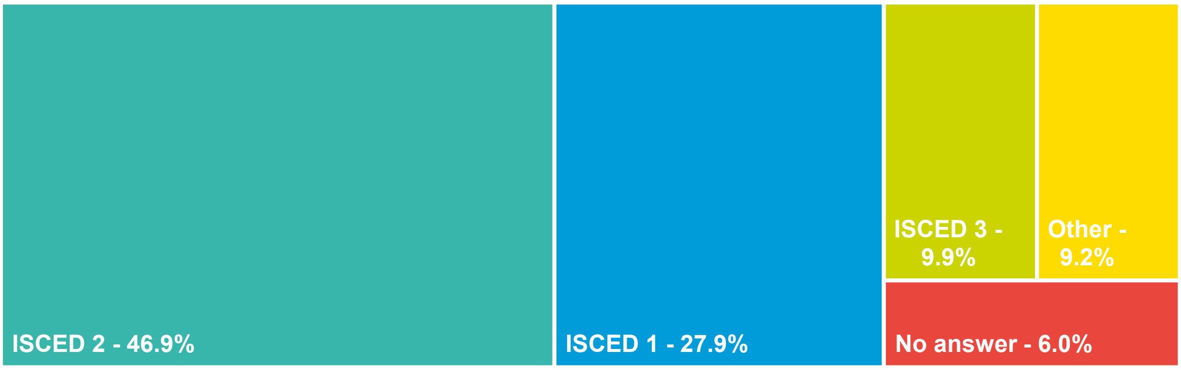
[7] Ministry of Education and Science of Ukraine (MESU), Educational Indicators Dashboard (AIKOM statistical database), available at: https://mon.gov.ua/osvitni-indikatori-dashbord

years, the proportion of female teachers has changed by only some 4%, reflecting a gradual but limited decrease in the share of women within the profession.

In terms of the educational levels taught (Figure 2), many teachers reported working across multiple levels of general secondary education. This reflects the organisational structure of Ukrainian schools, where gymnasiums and lyceums often combine lower and upper general secondary education within the same institution. Overall, 56.9% of teachers mainly teach at ISCED levels 2 and 3, while 27.6% primarily teach at the primary education level (ISCED 1).

Accordingly, the results are representative of the general secondary education teaching workforce in Ukraine across ISCED levels 1–3. Given that many teachers operate across multiple educational stages, the findings should be interpreted as reflecting overall school-based teaching practice rather than a single isolated ISCED level.

**Figure 2. Mainly teach ISCED level**



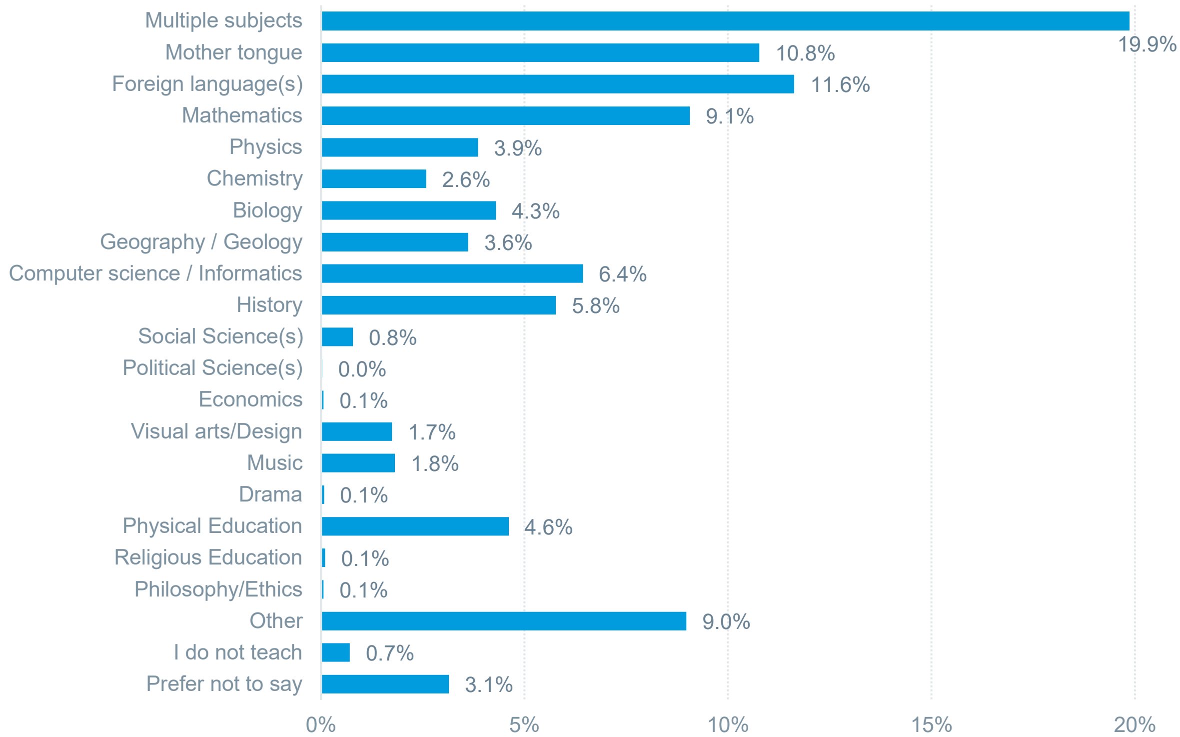

The distribution of respondents by main subject taught indicates that the sample covers a broad range of disciplines across the general secondary education curriculum (Figure 35). The largest group of respondents consists of teachers delivering multiple subjects (19.9%), which largely reflects primary education teachers who typically teach several subjects within the ISCED 1 curriculum, as well as subject teachers within the ISCED 2 and ISCED 3. There's a significant trend in Ukrainian secondary education system on a shortage of Informatics and Computer Science (ICT) teachers and covering these positions by teachers of Physics, Math, or other subjects (even English) who possess the necessary digital skills. The report reflects that multi-subject teaching is a reality across various levels, not just a primary school phenomenon.

Among single-subject teachers, foreign language teachers represent 11.6% of respondents, followed by teachers of the mother tongue (10.8%) and mathematics teachers (9.1%). ICT teachers account for 6.4%, representing a strategically important group in the context of digital education and the integration of digital technologies in schools. A substantial proportion of respondents also teach History (5.8%) and Physical Education (4.6%), while natural science subjects are represented by Biology (4.3%), Physics (3.9%), Geography/Geology (3.6%), and Chemistry (2.6%). Arts-related subjects, including Visual arts/Design (1.7%), Music (1.8%), and Drama (0.1%), together account for a smaller share of the sample.

Other subject categories such as Social Sciences, Economics, Philosophy/Ethics, and religious education represent only marginal proportions of respondents. In addition, 9.0% of teachers indicated that they teach other subjects not explicitly listed, while 3.1% preferred not to disclose their subject specialisation.

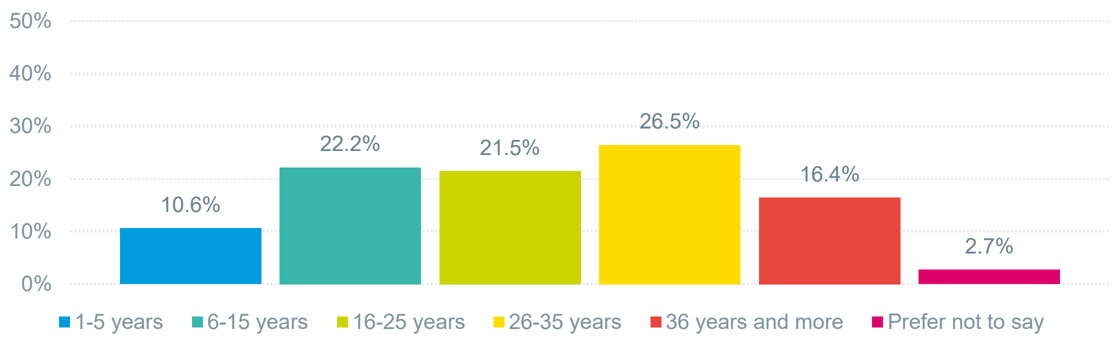
Overall, the subject distribution demonstrates a balanced representation of teachers across major curriculum domains, including languages, STEM subjects, Social Sciences, and Arts education. The presence of teachers from diverse subject areas strengthens the analytical value of the dataset and enables a comprehensive assessment of teachers' digital competence across different pedagogical contexts (Figure 3).

**Figure 3. Main subject of teaching**



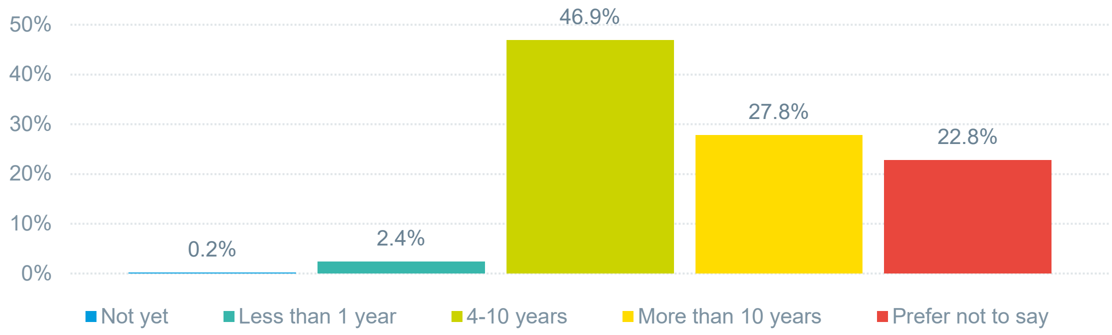

Ukraine's teaching workforce is characterised by high levels of seniority and professional stability. As illustrated in Figure 4, 42.91% of teachers have more than 25 years of experience, while 21.5% have between 16 and 25 years. Collectively, over half of the workforce has been in the profession for more than 15 years, highlighting a deep reservoir of pedagogical experience.

**Figure 4. Years of teaching experience**



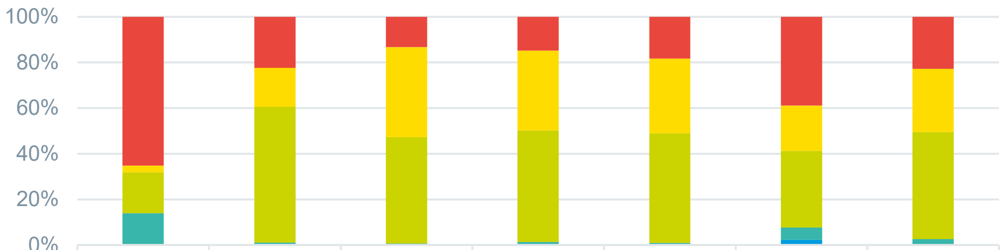

This professional experience increasingly intersects with the integration of digital technologies into teaching practice. When analysing the duration of digital technology use in teaching (Figure 5), the data suggests that the last decade has been a key period of digital adoption within Ukrainian schools. The largest group of respondents (46.9%) reported 4–10 years of experience using digital technologies in teaching, which likely reflects the accelerated digitalisation of education following the expansion of online and blended learning since the COVID19 pandemic. A further 27.8% of teachers reported more than 10 years of digital teaching practice experience, representing early adopters of digital pedagogical practices. At the same time, only 2.6% of teachers have just begun integrating digital tools or still do not use them, indicating a group that may benefit from additional foundational support in digital pedagogy.

**Figure 5. Years of use digital technologies in teaching**




The relationship between teaching experience and digital technology use (Figure 6) highlights an important structural trend. While younger teachers tend to report longer exposure to digital tools, experienced educators are also increasingly adopting digital practices. This suggests that digital transformation in Ukrainian schools is not limited to early-career teachers but is gradually spreading across all professional cohorts, although among the senior staff (36 years and more), the use of technology does not increase proportionally and in fact shows a decline.

**Figure 6. Usage of digital technologies depending on experience in teaching**

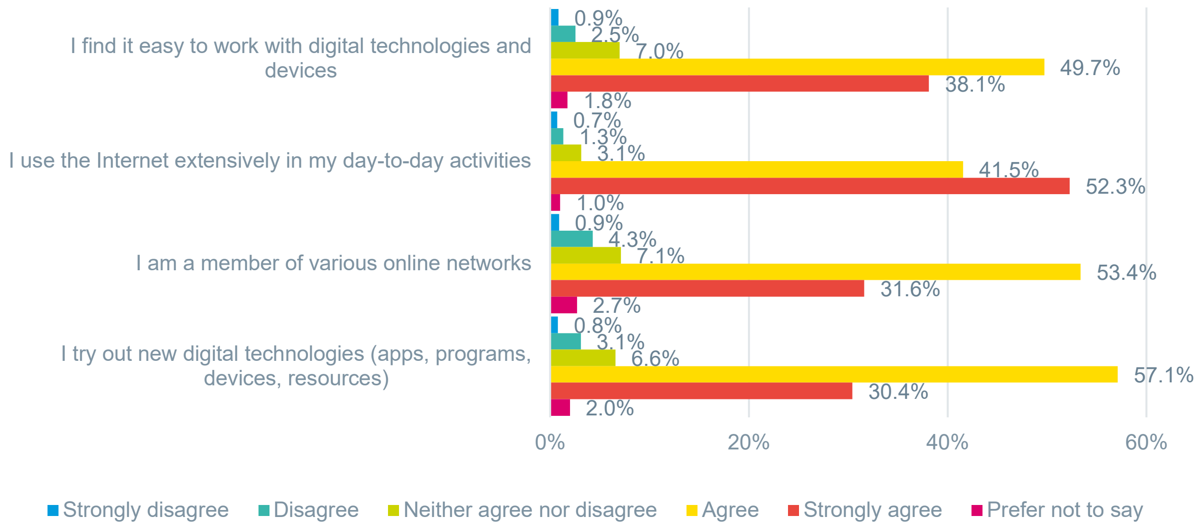



| | 1-5 years | 6-15 years | 16-25 years | 26-35 years | 36 years and more | Prefer not to say | Total |
|---|---|---|---|---|---|---|---|
| Prefer not to say | 65.2% | 22.4% | 13.2% | 14.8% | 18.3% | 38.9% | 22.8% |
| More than 10 years | 2.9% | 17.1% | 39.6% | 35.0% | 32.8% | 19.9% | 27.8% |
| 4-10 years | 17.9% | 59.4% | 46.6% | 48.9% | 48.0% | 33.5% | 46.9% |
| Less than 1 year | 13.6% | 0.9% | 0.6% | 1.2% | 0.8% | 5.4% | 2.4% |
| Not yet | 0.3% | 0.1% | 0.1% | 0.1% | 0.2% | 2.3% | 0.2% |

The survey results indicate that Ukrainian teachers possess a high degree of digital confidence and are well-integrated into the digital ecosystem in their personal and professional lives (Figure 7). This foundational confidence with technology is a critical prerequisite for the effective integration of digital tools into pedagogical practice.

A significant majority of respondents (87.8%) reported that they find it easy to **work with digital technologies and devices**, reflecting strong levels of digital self-efficacy. Similarly, 93.8% indicated that they use the internet extensively for everyday activities. Teachers also actively participate in online professional and social networks, with 85.0% reporting membership in digital communities. Such connectivity suggests considerable potential for peer learning and professional knowledge exchange through digital platforms. Furthermore, 87.5% of teachers reported actively experimenting with new digital technologies, indicating a generally positive attitude towards technological innovation and professional adaptation.

### Figure 7. Usage of digital technologies in everyday life



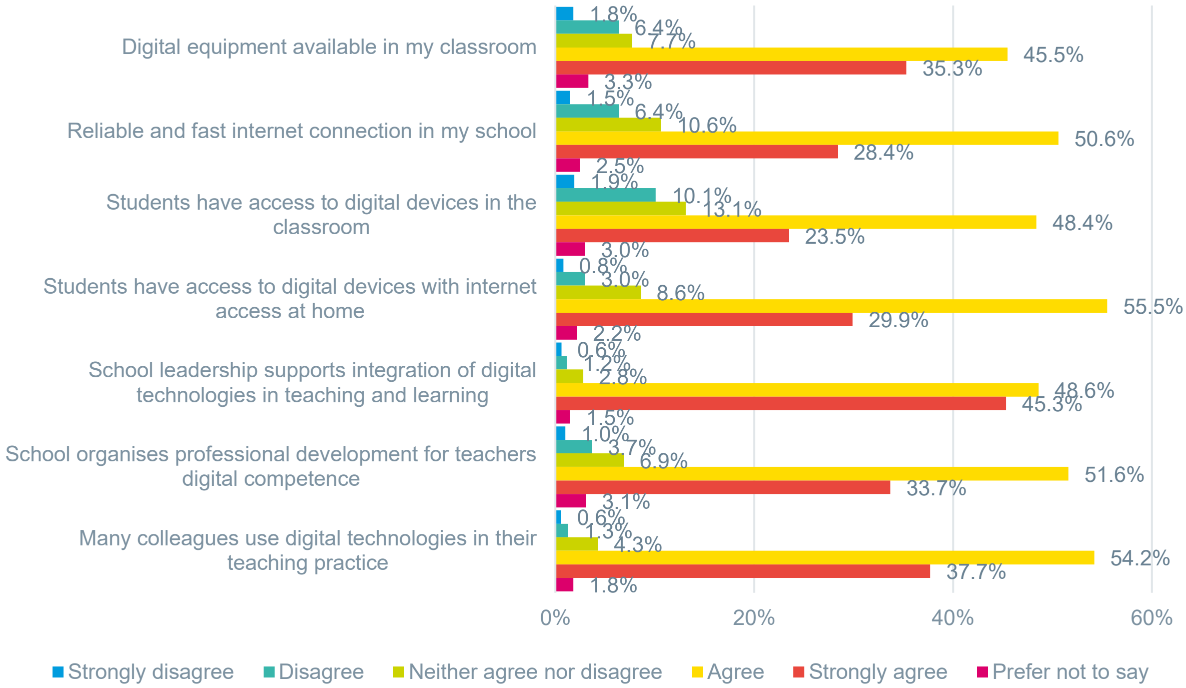

**The institutional environment of schools** plays a crucial role in enabling the effective integration of digital technologies into teaching and learning (Figure 8). Teachers' perceptions suggest that, despite ongoing systemic external challenges related to martial law, many schools provide a relatively supportive environment for digital practice. Most teachers (80.8%) reported that digital equipment such as computers and overhead projectors is available in classrooms, while 79.0% indicated access to reliable and fast internet connectivity at school.

Institutional leadership appears to be a particularly strong enabling factor. Approximately 93.9% of teachers reported that school leadership actively supports the use of digital technologies in education, while 85.3% indicated that their schools organise professional development activities focused on digital competence.

Peer collaboration also appears to support digital adoption. Around 91.9% of respondents agreed that many of their colleagues actively use digital technologies in their teaching, suggesting the presence of collaborative professional cultures that facilitate knowledge sharing and informal learning.

However, the data also reveals persistent **challenges related to student access to digital resources**. Only 71.9% of teachers reported that students have adequate access to digital devices in classrooms, and 85.4% indicated that students have sufficient access to devices and internet connectivity at home. These findings highlight an ongoing digital divide among learners, which may limit the effectiveness of remote or blended learning models.

**Figure 8. School environment regarding digital technologies**




## 4.2 Overall Digital Competence Results

The SELFIE for Teachers self-reflection tool enables teachers to assess their digital competence across the six competence areas of the DigCompEdu framework, providing both an overall competence score and area-specific profiles.

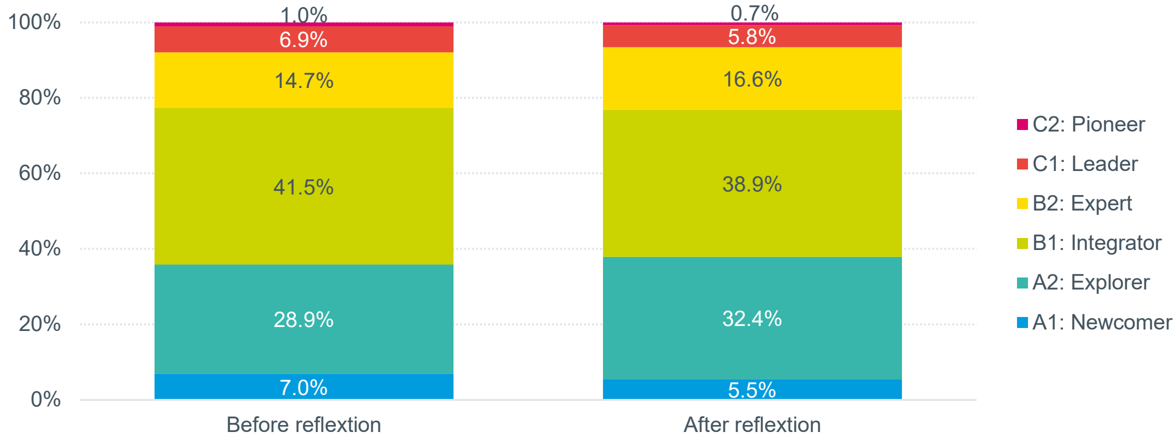
This section presents teachers' perception of their digital competence calculated based on the SfT scoring scheme and categorised into the SfT proficiency levels. The following scoring logic for the digital competence level identification is used:

- Scores up to 32 are categorised into the Newcomer (A1) level;
- Scores from 33 to 64 into the Explorer (A2) level;
- Scores from 65 to 96 into the Integrator (B1) level;
- Scores from 97 to 128 into the Expert (B2) level;
- Scores from 129 to 160 into the Leader (C1) level;
- And from 161 to 192 into the Pioneer (C2) level.

The comparison of teachers' self-assessment before and after the reflection process indicates a moderate shift in perceived competence levels, suggesting that the reflective component of the SfT tool contributes to a more nuanced understanding of digital competence (Figure 9). Before completing the reflection process, the largest share of teachers assessed themselves at the Integrator level (41.5%), indicating regular use of digital technologies in teaching practice. This was followed by Explorer (28.9%), Expert (14.7%), Leader (6.9%), and Newcomer (7.0%), while only 1.0% of respondents identified themselves as Pioneers, the highest level of digital competence.

After completing the reflective process, the distribution changed slightly. The proportion of teachers identifying as Explorers increased from 28.9% to 32.4%, while the share of Integrators decreased slightly from 41.5% to 38.9%. At the same time, the proportion of teachers identifying as Experts increased from 14.7% to 16.6%, indicating that some teachers recognised more advanced practices after reviewing the competence descriptors. Conversely, the share of teachers identifying as Leaders decreased slightly (from 6.9% to 5.8%), while the proportion of Pioneers declined from 1.0% to 0.7%.

**Figure 9. Teachers' self-assessment of digital competence BEFORE and AFTER reflection**




These shifts suggest that the self-reflection exercise encourages teachers to reassess their practices more critically, potentially leading to a more realistic self-evaluation of their competence levels, especially for the highest levels (C1, C2). In particular, the increase in the Explorer category may reflect teachers recognising that their use of digital technologies remains experimental rather than systematically integrated into pedagogical practice.

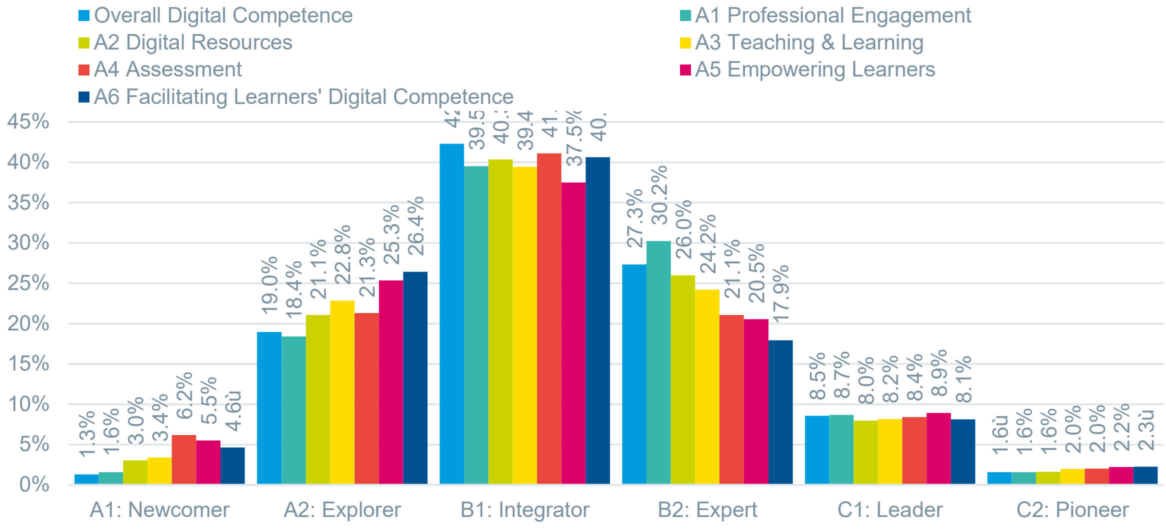
**The overall digital competence assessment** based on the SfT scoring methodology provides a more detailed view of teachers' competence levels across six DigCompEdu areas. The results show (Figure 10) that the largest group of teachers falls within the B1 – Integrator level (42.3%), indicating that they regularly integrate digital technologies into teaching activities but may still be developing more advanced pedagogical strategies. A further 27.3% of teachers are classified at the B2 – Expert level, suggesting a relatively strong capacity to analyse and adapt to digital teaching practices.

At the lower competence levels, 19.0% of teachers fall within the A2 – Explorer level, while only 1.3% are classified as A1 – Newcomers, indicating limited experience with digital technologies in teaching.

At the highest levels of digital competence, 8.5% of teachers are classified as C1 – Leaders, meaning they actively support colleagues and promote innovative digital practices within their institutions. Only 1.6% of teachers reach the C2 – Pioneer level, which represents educators who actively drive innovation and contribute to digital transformation at the institutional or system level.

Overall, the results indicate that the majority of teachers demonstrate intermediate levels of digital competence, with a solid foundation for digital integration but with clear potential for progression towards more advanced and transformative pedagogical practices.

**Figure 10. Teachers' distribution by the digital competence levels per competence area**




When analysing the distribution of competence levels across the six DigCompEdu areas, a broadly similar pattern emerges, with most teachers clustered around the B1 – Integrator level. This clustering should be interpreted as reflecting regular and operational use of digital tools in teaching practice rather than fully systematic, reflective, or innovative pedagogical integration. While digital technologies are widely used in classroom activities, their application is generally based on adaptation of existing practices rather than redesigning teaching and learning processes.

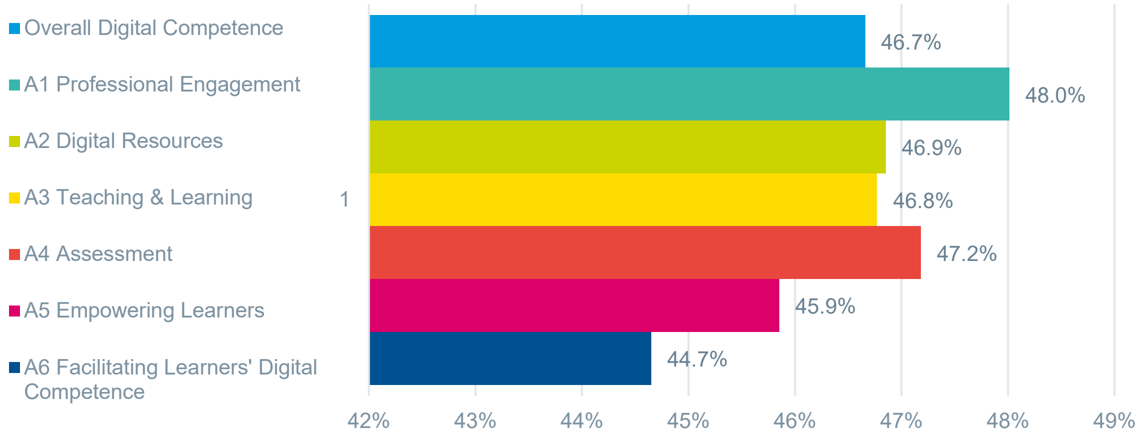
Some variations across competence areas are observed (*Figure 11*). In the Professional Engagement area (A1), results are relatively stronger, with 30.2% of teachers reaching the Expert level, suggesting more advanced use of digital tools for communication, collaboration, and professional learning. By contrast, the Assessment area (A4) and the Empowering Learners area (A5) show comparatively lower proportions of teachers at advanced levels. In particular, 6.2% of teachers are classified as Newcomers in digital assessment, indicating that the use of digital tools for formative assessment and feedback remains a development area.

Similarly, in the Facilitating Learners' Digital Competence area (A6), only 17.9% of teachers reach the Expert level, while over 31% remain at Explorer or Newcomer levels, suggesting that many teachers have limited experience in supporting students' digital competence development. These findings point to the need for professional development that goes beyond technical tool use and focuses on pedagogically meaningful integration of digital technologies, particularly in assessment practices and in fostering learners' digital competences.

The analysis of mean scores confirms the overall pattern of intermediate and relatively balanced competence among teachers. The average overall digital competence score is 89.59 points out of a maximum of 192, corresponding to 46.7% of the maximum possible score. This places the average teacher within the B1 – Integrator level, which should be interpreted as indicating regular and functional use of digital tools in teaching practice, rather than consistent or transformative pedagogical integration.

At this level, teachers typically demonstrate the ability to use digital technologies in everyday instructional activities, but their use remains more operational than transformative, with limited evidence of consistent redesign of pedagogical approaches.

**Figure 11. Teachers' digital competence level (mean) per competence area**




Across the six competence areas (see Table 2), mean scores show only minor variation, indicating a broadly homogeneous competence profile across different dimensions of teaching practice:

- Professional Engagement: 25.93 out of 54 points (48.0%)
- Digital Resources: 14.06 out of 30 points (46.9%)
- Teaching and Learning: 14.03 out of 30 points (46.8%)
- Assessment: 8.49 out of 18 points (47.2%)
- Empowering Learners: 11.00 out of 24 points (45.9%)
- Facilitating Learners' Digital Competence: 16.07 out of 36 points (44.7%)

This consistency suggests that teachers apply digital tools in a broadly similar way across different professional domains, without strong differentiation in more advanced or innovative practices.

**Table 4. Teachers' scores (mean) per competence area**

| Competence areas | Mean of scored points | Standard deviation | % of the max score | Level |
|---|---|---|---|---|
| Overall Digital Competence | 89.59 | 29.194 | 46.7% | B1: Integrator |
| A1 Professional Engagement | 25.93 | 8.318 | 48.0% | B1: Integrator |
| A2 Digital Resources | 14.06 | 4.797 | 46.9% | B1: Integrator |
| A3 Teaching & Learning | 14.03 | 5.006 | 46.8% | B1: Integrator |
| A4 Assessment | 8.49 | 3.147 | 47.2% | B1: Integrator |
| A5 Empowering Learners | 11.00 | 4.259 | 45.9% | B1: Integrator |
| A6 Facilitating Learners' Digital Competence | 16.07 | 6.198 | 44.7% | B1: Integrator |

Taken together, the results indicate that teachers perceived digital competence shows a broadly even distribution across the six DigCompEdu areas, with no strong variation in performance between domains. Nevertheless, the slightly lower score observed in Facilitating Learners' Digital Competence suggests an area requiring further policy attention. This lower score can be interpreted as a structural challenge in moving from teachers' own use of digital technologies to the systematic development of students' digital competences. It indicates that while teachers are generally able to integrate digital tools into their own teaching practice, fewer are consistently embedding strategies that explicitly foster learners' digital skills in a planned and sustained way.

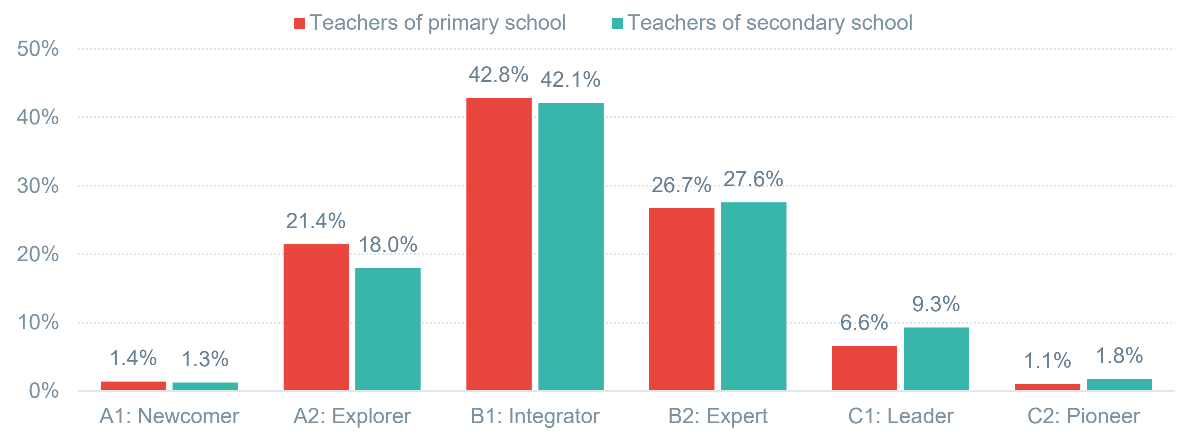
Teachers of primary and secondary school report broadly similar patterns in overall digital competence distribution (Figure 12), with the largest share in both groups positioned at the B1 – Integrator level (42.8% among primary school teachers and 42.1% among secondary school teachers).
This indicates that, for both groups, digital technologies are generally used regularly in professional practice, although mainly at a functional rather than advanced pedagogical level.

Primary school teachers are slightly more represented at the A2 – Explorer level (21.4% compared with 18.0%), suggesting that a somewhat larger share remains at an earlier stage of integrating digital tools into teaching practice. At the same time, secondary school teachers show a higher representation at more advanced competence levels, including B2 – Expert (27.6% vs. 26.7%), C1 – Leader (9.3% vs. 6.6%), and C2 – Pioneer (1.8% vs. 1.1%). This points to a somewhat stronger presence of advanced digital practices among teachers at secondary level education.

At the lower end of the scale (A1 – Newcomer), differences are negligible (1.4% among primary teachers and 1.3% among secondary teachers), indicating that very few teachers in either group remain at the initial stage of digital competence development.

Overall, the results suggest a broadly comparable competence profile across primary and secondary education, with secondary school teachers demonstrating a slightly stronger concentration at higher proficiency levels. This may reflect greater exposure to subject-specific digital tools, broader use of digital assessment practices, and more frequent integration of technology into complex teaching and learning activities.

**Figure 12. Overall digital competence level for teachers of primary and secondary school**




Male teachers report a slightly higher average competence score (90.95 points, or 47.4% of the maximum score) compared with female teachers (89.46 points, or 46.6%). However, both groups remain within the B1 – Integrator level, indicating broadly similar levels of digital competence across genders (Table 5).

Overall, the results suggest that gender does not constitute a major structural factor affecting teachers' digital competence development.

Digital competence levels vary moderately depending on the number of years of teaching experience. Teachers with 6 – 15 years of experience report the highest average competence score (91.9 points), followed by teachers with 16 – 25 years of experience (91.42 points). Teachers with more than 36 years of experience show a lower average score (84.38 points), which may reflect generational differences in exposure to digital technologies during initial teacher education. Nevertheless, even the most experienced teachers remain within the B1 – Integrator level, suggesting that digital competence development has become a widespread feature of professional practice across all career stages.

A much stronger relationship is observed between digital competence, and the number of years teachers have used digital technologies in teaching. Teachers who reported more than 10 years of experience using digital technologies achieved the highest average score (102.72 points), corresponding to 53.5% of the maximum score and reaching the B2 – Expert level. By contrast, teachers who have not yet used digital technologies in teaching report a much lower average score (50.88 points), corresponding to the A2 – Explorer level. This finding confirms that practical experience with digital technologies in teaching is a key factor in shaping digital competence development.

**Table 5. Overall digital competence results by background variables**

| | Table Heading | Mean of scored points | Standard deviation | % of the max score | Level |
|---|---|---|---|---|---|
| Gender | Male | 90.95 | 32.03 | 47.4% | B1: Integrator |
| | Female | 89.46 | 28.65 | 46.6% | B1: Integrator |
| Years of teaching | 1-5 years | 88.96 | 29.00 | 46.3% | B1: Integrator |
| | 6-15 years | 91.90 | 29.64 | 47.9% | B1: Integrator |
| | 16-25 years | 91.42 | 29.68 | 47.6% | B1: Integrator |
| | 26-35 years | 90.26 | 28.67 | 47.0% | B1: Integrator |
| | 36 years and more | 84.38 | 27.98 | 43.9% | B1: Integrator |
| | Prefer not to say | 83.65 | 30.32 | 43.6% | B1: Integrator |
| Years of using digital technologies | Not yet | 50.88 | 25.59 | 26.5% | A2: Explorer |
| | Less than 1 year | 69.46 | 25.71 | 36.2% | B1: Integrator |
| | 4-10 years | 88.08 | 27.30 | 45.9% | B1: Integrator |
| | More than 10 years | 102.72 | 29.21 | 53.5% | B2: Expert |
| | Prefer not to say | 79.05 | 26.73 | 41.2% | B1: Integrator |
| Main subject of teaching | Multiple subjects | 87.35 | 27.20 | 45.5% | B1: Integrator |
| | Computer science / Informatics | 110.95 | 29.25 | 57.8% | B2: Expert |
| | Mother tongue | 87.96 | 28.58 | 45.8% | B1: Integrator |
| | Foreign language(s) | 90.04 | 29.38 | 46.9% | B1: Integrator |
| | Math / Physics | 93.68 | 29.00 | 48.8% | B1: Integrator |
| | Chemistry / Biology / Geography | 91.38 | 27.79 | 47.6% | B1: Integrator |

| | Table Heading | Mean of scored points | Standard deviation | % of the max score | Level |
|---|---|---|---|---|---|
| | History | 91.43 | 30.06 | 47.6% | B1: Integrator |
| | Physical Education | 77.59 | 25.28 | 40.4% | B1: Integrator |
| | Other | 83.42 | 28.75 | 43.4% | B1: Integrator |
| Type of area | Urban | 93.08 | 29.59 | 48.5% | B1: Integrator |
| | Rural | 86.00 | 28.34 | 44.8% | B1: Integrator |
| Risk level in Education | 1 - insuperable | 102.29 | 28.75 | 53.3% | B2: Expert |
| | 2 - very high | 93.49 | 28.28 | 48.7% | B1: Integrator |
| | 3 - high | 89.50 | 29.97 | 46.6% | B1: Integrator |
| | 4 - moderate | 90.31 | 28.43 | 47.0% | B1: Integrator |

Digital competence levels also vary across subject areas. Teachers of computer science and informatics demonstrate the highest competence levels, with an average score of 110.95 points (57.8%), corresponding to the B2 – Expert level. Teachers in STEM subjects such as mathematics and physics also report relatively higher competence levels (93.68 points) compared with teachers in other subject areas, which may reflect the lower relevance of digital tools for certain types of practical classroom activities.

These differences should be interpreted primarily as structural and contextual, rather than individual. Higher scores among computer science and STEM teachers likely reflect greater exposure to (and routine opportunities for) using digital tools in their instructional practice, as these subjects are more directly integrated with digital environments, computational thinking, and technology-supported learning. In contrast, in subjects such as physical education, where digital integration is less central to curriculum delivery, lower average scores (77.59 points) are observed, which may reflect more limited pedagogical relevance rather than lower competence per se.

As a result, variations across subject groups are closely linked to differences in curriculum design, instructional modalities, and the extent to which digital technologies are embedded in everyday teaching practice, rather than indicating fundamental disparities in teachers' overall digital capability.

Teachers working in urban schools report slightly higher digital competence levels (93.08 points) compared with those working in rural schools (86.0 points). Although both groups remain within the Integrator level, this difference may reflect disparities in access to digital infrastructure, connectivity, and professional development opportunities. Finally, the analysis suggests some variation in digital competence depending on the security risk level for education. Teachers working in areas classified as risk level 1 (insuperable) report the highest average competence score (102.29 points, corresponding to the Expert level). This score is significantly higher than the national average (89.59 points, 46.7%) and notably above the scores reported by teachers working in areas classified as moderate or satisfactory risk levels, where average scores range between 85.81 and 90.31 points.

This may reflect the stronger reliance on digital tools for remote or blended learning in regions where traditional in-person schooling has been most disrupted. Teachers working in environments characterised by higher levels of disruption appear to rely more intensively on digital technologies to sustain teaching and learning processes.

This relation likely reflects the adaptive response of educators to challenging conditions, where digital tools become essential for ensuring continuity of learning, maintaining communication with students, and implementing remote or blended teaching approaches. As a result, teachers operating in more challenging contexts may develop stronger practical experience with digital technologies and more advanced digital pedagogical practices.

## 4.3 Results by DigCompEdu Area

### 4.3.1 Area 1 – Professional Engagement

The Professional Engagement area reflects teachers' ability to use digital technologies to support professional activities, collaboration, communication, and continuous professional development. Within the DigCompEdu framework, this area includes competencies related to organisational communication, participation in online learning environments, professional collaboration, engagement in reflective practice, and the use of digital technologies for professional learning and development. The score for this competence area is derived from teachers' responses to nine components (1.1–1.9); each component corresponds to a progression across six competence levels, ranging from A1 – Newcomer to C2 – Pioneer, reflecting increasing levels of sophistication in the pedagogical and professional use of digital technologies.

Overall, the results show (Table 4, Figure 13) that most teachers report intermediate levels of competence, particularly at the B1 – Integrator and B2 – Expert levels. For example, 37.5% of teachers report the Integrator level for organisational communication, while 43.2% indicate this level for professional collaboration and interactions. Similarly, 36.9% report on Integrator-level competence regarding the use of digital technologies in relation to school infrastructure.

At the same time, a considerable proportion of teachers report Expert level competence in certain areas, such as professional learning through digital technologies (30.3%) and digital life (29.5%), suggesting that many educators actively use digital tools to support their professional development.

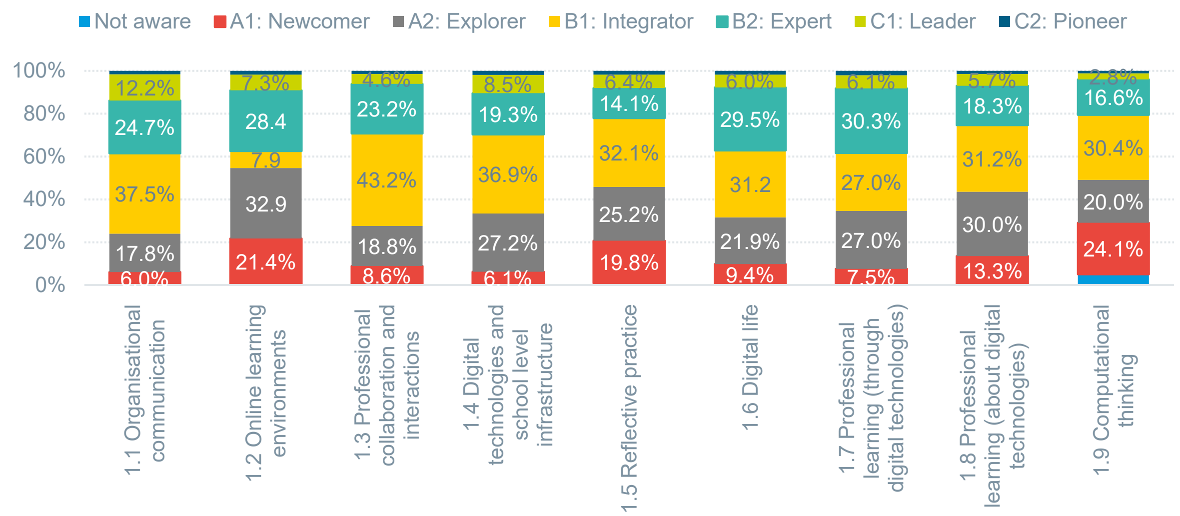
Lower competence levels remain more visible in some components. For instance, 21.4% of respondents report on the Newcomer level for online learning environments and 19.8% for reflective practice, indicating that these areas may require further development. In addition, computational thinking shows relatively high dispersion, with 24.1% of teachers at the Newcomer level and 5.0% indicating that they are not aware of this concept.

**Table 6. Responses distribution of Professional Engagement per component**

| Professional Engagement | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 1.1 Organisational communication | 6.0% | 17.8% | 37.5% | 24.7% | 12.2% | 1.6% | 0.1% |
| 1.2 Online learning environments | 21.4% | 32.9% | 7.9% | 28.4% | 7.3% | 1.8% | 0.3% |
| 1.3 Professional collaboration and interactions | 8.6% | 18.8% | 43.2% | 23.2% | 4.6% | 1.5% | 0.2% |
| 1.4 Digital technologies and school level infrastructure | 6.1% | 27.2% | 36.9% | 19.3% | 8.5% | 1.9% | 0.1% |

| Professional Engagement | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 1.5 Reflective practice | 19.8% | 25.2% | 32.1% | 14.1% | 6.4% | 1.7% | 0.8% |
| 1.6 Digital life | 9.4% | 21.9% | 31.2% | 29.5% | 6.0% | 1.7% | 0.3% |
| 1.7 Professional learning (through digital technologies) | 7.5% | 27.0% | 27.0% | 30.3% | 6.1% | 2.0% | 0.1% |
| 1.8 Professional learning (about digital technologies) | 13.3% | 30.0% | 31.2% | 18.3% | 5.7% | 1.4% | 0.2% |
| 1.9 Computational thinking | 24.1% | 20.0% | 30.4% | 16.6% | 2.8% | 1.1% | 5.0% |

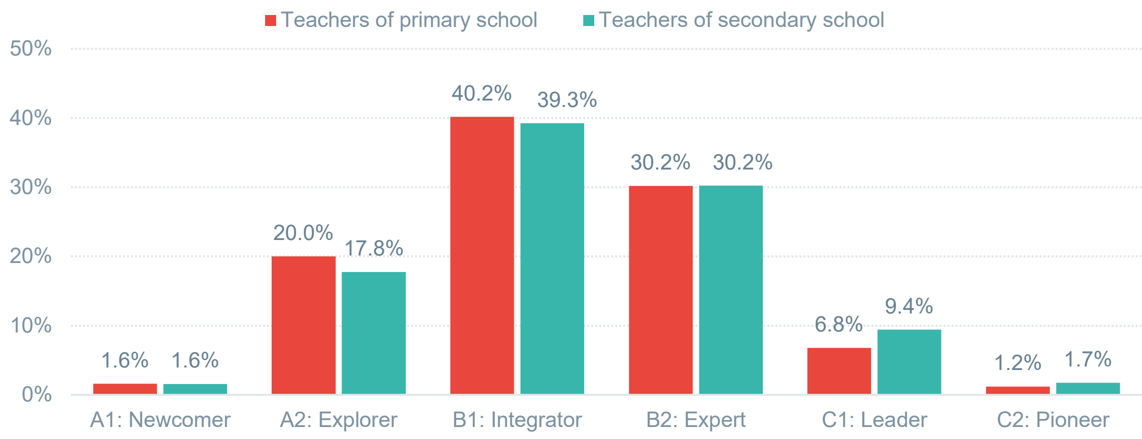
**Figure 13. Professional Engagement per components**




The analysis of Professional Engagement by school level (Figure 14) reveals broadly similar competence patterns between teachers of primary and secondary school, with the largest share in both groups concentrated at the Integrator and Expert levels. This indicates that regular and structured use of digital technologies for professional communication, collaboration, and professional learning is well established across both education levels.

The most notable differences emerge at the Explorer and Leader levels. Primary school teachers are more represented at the Explorer level (20.0% compared with 17.8%) and slightly more at the Integrator level (40.2% vs. 39.3%), suggesting that a larger share of primary teachers remains at intermediate stages of professional digital engagement. In contrast, secondary school teachers are more strongly represented at the Leader level (9.4% compared with 6.8%) and, to a lesser extent, at the Pioneer level (1.7% vs. 1.2%), indicating a somewhat greater concentration of highly advanced professional digital practices. The proportion of teachers at the Expert level is identical in both groups (30.2%), highlighting a common strong core of digitally engaged professionals across primary and secondary education.

**Figure 14. Professional Engagement level for teachers of primary and secondary schools**




Overall, while differences are limited, the pattern suggests that primary teachers are slightly more concentrated at intermediate competence levels, whereas secondary teachers show a stronger presence at the highest proficiency levels, pointing to somewhat greater digital leadership and innovation capacity within secondary education.

### 4.3.2 Area 2 – Digital Resources

The Digital Resources area reflects teachers' ability to identify, create, adapt, manage, and share digital educational resources. Within the DigCompEdu framework, this competence area includes skills related to searching and selecting digital materials, creating and modifying digital resources, managing digital content, protecting digital materials and data, and sharing resources with colleagues or learners. In the SfT methodology, the score for this competence area is derived from teachers' responses to five components (2.1–2.5).

Overall, the results show (Table 5, Figure 15) that most teachers report intermediate levels of competence, particularly at the B1 – Integrator level. For example, 40.1% of respondents report on the Integrator level for searching and selecting digital resources, while 49.5% indicate this level for creating digital resources, representing the highest concentration within this competence area. These findings suggest that many teachers regularly use and produce digital materials as part of their teaching practice.

At the same time, a considerable proportion of teachers report Expert-level competence in certain aspects of digital resource use. For instance, 23.2% of teachers report on the Expert level for searching and selecting digital resources and 22.6% for managing and protecting digital resources, indicating relatively strong capacity in locating and organising digital content.

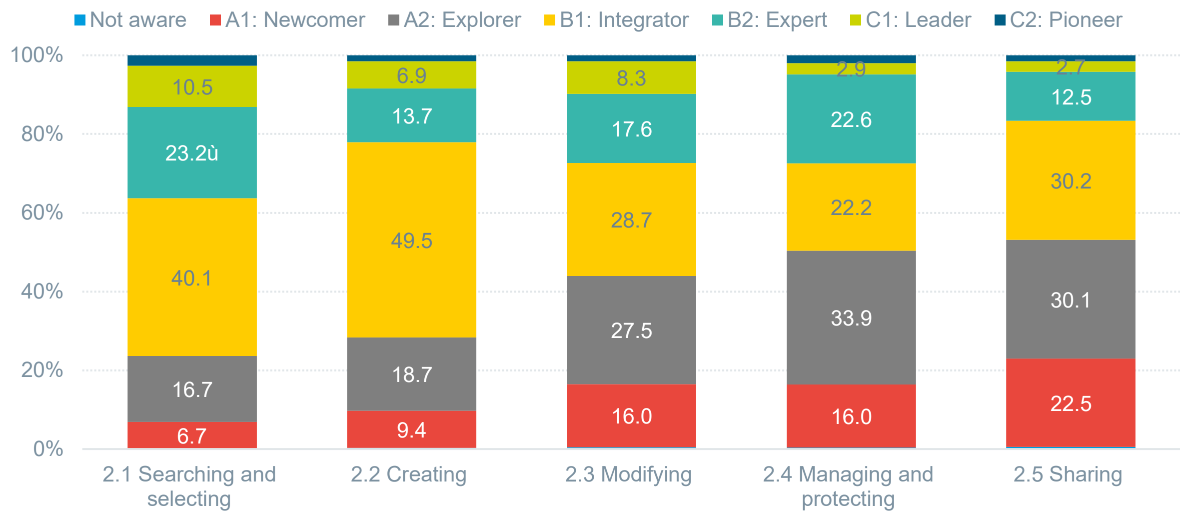
However, lower competence levels remain visible in some components, particularly in relation to sharing and modifying digital resources. For example, 22.5% of teachers report on the Newcomer level in relation to sharing digital resources, and 16.0% report on this level for modifying digital materials. These patterns are better understood as reflecting system-level and organisational conditions, rather than individual skill deficits. In particular, they may be associated with limited incentives for resource sharing, time constraints within teachers' workload, and uneven availability of institutional or digital platforms that support collaborative exchange of materials.

Overall, the distribution of responses suggests that while teachers are generally confident in accessing, selecting, and creating digital resources, more advanced practices – such as systematic modification and especially collaborative sharing – remain less developed. This likely reflects broader characteristics of professional and organisational culture, where structured mechanisms and incentives for collaboration are still emerging, rather than solely individual-level limitations in digital competence.

**Table 7. Response distribution of Digital Resources per component**

| Digital Resources | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 2.1 Searching and selecting | 6.7% | 16.7% | 40.1% | 23.2% | 10.5% | 2.6% | 0.2% |
| 2.2 Creating | 9.4% | 18.7% | 49.5% | 13.7% | 6.9% | 1.5% | 0.3% |
| 2.3 Modifying | 16.0% | 27.5% | 28.7% | 17.6% | 8.3% | 1.5% | 0.5% |
| 2.4 Managing and protecting | 16.0% | 33.9% | 22.2% | 22.6% | 2.9% | 2.0% | 0.4% |
| 2.5 Sharing | 22.5% | 30.1% | 30.2% | 12.5% | 2.7% | 1.5% | 0.5% |

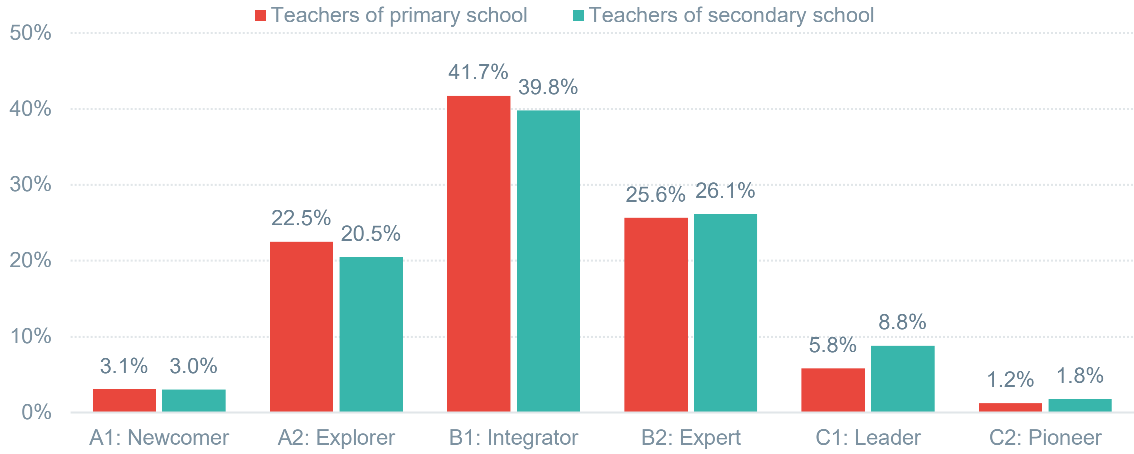
**Figure 15. Digital Resources per components**




The analysis of Digital Resources by school level (Figure 16) reveals broadly similar competence patterns between primary and secondary school teachers, with the largest share in both groups concentrated at the Integrator and Expert levels. This suggests that the ability to find, create, adapt, and use digital resources is generally well established across both levels of education.

The most notable differences are observed at the Explorer and Leader levels. Primary school teachers are more represented at the Explorer level (22.5% compared with 20.5%) and slightly more at the Integrator level (41.7% vs. 39.8%), indicating that a somewhat larger share of primary teachers remains at intermediate stages of competence in working with digital resources. In contrast, secondary school teachers show a stronger presence at the more advanced Leader (8.8% compared with 5.8%) and Pioneer (1.8% vs. 1.2%) levels, suggesting a greater concentration of highly developed practices in selecting, adapting, and strategically integrating digital resources into teaching. Differences at the Expert level are minimal (26.1% among secondary teachers compared with 25.6% among primary teachers), indicating a broadly similar core of teachers with advanced competence in this area across both groups.

**Figure 16. Digital Resources level for teachers of primary and secondary schools**




Overall, while competence profiles are largely comparable, the pattern suggests that primary teachers are slightly more concentrated at intermediate levels of digital resource use, whereas secondary teachers display a stronger representation at the highest proficiency levels, pointing to somewhat greater capacity for advanced and innovative use of digital resources in secondary education.

### 4.3.3 Area 3 – Teaching and Learning

The results for the Teaching and Learning area point to a moderately developed but unevenly distributed pedagogical use of digital technologies. Most teachers position themselves at the B1 – Integrator level, indicating that digital tools are regularly incorporated into teaching practice, particularly for lesson delivery and providing guidance to students. This suggests that digital technologies are already embedded in core instructional processes and are used with a reasonable degree of confidence.

At the same time, the distribution of results across components (Table 8, Figure 17) reveals an important internal imbalance within this competence area. Teachers report stronger performance in structured, teacher-led uses of digital technologies e.g. presenting content and supporting learning activities, while lower levels of competence are evident in more complex pedagogical applications. In particular, collaborative learning and self-regulated learning show a higher concentration of teachers at lower levels, including a notable share at the Newcomer level. This indicates that digital technologies are less frequently used to facilitate peer interaction, co-construction of knowledge, or the development of learners' autonomy.

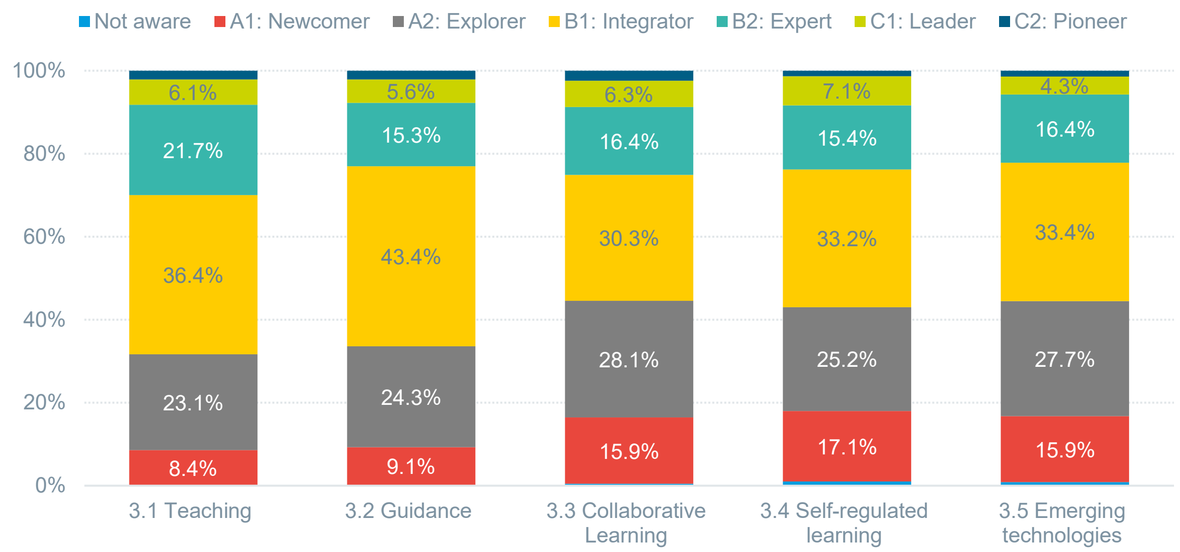
The relatively weaker performance in self-regulated learning further suggests that digital tools are not yet widely employed to support students' independent learning processes, including goal setting, monitoring progress, and developing metacognitive skills. Similarly, the limited use of emerging technologies points to a cautious or incremental approach to innovation, where experimentation with new tools remains restricted.

Nevertheless, the presence of a substantial proportion of teachers at the Expert level demonstrates that more advanced, pedagogically integrated practices do exist within the system, although they are not yet widespread. Overall, the findings indicate that while digital technologies are routinely used in teaching, their application remains predominantly instructional rather than transformative, with limited integration into collaborative and learner-centred pedagogies.

**Table 8. Responses distribution of Teaching and Learning per component**

| Teaching and Learning | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 3.1 Teaching | 8.4% | 23.1% | 38.4% | 21.7% | 6.1% | 2.1% | 0.2% |
| 3.2 Guidance | 9.1% | 24.3% | 43.4% | 15.3% | 5.6% | 2.1% | 0.2% |
| 3.3 Collaborative Learning | 15.9% | 28.1% | 30.3% | 16.4% | 6.3% | 2.4% | 0.5% |
| 3.4 Self-regulated learning | 17.1% | 25.0% | 33.2% | 15.4% | 7.1% | 1.3% | 1.0% |
| 3.5 Emerging technologies | 15.9% | 27.7% | 33.4% | 16.4% | 4.3% | 1.4% | 0.8% |

**Figure 17. Teaching and Learning per components**




The distribution of responses across components (Figure 17) provides a more granular view of how teachers are positioned along the competence spectrum, highlighting not only central tendencies but also the spread and progression potential within each dimension.

While the dominance of the B1 – Integrator level confirms that digital technologies are routinely used, the table reveals important differences in how competence is distributed across components. Teaching (3.1) and Guidance (3.2) show a more balanced distribution with a stronger upper tail, including the highest shares of teachers at the Expert level (21.7% and 15.3% respectively). This suggests that progression beyond routine use is more established in structured, teacher-led practices.

In contrast, Collaborative Learning (3.3), Self-regulated Learning (3.4) and Emerging Technologies (3.5) display a flatter distribution with a heavier concentration in lower levels (A1–A2) and a less pronounced Expert segment. This indicates not only lower average competence, but also weaker progression pathways, where fewer teachers move towards advanced levels. The relatively higher shares at the Newcomer level (around 16–17%) in these components point to persistent entry-level engagement in areas that require more complex pedagogical change.

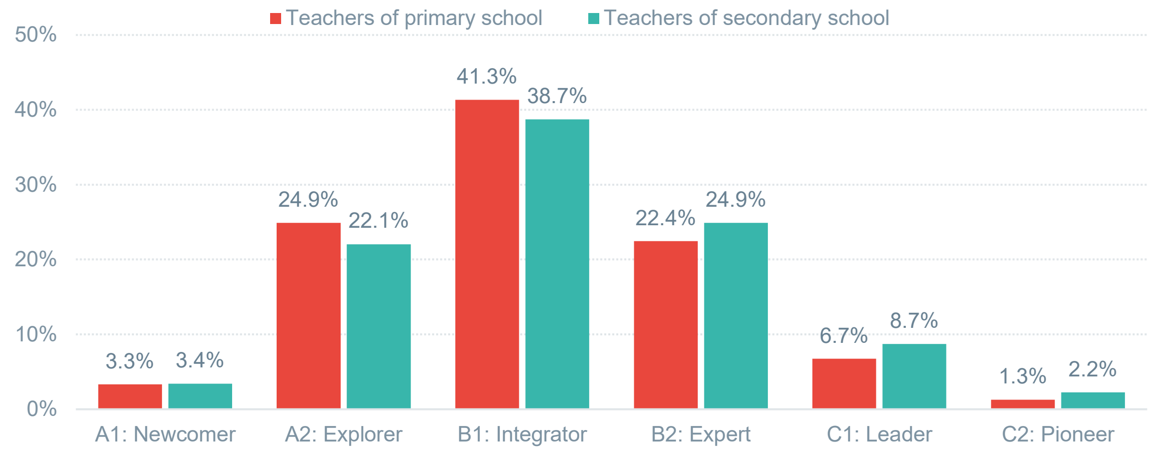
Importantly, the table also shows that leadership levels (C1–C2) remain marginal across all components, suggesting that system-wide capacity for innovation, mentoring, and scaling of advanced practices is still limited.

Overall, the distribution highlights that the key challenge is not only raising average competence but strengthening progression from B1 to higher levels in pedagogically demanding areas, particularly those related to learner-centred and innovative uses of digital technologies.

A similar distribution can be observed in the Teaching and Learning competence area (Figure 18), where teachers of primary and secondary school display largely comparable competence profiles, with the highest shares concentrated at the Integrator and Expert levels. This indicates that the use of digital technologies to support teaching processes is becoming a regular component of classroom practice across both education levels.

The clearest differences appear at the intermediate and advanced proficiency levels. Primary school teachers are somewhat more represented at the Explorer (24.9% compared with 22.1%) and Integrator (41.3% vs. 38.7%) levels, suggesting that a larger proportion remain at functional or developing stages of digital integration in teaching. By contrast, teachers at secondary school demonstrate a stronger presence at the Expert (24.9% compared with 22.4%), Leader (8.7% vs. 6.7%), and Pioneer (2.2% vs. 1.3%) levels, indicating greater confidence and a more advanced pedagogical use of digital technologies in instructional practice.

**Figure 18. Teaching and Learning level for teachers of primary and secondary schools**




Overall, the pattern suggests that while digital teaching practices are broadly established across both groups, secondary school teachers show a somewhat stronger concentration at higher competence levels, pointing to greater readiness to apply digital technologies in more sophisticated, innovative, and pedagogically integrated ways.

### 4.3.4 Area 4 – Assessment

The Assessment area reflects teachers' ability to use digital technologies to design, implement, and improve assessment practices. Within the DigCompEdu framework, this area includes competencies related to applying digital assessment strategies, analysing evidence generated through digital tools, and providing feedback that supports learning and instructional planning. The score for this competence area is derived from teachers' responses to three components (4.1–4.3). These components address digital assessment strategies, the analysis of learning evidence, and the use of digital feedback to inform teaching and learning processes. As in other competence areas, responses are mapped onto six levels of progression, ranging from A1 – Newcomer to C2 – Pioneer.

The results (Table 9, Figure 19) indicate that most teachers report moderate levels of competence in digital assessment, with the largest share of responses concentrated at the B1 – Integrator level across all components. For example, 43.9% of teachers indicate the Integrator level for digital assessment strategies, while 41.5% report this level for analysing assessment evidence and 38.8% for providing feedback and planning learning activities based on digital assessment data. These findings suggest that many teachers already incorporate digital tools into assessment practices, particularly for administering assessments and reviewing student performance.

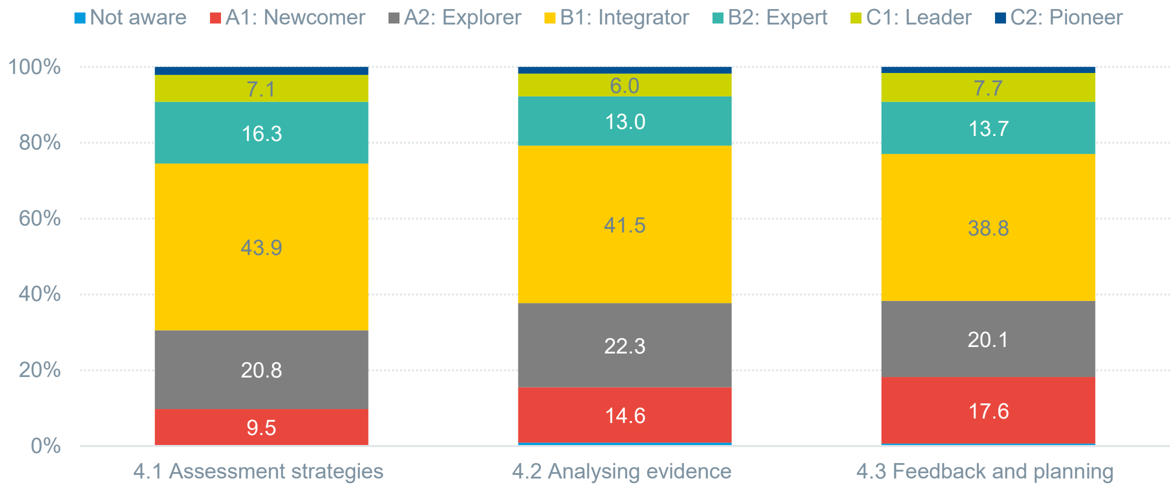
Nevertheless, lower competence levels remain present in several aspects of digital assessment. For instance, 17.6% of respondents report on the Newcomer level in relation to feedback and planning and 14.6% for analysing evidence, indicating that a notable share of teachers has limited experience in using digital data to support instructional decisions. These results suggest that while digital assessment tools may be used in practice, their potential for informing pedagogical planning and personalised feedback is not yet fully realised.

At the same time, a smaller but significant group of teachers report Expert-level competence, particularly in the use of digital assessment strategies (16.3%) and feedback processes (13.7%), reflecting more advanced integration of digital technologies into assessment and learning monitoring.

**Table 9. Response distribution of Assessment per component**

| Assessment | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 4.1 Assessment strategies | 9.5% | 20.8% | 43.9% | 16.3% | 7.1% | 2.1% | 0.2% |
| 4.2 Analysing evidence | 14.6% | 22.3% | 41.5% | 13.0% | 6.0% | 1.8% | 0.9% |
| 4.3 Feedback and planning | 17.6% | 20.1% | 38.8% | 13.7% | 7.7% | 1.6% | 0.6% |

**Figure 19. Assessment per components**

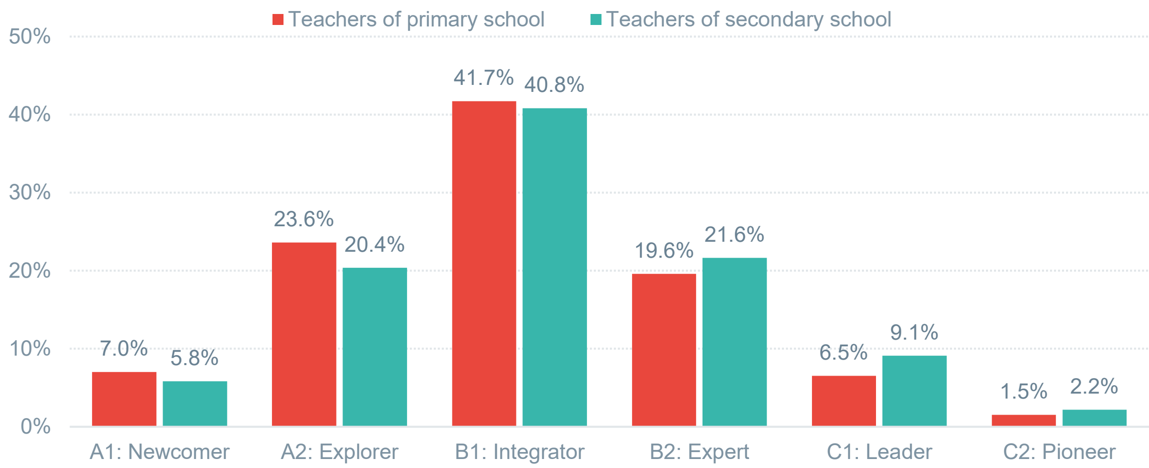



A slightly different pattern emerges in the Assessment competence area (Figure 20), where teachers of primary and secondary school again demonstrate broadly similar distributions, but with somewhat more visible differences at both the lower and higher ends of the proficiency scale. The largest share in both groups remains concentrated at the Integrator level, indicating that digital tools for assessment are used regularly, although their pedagogical application is still developing for a substantial proportion of teachers.

Primary school teachers are more represented at the Newcomer (7.0% compared with 5.8%) and Explorer (23.6% vs. 20.4%) levels, as well as slightly more at the Integrator level (41.7% vs. 40.8%). This suggests that a somewhat larger share of primary teachers remains at earlier or intermediate stages in using digital technologies for assessment, feedback, and monitoring student progress.

By contrast, secondary school teachers show a stronger concentration at the more advanced levels, including Expert (21.6% compared with 19.6%), Leader (9.1% vs. 6.5%), and Pioneer (2.2% vs. 1.5%). This points to greater use of digital tools for more sophisticated assessment practices, including data-informed feedback, formative assessment, and more structured monitoring of learners' development.

**Figure 20. Assessment level for teachers of primary and secondary schools**




Overall, the results suggest that secondary school teachers demonstrate a somewhat more advanced profile in digital assessment practices, while primary teachers are more concentrated at foundational and intermediate levels, indicating greater room for development in embedding digital assessment more systematically into teaching and learning processes.

### 4.3.5 Area 5 – Empowering Learners

The Empowering Learners area reflects teachers' ability to use digital technologies to support inclusive, learner-centred education and to address diverse learning needs. Within the DigCompEdu framework, this area includes competencies related to improving accessibility and inclusion, supporting differentiation and personalisation of learning, actively engaging learners through digital tools, and implementing blended learning approaches. This competence area is scored based on teachers' responses to four components (5.1–5.4).

The results (Table 10, Figure 21) indicate that teachers' competence in empowering learners with digital technologies is distributed across several levels, although Explorer and Integrator levels are the most frequently reported. For example, 45.5% of respondents report on the Integrator level for blended learning, suggesting that many teachers regularly combine digital and traditional teaching approaches in their practice. Similarly, 32.0% of teachers report the Integrator level for differentiation and personalisation, indicating the use of digital tools to adapt learning activities to students' needs.

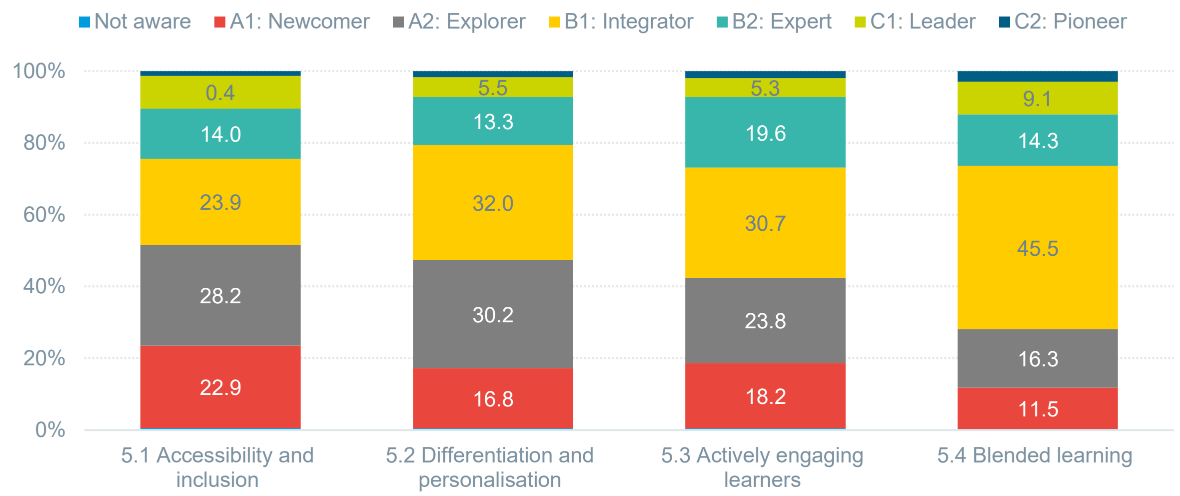
However, relatively high shares of respondents report lower competence levels in some components. In particular, 22.9% of teachers indicate the Newcomer level in relation to accessibility and inclusion, while 28.2% report on the Explorer level, suggesting that the systematic use of digital technologies to support inclusive education is still developing. Similarly, 18.2% of teachers report on the Newcomer level for actively engaging learners, indicating that digital tools are not yet fully exploited to enhance student participation and interaction in learning activities.

At the same time, a smaller but significant share of teachers demonstrate more advanced competence, particularly in engaging learners (19.6% at the Expert level) and implementing blended learning approaches (14.3% at the Expert level). These results suggest that while many teachers are already integrating digital technologies into learner-centred practices, there remains considerable potential to further strengthen the pedagogical use of digital tools for inclusion, engagement, and personalised learning.

**Table 10. Responses distribution of Empowering Learners per component**

| Empowering Learners | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 5.1 Accessibility and inclusion | 22.9% | 28.2% | 23.9% | 14.0% | 9.1% | 1.3% | 0.6% |
| 5.2 Differentiation and personalisation | 16.8% | 30.2% | 32.0% | 13.3% | 5.5% | 1.7% | 0.4% |
| 5.3 Actively engaging learners | 18.2% | 23.8% | 30.7% | 19.6% | 5.3% | 2.0% | 0.5% |
| 5.4 Blended learning | 11.5% | 16.3% | 45.5% | 14.3% | 9.1% | 2.9% | 0.3% |

**Figure 21. Empowering Learners per components**

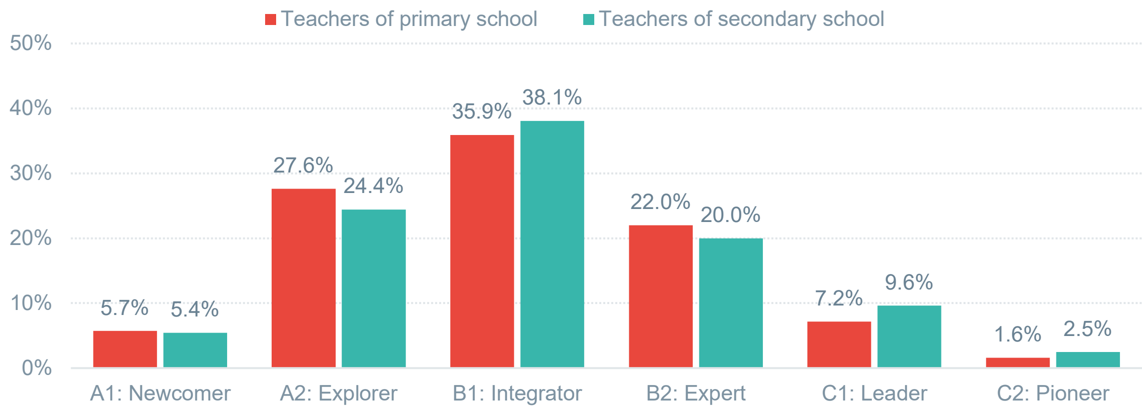



A broadly comparable pattern can be observed in the Empowering Learners competence area across primary and secondary school teachers (Figure 22), with the largest shares in both groups concentrated at the Integrator and Expert levels. This indicates that digital tools are increasingly being used to support learner autonomy, differentiation, and inclusion across both levels of education, although the depth and consistency of pedagogical application continue to vary.

Primary school teachers are somewhat more represented at the Explorer level (27.6% compared with 24.4%) and also slightly more at the Expert level (22.0% vs. 20.0%). This suggests a broader distribution of competence among primary teachers, with a larger share still developing these practices, alongside a substantial group already demonstrating confident use of digital tools to personalise learning and address diverse learner needs.

At the same time, secondary school teachers show a stronger concentration at the highest proficiency levels, particularly at Leader (9.6% compared with 7.2%) and Pioneer (2.5% vs. 1.6%). This points to greater readiness among secondary teachers to apply more advanced and innovative digital pedagogical approaches aimed at learner empowerment.

**Figure 22. Empowering Learners level for teachers of primary and secondary schools**




Overall, while competence profiles are broadly similar, secondary school teachers demonstrate a somewhat stronger presence at the most advanced levels, whereas primary school teachers show a wider spread across intermediate and upper levels of competence, indicating more varied levels of pedagogical maturity in this area.

### 4.3.6 Area 6 – Facilitating Learners' Digital Competence

The Facilitating Learners' Digital Competence area, derived from the initial DigCompEdu framework, reflects teachers' ability to support students in developing their own digital skills and responsible use of digital technologies. This area includes competencies related to promoting learners' information and data literacy, digital communication and collaboration, digital content creation, online safety and well-being, responsible technology use, and problem-solving in digital environments.

The score for this competence area is derived from teachers' responses to six components (6.1–6.6).

The results (Table 11, Figure 23) indicate that teachers most frequently report competence at the Explorer and Integrator levels across this area. For instance, 35.0% of teachers indicate the Explorer level for information and data literacy, while 30.4% report on the Integrator level for this component. Similarly, 32.9% of respondents report on the Integrator level for supporting learners' digital communication and collaboration, and 32.5% for digital content creation. These findings suggest that many teachers are already introducing activities that help learners develop digital skills, although often at a moderate level of pedagogical integration.

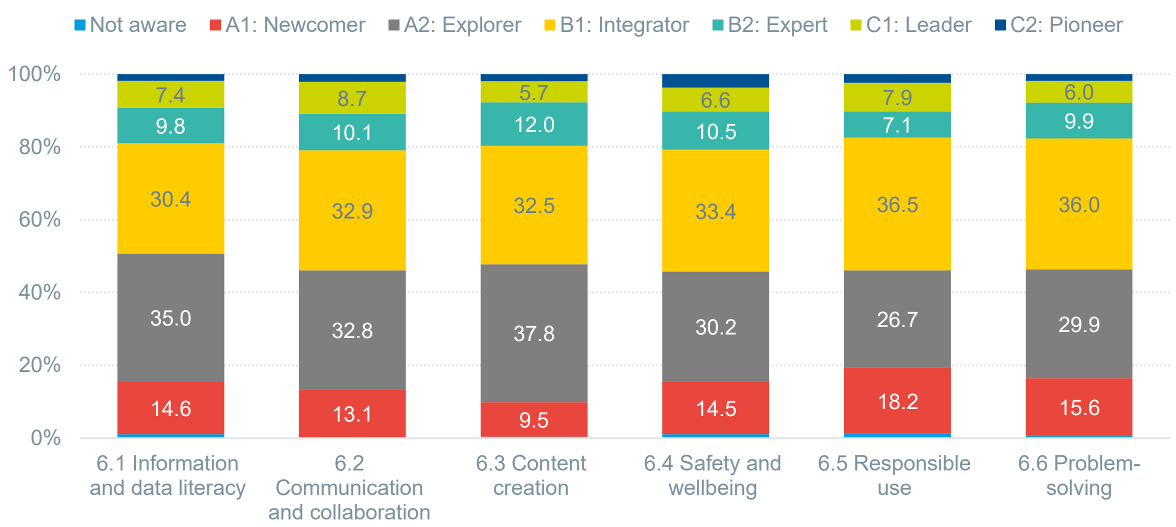
Several components also show relatively high shares of teachers at the Explorer level, particularly in content creation (37.9%) and communication and collaboration (32.8%), indicating that teachers may still be experimenting with approaches to supporting students' digital competence development. At the same time, Integrators represent the largest group in areas such as responsible use (36.5%) and problem-solving (36.0%), suggesting that digital citizenship and practical digital skills are more regularly embedded in teaching practice.

However, lower competence levels remain visible in some components. For example, 18.2% of teachers report the Newcomer level in relation to responsible use of digital technologies, and 15.6% for digital problem-solving, indicating that further support may be needed to strengthen teachers' ability to systematically develop learners' digital competence.

**Table 11. Response distribution of Facilitating Learners' Digital Competence per component**

| Facilitating Learners' Digital Competence | A1: Newcomer | A2: Explorer | B1: Integrator | B2: Expert | C1: Leader | C2: Pioneer | I am not aware |
|---|---|---|---|---|---|---|---|
| 6.1 Information and data literacy | 14.6% | 35.0% | 30.4% | 9.8% | 7.4% | 1.8% | 1.1% |
| 6.2 Communication and collaboration | 13.1% | 32.8% | 32.9% | 10.1% | 8.7% | 2.1% | 0.2% |
| 6.3 Content creation | 9.5% | 37.9% | 32.5% | 12.0% | 5.7% | 2.0% | 0.4% |
| 6.4 Safety and wellbeing | 14.5% | 30.2% | 33.4% | 10.5% | 6.6% | 3.7% | 1.1% |
| 6.5 Responsible use | 18.2% | 26.7% | 36.5% | 7.1% | 7.9% | 2.3% | 1.2% |
| 6.6 Problem-solving | 15.6% | 29.9% | 36.0% | 9.9% | 6.0% | 1.8% | 0.9% |

**Figure 23. Facilitating Learners' Digital Competence per component**

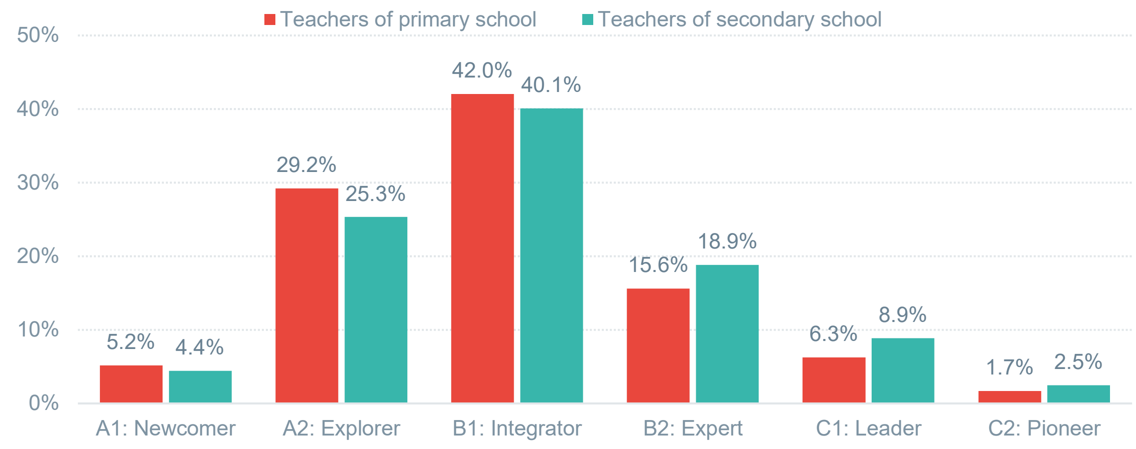



A similar pattern is observed in Facilitating Learners' Digital Competence across teachers of primary and secondary school (Figure 24), with the largest share of respondents in both groups concentrated at the Integrator level. This suggests that supporting students in developing their own digital competence is becoming an established element of teaching practice, although the level of pedagogical sophistication still varies.

Primary school teachers are more represented at the Explorer level (29.2% compared with 25.3%) and slightly more at the Integrator level (42.0% vs. 40.1%), indicating that a larger share remains at earlier or intermediate stages in systematically fostering learners' digital skills. This may reflect a stronger focus on foundational digital practices rather than more advanced competence development.

By contrast, secondary school teachers demonstrate a more pronounced presence at the higher proficiency levels, including Expert (18.8% compared with 15.6%), Leader (8.9% vs. 6.3%), and Pioneer (2.5% vs. 1.7%). This points to greater readiness to embed digital competence development more intentionally into teaching, including supporting learners in critical, creative, and responsible use of digital technologies.

**Figure 24. Facilitating Learners' Digital Competence for teachers of primary and secondary schools**




Overall, the results suggest that secondary school teachers display a somewhat more advanced competence profile in facilitating learners' digital competence, while primary school teachers are more concentrated at foundational and intermediate levels, indicating further scope for strengthening pedagogical approaches that explicitly support students' own digital competence development.

## 4.4. Customised Questions

This section provides a review of customised variables developed to complement the core SELFIE for Teachers areas and to provide additional insights into two strategically important areas: the use of Artificial Intelligence (AI) in education and the integration of digital technologies in STEM teaching and learning.

The customised module is structured into two thematic groups:

- AI-related variables, covering:
  - Teachers' awareness and perception of AI;
  - Practical use of AI tools in professional activities; and
  - Understanding and application of AI-related regulations and ethical principles;
- STEM-related variables, focusing on:
  - The use of digital technologies in STEM education; and
  - The application of digital tools for creative and project-based learning in STEM contexts.

A key methodological distinction between these two groups should be noted. The AI-related questions were administered to all respondents, covering the full sample of teachers across all participating schools. This ensures that the analysis of AI-related variables is fully representative at the national level and allows for robust comparative analysis across different respondent characteristics.

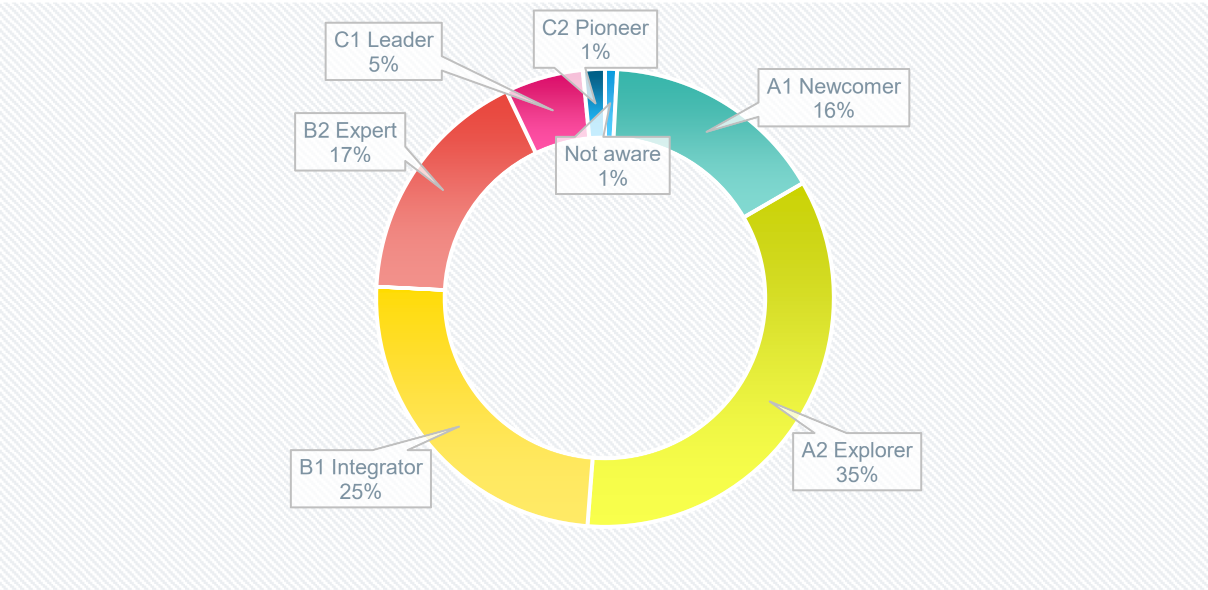
In contrast, the STEM-related questions were administered only to teachers working in academic lyceums, specifically those included in the self-representative stratum (30 schools). As a result, findings related to STEM variables should be interpreted with caution. While they provide valuable insights into digital practices within STEM-focused educational environments, they do not represent the full teaching force and have limitations for cross-tabulation and generalisation.

### 4.4.1 AI-related variables

This subsection analyses three dimensions of teachers' engagement with Artificial Intelligence (AI): awareness and general perception, usage in professional practice, and understanding of regulation and ethical aspects.

For the **AI awareness and general perception dimension**, 7,055 teachers (87.2% of the sample) provided valid responses (Figure 25). The distribution indicates that most teachers are positioned at intermediate levels of awareness, with a strong concentration at the Explorer (34.6%) and Integrator (24.6%) levels. This suggests that a substantial proportion of teachers have moved beyond basic awareness and are already experimenting with or regularly using AI tools.

**Figure 25. Teachers' AI awareness and general perception**

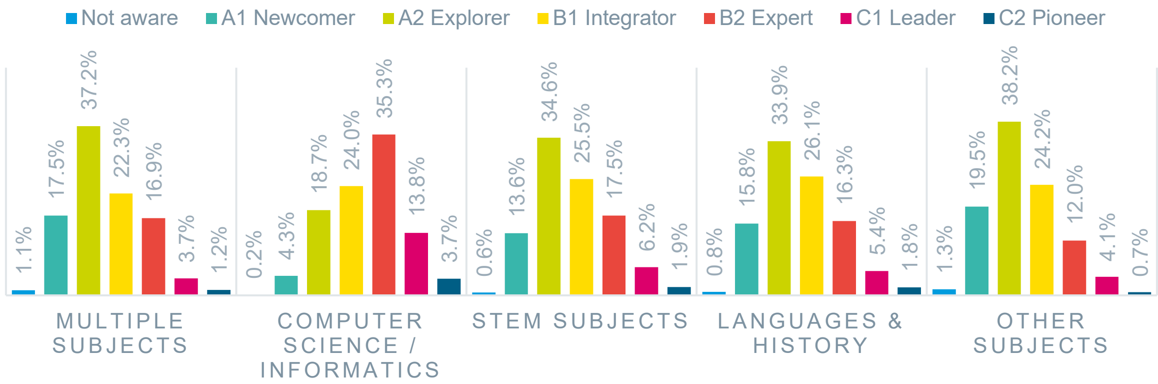



At more advanced levels, 17.1% of respondents identify as Experts, while 5.5% and 1.6% report Leader and Pioneer levels, respectively. These groups represent teachers who not only use AI effectively but also contribute to peer support or innovation. At the lower end, 15.8% of teachers remain at the Newcomer level, indicating limited practical experience, while only 0.9% report no awareness.

Overall, the distribution suggests a predominantly transitional stage in AI adoption among teachers. The concentration in the Explorer and Integrator categories indicates that AI is no longer at an awareness-only stage but has not yet reached fully embedded or systematically advanced use across the majority of respondents. This pattern reflects an emerging but still uneven integration of AI tools into everyday pedagogical practice.

A more detailed view by subject group reveals clear differences in AI awareness and general perception (Figure 26).

**Figure 26. AI awareness and general perception, by subject groups**



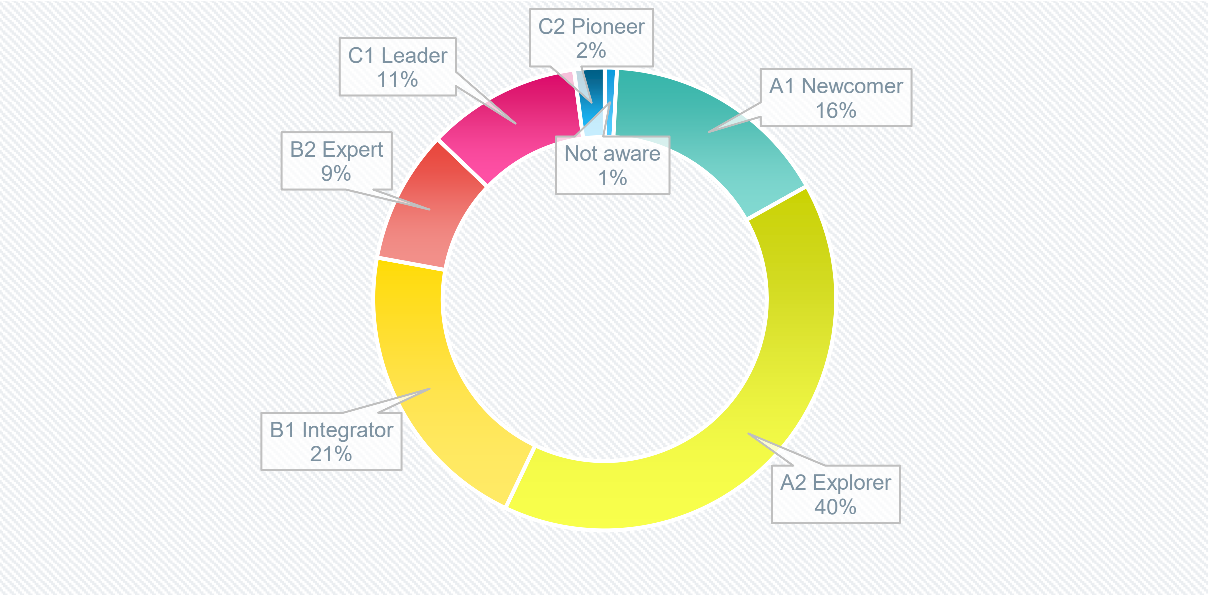

Teachers of Computer Science / Informatics demonstrate the most advanced profile, with the highest concentration in upper competency levels. Over half of this group are positioned at Integrator, Expert, Leader, or Pioneer levels, including a particularly high share of Experts (35.3%) and Leaders (13.8%). At the same time, this group shows very low proportions of Newcomer (0.2%) and minimal non-awareness, indicating a highly mature stage of AI integration in teaching practice.

Teachers of STEM subjects and Languages & History display relatively similar overall patterns characterised by a dominant presence at the Explorer and Integrator levels and a gradual shift towards more advanced use. In STEM, 34.6% of teachers are Explorers and 25.5% are Integrators, with a notable proportion of Experts (17.5%). A comparable structure is observed in Languages & History, where 33.9% are Explorers and 26.1% are Integrators, with a moderate but lower share of advanced users (Leader and Pioneer combined). These results suggest a transitional stage of AI adoption in both groups, with increasing but not yet fully consolidated integration into pedagogical practice.

Teachers of Other subjects and Multiple subjects show more moderate and relatively cautious engagement with AI tools. Both groups are characterised by a higher concentration at the Explorer level (38.2% and 37.2% respectively) and a substantial share of Integrators (24.2% and 22.3%). At the same time, the proportion of advanced users is lower compared to STEM-related fields, particularly in Expert and above categories (12.0% Experts in Other subjects; 16.9% in Multiple subjects, with limited representation at Leader and Pioneer levels in both groups). This pattern suggests that broader or less specialised teaching profiles are associated with more exploratory and less deeply embedded AI use, reflecting a slower progression towards advanced pedagogical integration.

The analysis of **AI usage models in teaching and professional activities** is based on 7,037 teachers (87.0% of the sample) who provided valid responses (Figure 27). The results show a strong concentration at early adoption stages, with the largest share at the Explorer level (40.2%). This indicates that many teachers are actively experimenting with AI tools for tasks such as lesson preparation, content generation, and administrative support.

**Figure 27. AI usage models in teaching and professional activities**

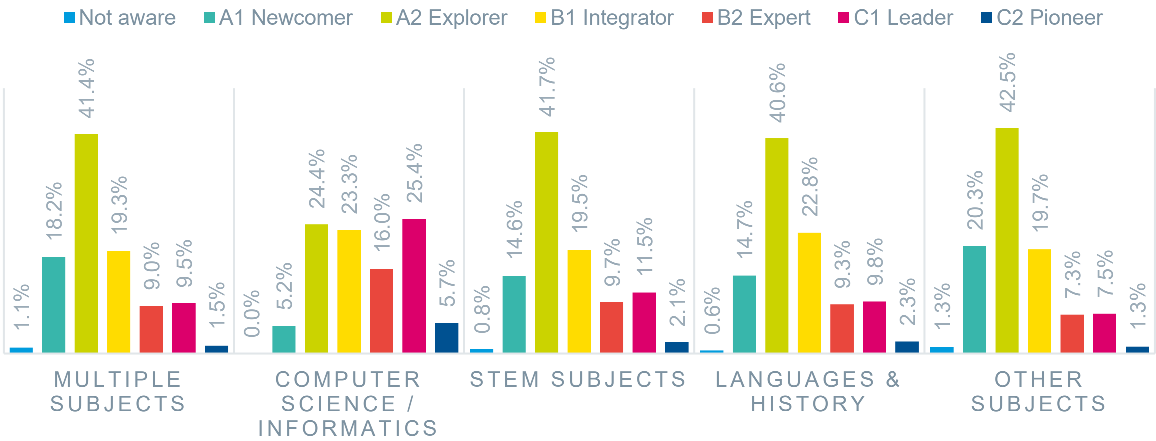



The proportion of Integrators (20.8%) is lower compared to the awareness dimension, suggesting that regular and systematic use of AI is less widespread. Similarly, the share of Experts (9.3%) is notably smaller than in the awareness category, pointing to a gap between understanding AI and applying it consistently in practice. At higher levels, 10.7% of teachers identify as Leaders and 2.1% as Pioneers, indicating a group engaged in promoting or advancing AI use within their professional communities. Meanwhile, 16.0% of respondents remain at the Newcomer level, and 0.9% report no awareness.

Overall, the findings indicate that AI use in practice is still in a developing phase, with most teachers positioned at exploratory stages and fewer demonstrating fully embedded or leadership-level integration into teaching practice.

A breakdown by subject group further highlights differences in AI usage models in teaching and professional activities (Figure 28).

**Figure 28. AI usage models in teaching and professional activities, by subject groups**




Teachers of Computer Science / Informatics demonstrate by far the most advanced usage profile. A substantial share is positioned at higher competency levels, including Expert (16.0%), Leader (25.4%), and Pioneer (5.7%), alongside strong representation at Integrator (23.3%) and Explorer (24.4%)

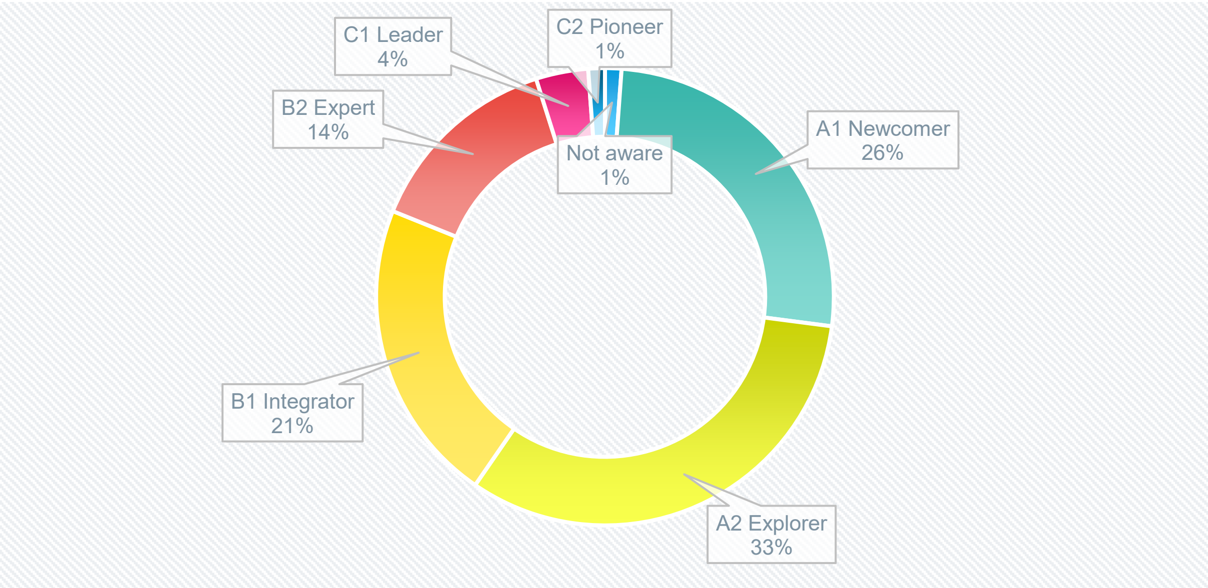
levels. Notably, this group reports virtually no teachers at the Not aware level (0.0%), confirming a fully embedded familiarity with AI tools and a strong orientation towards both pedagogical application and innovation leadership.

Teachers of STEM subjects and Languages & History show broadly similar patterns, characterised by dominant Explorer levels (41.7% and 40.6%, respectively) and substantial Integrator shares (19.5% and 22.8%). Both groups also include a moderate proportion of advanced users (Expert, Leader, and Pioneer combined), indicating ongoing but uneven progression from experimentation towards more structured and reflective use of AI in teaching practice.

In contrast, teachers of “Other” subjects and Multiple subjects demonstrate more cautious and less advanced usage profiles. Both groups are heavily concentrated at the Explorer level (42.5% and 41.4%, respectively), with comparatively lower shares of Integrator (19.7% and 19.3%) and especially limited representation in higher categories (Expert and above). This pattern suggests that more generalist teaching profiles tend to be associated with exploratory rather than systematic or innovative use of AI tools, indicating slower progression towards deeper pedagogical integration.

Regarding **AI regulations, ethics, and responsible use**, 7,020 teachers (86.8%) provided valid responses for this dimension. Compared to awareness and usage, the results show a clear shift towards lower competence levels and less advanced engagement with this dimension of AI literacy (Figure 29).

**Figure 29. AI regulations, ethics and responsible use**

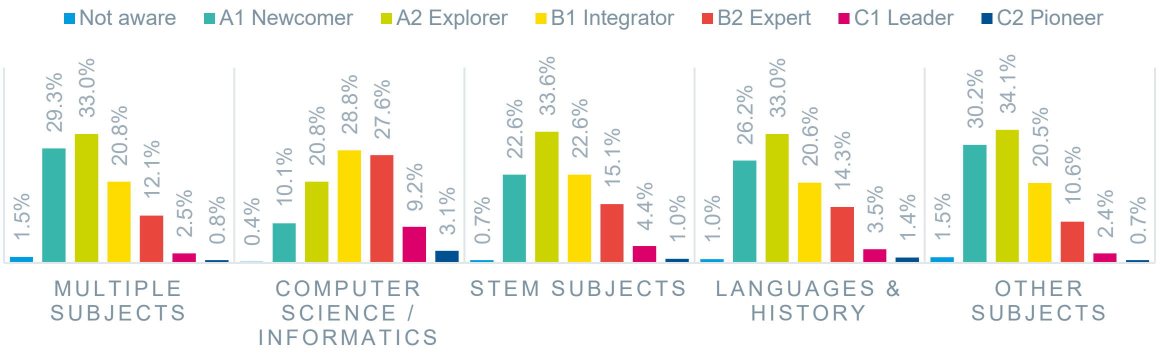



The largest shares are observed at the Explorer (32.5%) and Newcomer (25.9%) levels, meaning that more than half of teachers are still at early stages of understanding and applying ethical and regulatory aspects of AI. The proportion of Integrators (21.5%) indicates that some teachers are beginning to incorporate responsible AI practices into their work. However, only 14.0% reach the Expert level, while 3.7% and 1.2% are at the Leader and Pioneer levels, respectively. The share of respondents with no awareness (1.2%) remains low but slightly higher than in the other AI-related dimensions.

These findings suggest that AI regulation and ethics constitute the least developed area, highlighting a need for stronger support in areas such as data protection, transparency, academic integrity, and responsible use of AI in educational settings.

Looking across subject groups, differences in AI regulations, ethics and responsible use are observable, although less pronounced compared to AI usage models (Figure 30).

**Figure 30. AI regulations, ethics and responsible use, by subject groups**




Teachers of Computer Science / Informatics demonstrate the most advanced profile, with a relatively high concentration at upper competency levels, including Expert (27.6%), Leader (9.2%), and Pioneer (3.1%). At the same time, a notable share remains at the Integrator level (28.8%), indicating that even within this advanced group, ethical and regulatory aspects are still in the process of being fully systematised.

Teachers of STEM subjects and Languages & History show broadly similar distributions, characterised by dominance of Explorer (33.6% and 33.0%) and Newcomer (22.6% and 26.2%) levels, alongside moderate shares of Integrators (22.6% and 20.6%). This suggests that while these groups are already engaging with AI tools in practice, their understanding of ethical and regulatory frameworks remains mostly at a foundational or exploratory stage.

Teachers of Other subjects and Multiple subjects again demonstrate the lowest levels of advanced competence. Both groups are heavily concentrated at the Newcomer and Explorer levels (together exceeding 60%), with limited representation at Expert and above (Expert, Leader, and Pioneer combined remain below 15% in both cases). This pattern indicates that more generalist teaching profiles are particularly vulnerable in terms of AI governance literacy, reflecting limited exposure to structured training or institutional guidance on ethical AI use.

### Summary Findings on AI in general education

Across the three dimensions—AI Awareness, Usage models, and Regulation/AI Ethics—several consistent patterns emerge (Figure 31, Figure 31(a)):

- Teachers are predominantly positioned at the Explorer (A2) and Integrator (B1) levels, indicating that AI adoption is largely characterised by experimentation and early-stage integration, rather than mature, system-wide practice.
- A persistent gap between awareness and sustained pedagogical use suggests that while familiarity with AI is widespread, its integration into teaching and learning remains inconsistent and not yet institutionalised.
- Advanced profiles (Leader (C1) and Pioneer (C2)) are present but limited in scale, indicating that system-level leadership and innovation capacity in AI are still emerging.
- The dimension of AI ethics and governance lags behind both awareness and use, reflecting a structural imbalance between the rapid uptake of AI tools and the slower development of regulatory frameworks, ethical understanding, and responsible-use practices.

Taken together, these findings indicate that AI integration in general education is uneven, exploratory, and insufficiently supported by governance mechanisms.

**Figure 31. AI competences in general education (per levels)**

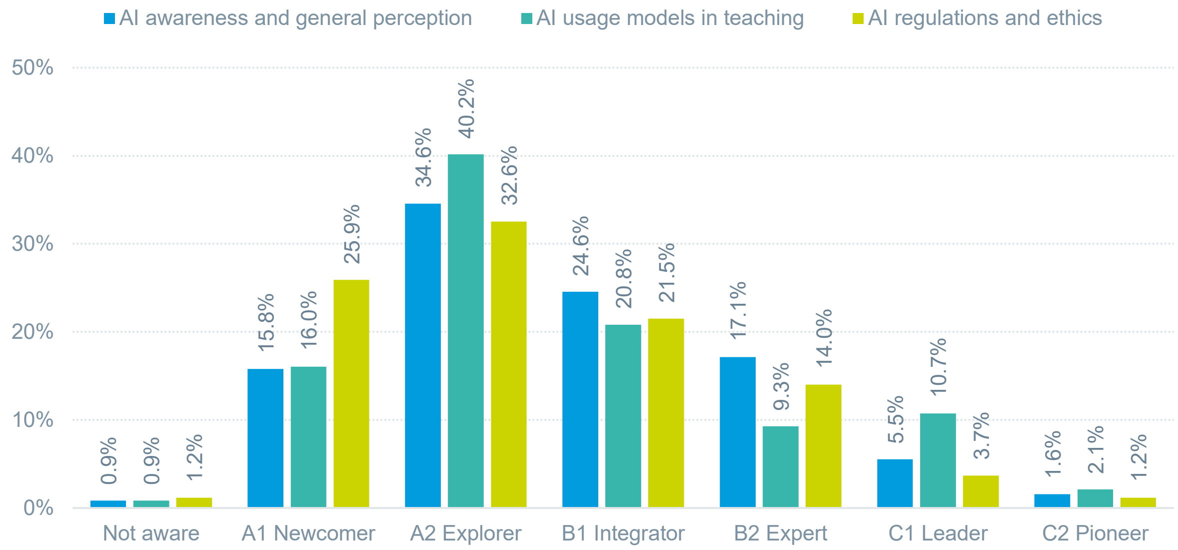
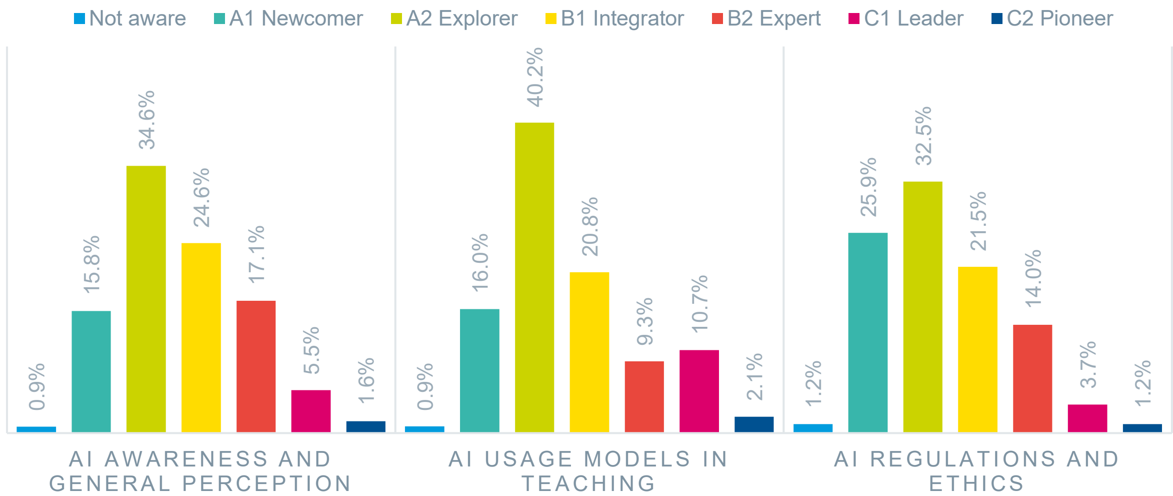



**Figure 31 (a). AI competences in general education (per components)**




## Overall Conclusion on AI area

The education system is currently in a transitional phase, moving from initial awareness towards partial and uneven integration of AI. While experimentation is widespread, the absence of systematic pedagogical practices, institutional support, and robust ethical and regulatory frameworks constrain further development.

Bridging the gap between awareness and effectiveness, particularly by strengthening AI governance, ethical competence, and institutional capacity—is essential for achieving sustainable and responsible integration of AI in education.

## Policy Recommendations related to AI in general education in Ukraine

- **Strengthen AI Policy Implementation at System Level**. Integrate AI related components into the DigCompEdu Framework and Teacher Professional Development (TPD) Model Programs on the national level. Member State authorities (Ministry of Education and Science of Ukraine), in cooperation with regional and local education authorities, should accelerate the dissemination and operationalisation of national guidelines on the ethical and safe use of AI in education. This should include targeted support for implementation at the level of regions, municipalities, and individual schools, ensuring coherence and consistency across the system.

- **Embed AI Competences in Teacher Professional Development**. Competent authorities should ensure the systematic integration of AI-related competences, with particular emphasis on AI ethics and responsible use, into mandatory continuing professional development (CPD) programmes. Training offers should be differentiated according to teachers' proficiency levels and aligned with existing digital competence frameworks.
- **Support Practical Pedagogical Integration of AI.** Education authorities should provide teachers with validated pedagogical use cases, teaching scenarios, and implementation models for AI integration. These resources should prioritise classroom applicability, subject relevance, and alignment with curriculum objectives, thereby facilitating the transition from experimental to systematic use.
- **Foster Leadership and Innovation Capacity in the AI Area.** Policy measures should aim to identify, support, and empower teacher leaders and innovators as key drivers of change. This includes the development of peer-learning networks, mentoring schemes, and communities of practice to scale effective practices across the education system.
- **Ensure Institutional Governance and Risk Management related to AI in Education.** Schools and higher education institutions should be supported in adopting institutional AI policies, including clear procedures for:
  - AI ethics;
  - Data protection and privacy;
  - Transparency in ai-supported decision-making; and
  - Risk management mechanisms.

Attention should be given to high-impact AI use cases (e.g. assessment, admission, student monitoring), ensuring compliance with a risk-based approach.

- Establish Monitoring and Evaluation Mechanisms. Authorities should implement regular, system-level monitoring of AI readiness, usage, and impact, including:
  - Data collection on adoption patterns;
  - Evaluation of educational outcomes; and
  - Identification of emerging risks.

The findings should inform evidence-based policy adjustments and continuous improvement of AI integration strategies.

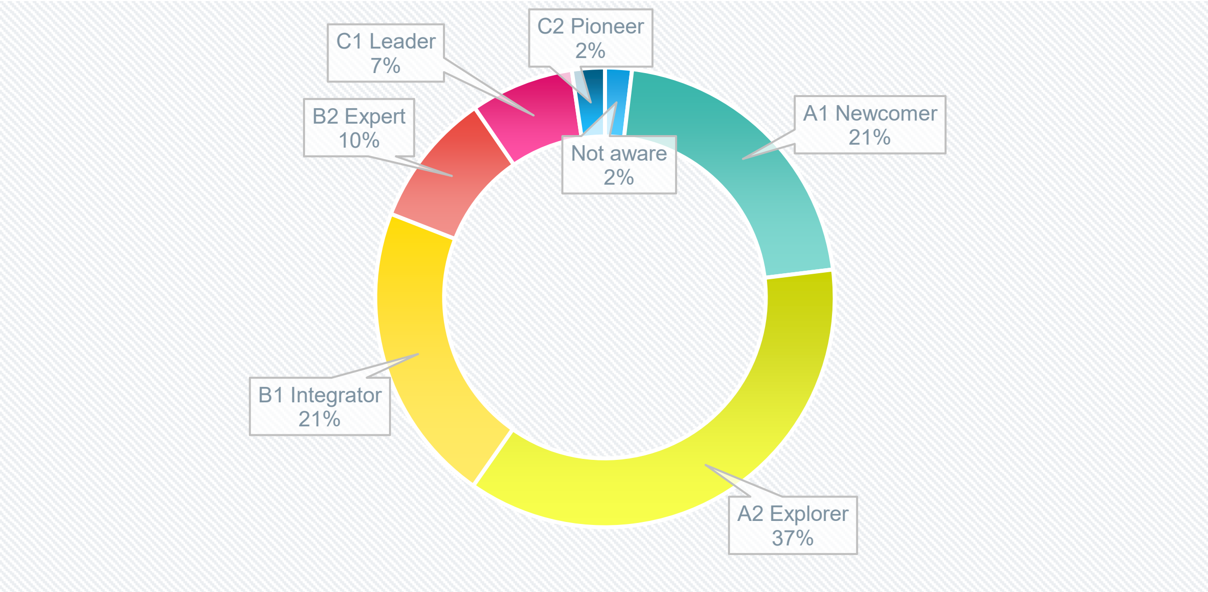
### 4.4.2 STEM-related variables

The section presents the analysis of teachers' responses related to the use of digital technologies in STEM education and the application of digital tools for creative and IBL/PBL project-based learning. As these questions were administered only to teachers from specialised profile schools included in the self-representative stratum (30 schools), the results are based on a subsample and should be interpreted with caution, particularly regarding their generalizability to the overall teacher population. The analysis is based on valid responses representing approximately 7.0–7.5% of the total sample of teachers (N = 8,091).

The analysis of the use of digital technologies in STEM education is based on 605 teachers (7.5% of the full sample) who provided valid responses. The distribution indicates that most respondents are concentrated at early and intermediate levels of competence (Figure 32). The largest share is observed at the Explorer level (36.7%), suggesting that over one-third of teachers have already experimented with digital tools in STEM teaching. This is followed by Newcomers (21.2%) and Integrators (21.2%), indicating a relatively balanced distribution between initial awareness and more regular use.

At higher levels, 9.5% of teachers identify as Experts, while 7.3% and 2.3% report Leader and Pioneer levels, respectively. These results point to a limited but notable group of advanced users who are able to critically select tools or contribute to innovation in STEM education. The proportion of respondents reporting no awareness (1.9%) remains very low.

**Figure 32. Digital technologies usage in STEM education**

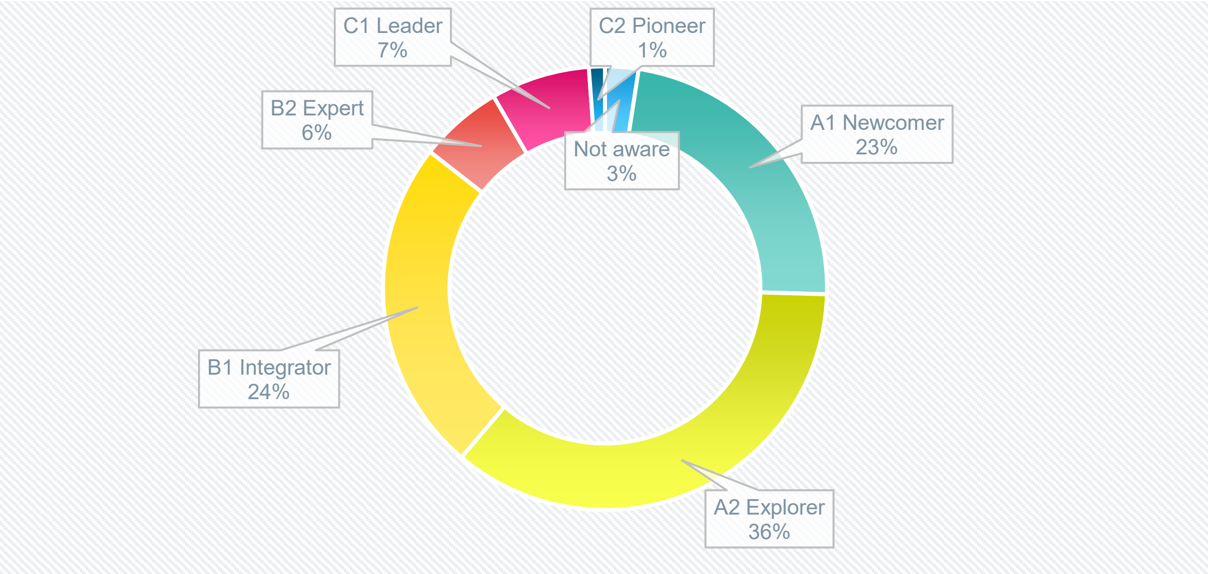



Overall, the findings suggest that while experimentation with digital STEM tools is relatively widespread within the subsample, the transition to systematic and advanced use remains limited, with most teachers (60%) positioned at exploratory or early integration stages.

Responses for the dimension on digital tools for creative and project-based learning in STEM were provided by 564 teachers (7.0% of the full sample). The distribution follows a similar pattern, with a strong concentration at lower and intermediate competence levels (Figure 33). The largest group is again at the Explorer level (35.8%), indicating that many teachers have begun to use digital tools to support project-based or creative STEM activities. This is followed by Integrator-level respondents (24.4%), suggesting that around one-quarter of teachers regularly incorporate such tools into their teaching practice.

A further 23.0% of teachers are at the Newcomer level, reflecting awareness but limited experience in applying digital tools for creative or project-based learning. At higher levels, only 6.1% of respondents identify as Experts, while 7.2% and 1.2% report Leader and Pioneer levels, respectively. Compared to general STEM technology use, this indicates even more limited progression to advanced and innovative practices in project-based contexts. The share of teachers with no awareness (2.4%) remains low but slightly higher than in the previous dimension.

### Figure 33. Digital tools for creative and project-based learning in STEM




Overall, the results suggest that the use of digital tools for creative and project-based/ problem-based/ inquiry-based learning in STEM is still emerging, with most teachers at early stages of adoption and relatively few demonstrating advanced pedagogical integration.

### Summary Findings on digital technologies in STEM education

Across both dimensions (Figure 34, Figure 34(a)), several consistent patterns can be observed:

- Teachers' digital competences are predominantly concentrated at the Explorer and Integrator levels, indicating initial adoption and partial integration of digital technologies in STEM.
- A substantial proportion of respondents remains at the Newcomer level, particularly in project-based and creative applications.
- Advanced levels (Expert, Leader, Pioneer) are present but limited, pointing to restricted diffusion of innovative STEM practices.
- The relatively small number of valid responses reflects the restricted sample, which limits broader generalisation but still provides valuable insights into practices within specialised STEM contexts.

### Figure 34. Usage of Digital tools in STEM (per levels)

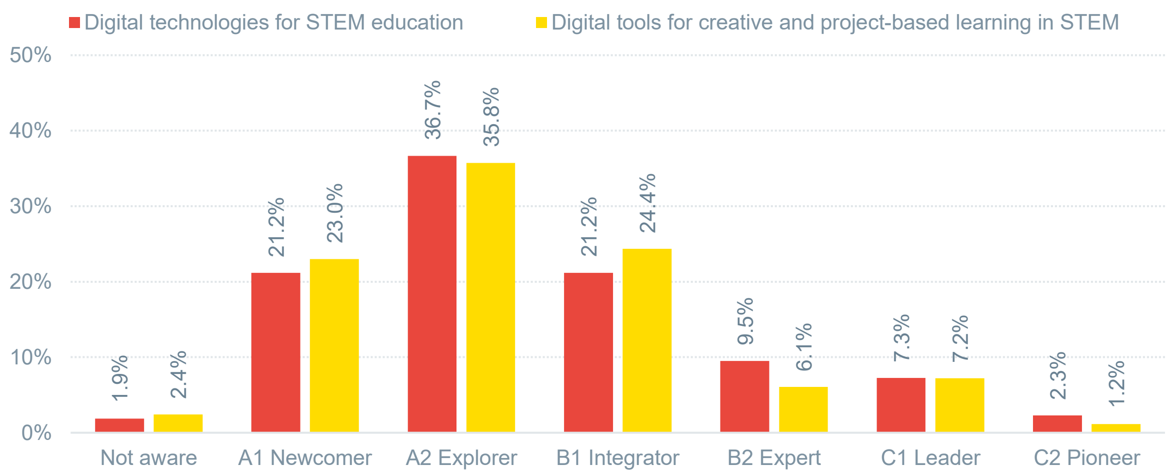
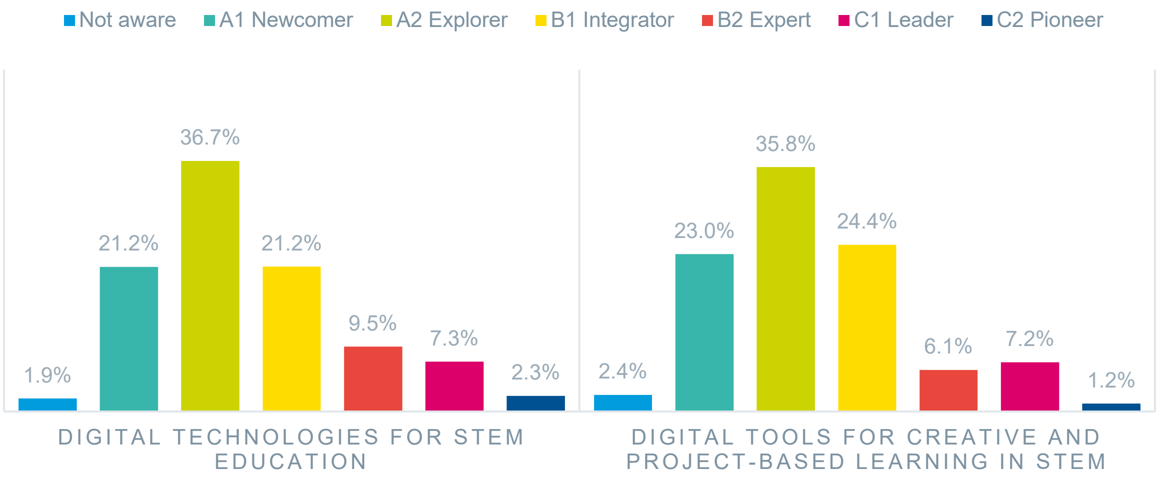


**Figure 34(a). Usage of Digital tools in STEM (per components)**




Overall, the findings indicate that while digital technologies are increasingly present in STEM education, their systematic, creative, and innovation-oriented use remains at an early stage, highlighting the need for targeted support in developing advanced pedagogical approaches within STEM teaching.

### Conclusions on teachers' digital competences related to integration of digital technologies in STEM and profile education

The analysis shows that in specialised STEM profile schools; the integration of digital technologies is emerging but not yet mature. Most teachers operate at Explorer and Integrator levels, indicating initial adoption and partial use, while advanced, innovative, and creative applications remain limited. This suggests that although access and awareness are improving, systematic, pedagogically meaningful use of digital technologies in STEM is still developing, particularly in project-based and creative learning contexts.

### Targeted messages related to STEM for further consideration:

- **For Ministry of Education and Science of Ukraine**
  - Prioritise national CPD programmes focused on advanced DigCompEdu STEM practices (project-based, inquiry-based, interdisciplinary learning).
  - Develop guidelines and exemplars of high-impact digital STEM pedagogy aligned with profile school reform.
  - Support scaling of pilot schools as innovation hubs for peer learning.
- **For Regional Authorities**
  - Establish regional STEM digital competence hubs to provide hands-on teacher training and mentoring.
  - Facilitate communities of practice to share effective use of digital tools in STEM.
  - Monitor progress using DigCompEdu-based indicators, with focus on progression beyond Explorer level.
- **For School Heads**
  - Embed digital STEM innovation in school development plans.
  - Allocate time and incentives for teacher collaboration and experimentation (e.g. project-based learning).
  - Identify and support teacher leaders to mentor peers and drive internal capacity building.

# 5. REGIONAL ANALYSIS

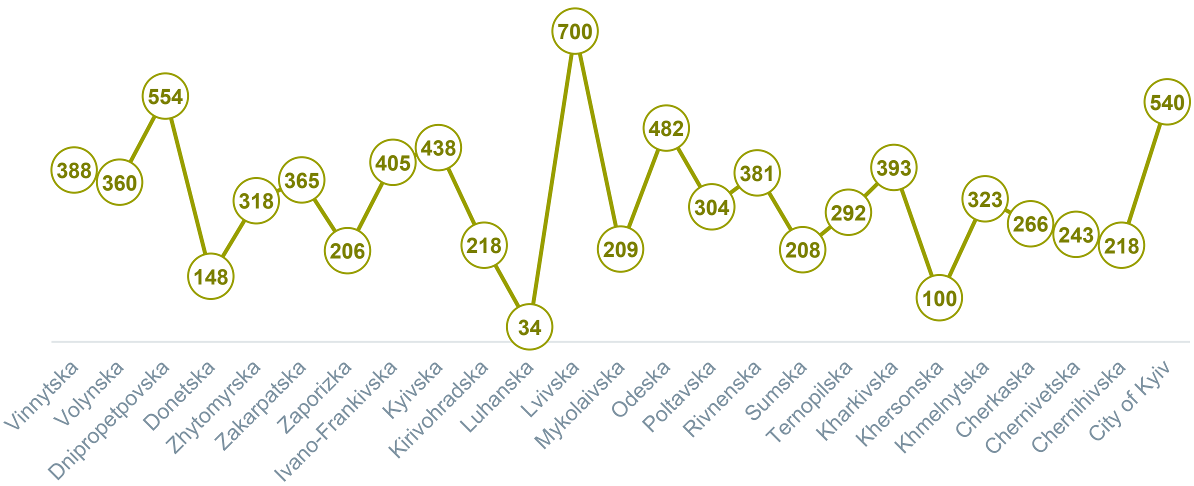
This chapter presents the regional analysis of teachers' digital competence across Ukraine, including both digital competence outcomes and key background characteristics of respondents, providing an overview of how these vary across oblasts[8].

## 5.1 Regional Distribution of Respondents

The analysis is based on a final sample of 8,091 teachers from 397 schools, covering all regions of Ukraine. The distribution of respondents reflects the structure of the education system and the applied weighting procedure, ensuring representativeness at both national and regional levels.

The number of respondents varies across regions (Figure 35), reflecting differences in population size and school networks. Larger regions contribute to approximately 300 – 600 teachers, medium-sized regions around 200–350 respondents, while smaller or more affected regions include 100 – 200 respondents. Despite this variation, all oblasts are sufficiently represented to support reliable analysis. While larger samples allow for more stable estimates across multiple dimensions, results in regions with smaller samples remain robust at aggregate level, though more detailed subgroup analysis should be interpreted with caution.

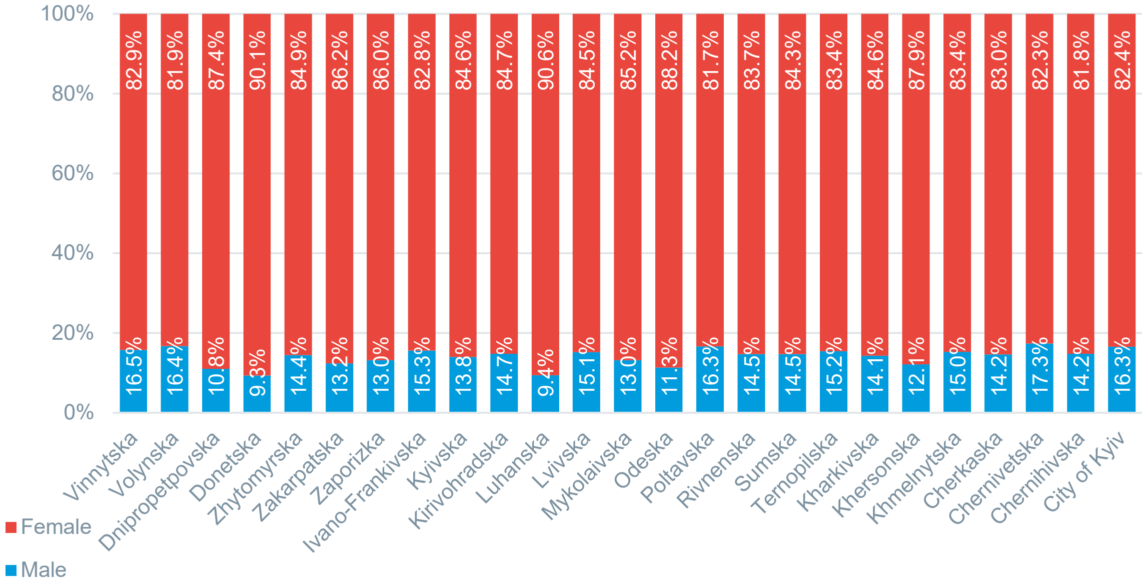
**Figure 35. SELFIE participated teachers by regions**




The gender composition of the teaching workforce (*Figure 36*) is highly consistent across regions and closely mirrors national patterns. In every region, women constitute the clear majority, typically between 82% and 88%. Only a few oblasts deviate slightly from this pattern. Luhanska stands out with the highest share of female teachers (90.6%), while Chernihivska shows the highest proportion of male teachers (18.3%). Despite these differences, gender remains one of the most stable characteristics across regions and does not appear to influence regional variation in digital competence.

[8] The regional analysis should be interpreted in light of the key findings on regional differences and educational risk levels, as detailed in Chapter 1.4.

**Figure 36. Teachers' gender by regions**

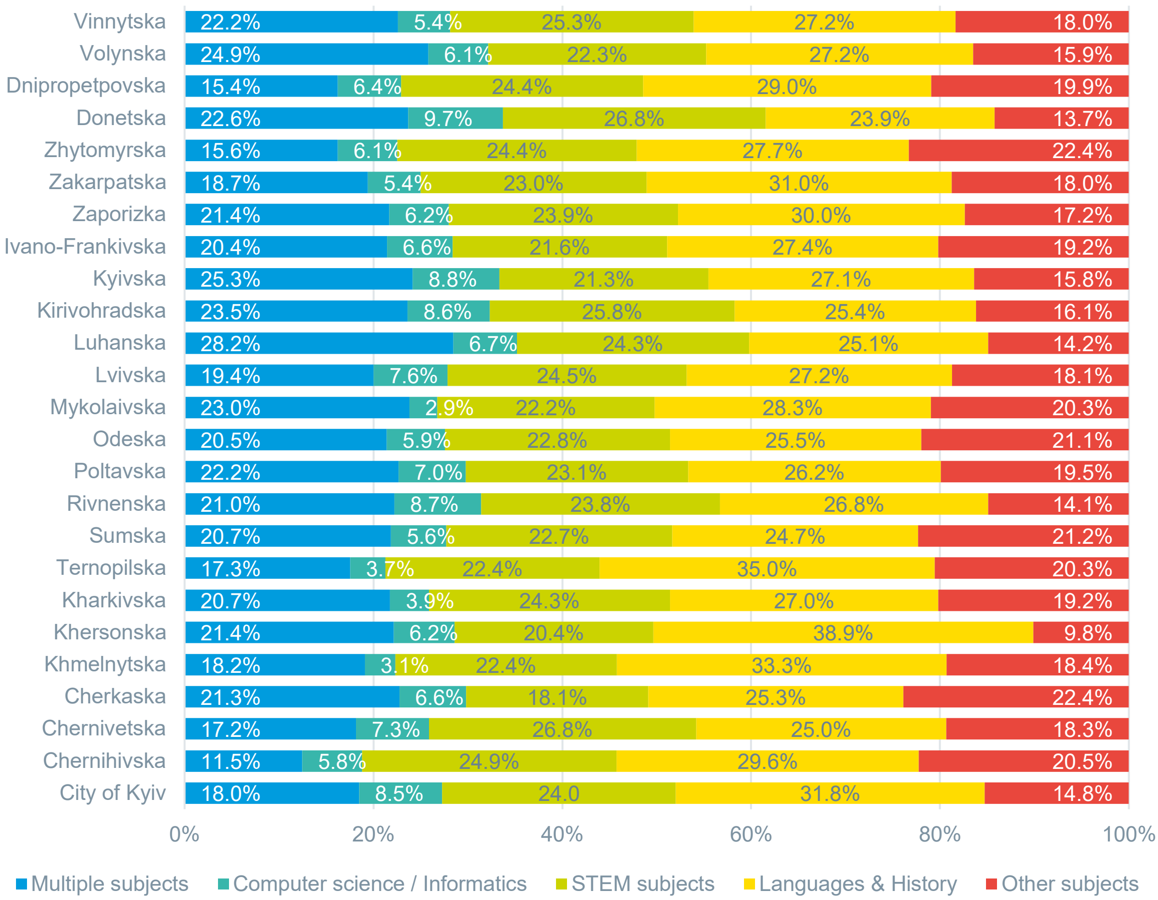



The original SELFIE dataset includes more than twenty individual subjects, which for the national level analysis were organised into nine subject groups to reflect the full diversity of teaching specialisations. For regional analysis, however, these nine groups proved too detailed, with several categories having very small sample sizes in individual oblasts. To ensure analytical robustness and comparability across regions, these national level groups were merged into five valid broader groups:

1. Multiple subject teachers (incl. teachers at primary school).
2. Computer science and informatics.
   a. STEM subjects (combines Math, Physics, Chemistry, Biology and Geography);
   b. Languages and history (both Mother tongue and Foreign);
   c. Other subjects (incl. Social, Political Science, Arts, Physical Education, etc.); and
   d. Undefined (combines “do not teach” respondents and those that refused to say).

Another cause for this grouping was the national level findings, which showed that meaningful differences in digital competence emerge only in some subjects. These five groups capture the main structural distinctions in teachers’ exposure to digital tools (Figure 37).

**Figure 37. Main subject of teaching by regions**

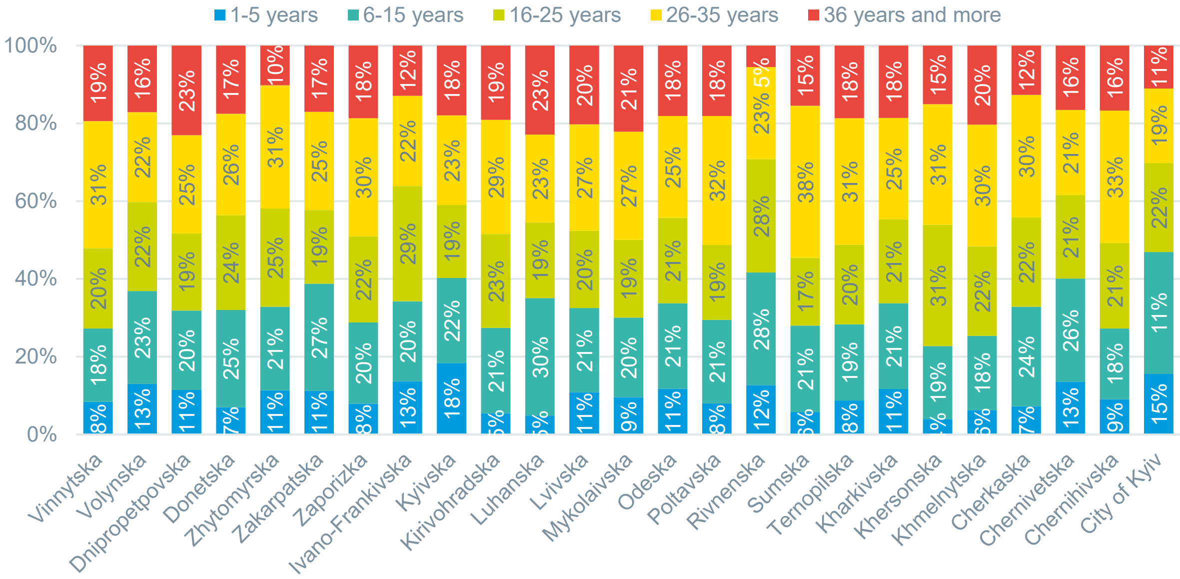



The distribution of teachers across the subject groups shows clear structural differences between regions and reflects distinct patterns in school organisation, staffing, and subject specialisation. Multiple subject teachers range from 11.5% in Chernihivska to 28.2% in Luhanska, with most oblasts falling between 18% and 24%. Higher shares in Luhanska, Kirovohradska and Kyivska suggest more flexible staffing structures, while lower shares in Chernihivska and Ternopilska indicate more specialised teaching profiles. The share of computer science and informatics teachers varies more sharply, from 2.9% in Mykolaivska to 9.7% in Donetska, with Kyivska, Rivnenska and Kirovohradska also showing elevated levels (around 8–9%). These regions have a comparatively stronger internal digital specialist capacity, while oblasts with lower shares may rely more on generalist teachers for digital integration. STEM subjects are relatively stable across regions, typically between 22% and 25%, but with notable peaks in Kirovohradska (25.8%), Chernivetska (25.0%), and Chernihivska (24.9%), and lower levels in Ivano Frankivska (21.6%) and Ternopilska (22.4%). The languages and history group shows the widest variation, ranging from 23.3% in Donetska to 38.9% in Khersonska, with Ternopilska and Khmelnytska also showing high concentrations (above 33%). These regions have a stronger humanities orientation, which may influence the types of digital tools used in teaching. Finally, the other subjects group ranges from 9.8% in Khersonska to 22.4% in Zhytomyrska and Cherkaska, reflecting differences in curriculum emphasis and staffing availability.

Taken together, these patterns show that regions differ not only in the concentration of digital specialist teachers but also in the broader subject composition of their teaching workforce. Regions with higher shares of computer science and STEM teachers – such as Donetska, Kyivska, Rivnenska and Kirovohradska tend to have stronger internal drivers for digital adoption. In contrast, oblasts with a stronger humanities profile or fewer digital specialists, such as Khersonska, Ternopilska and Mykolaivska, may require more targeted support to strengthen digital competence. These structural differences provide essential context for interpreting regional variation in digital readiness and digital competence outcomes.

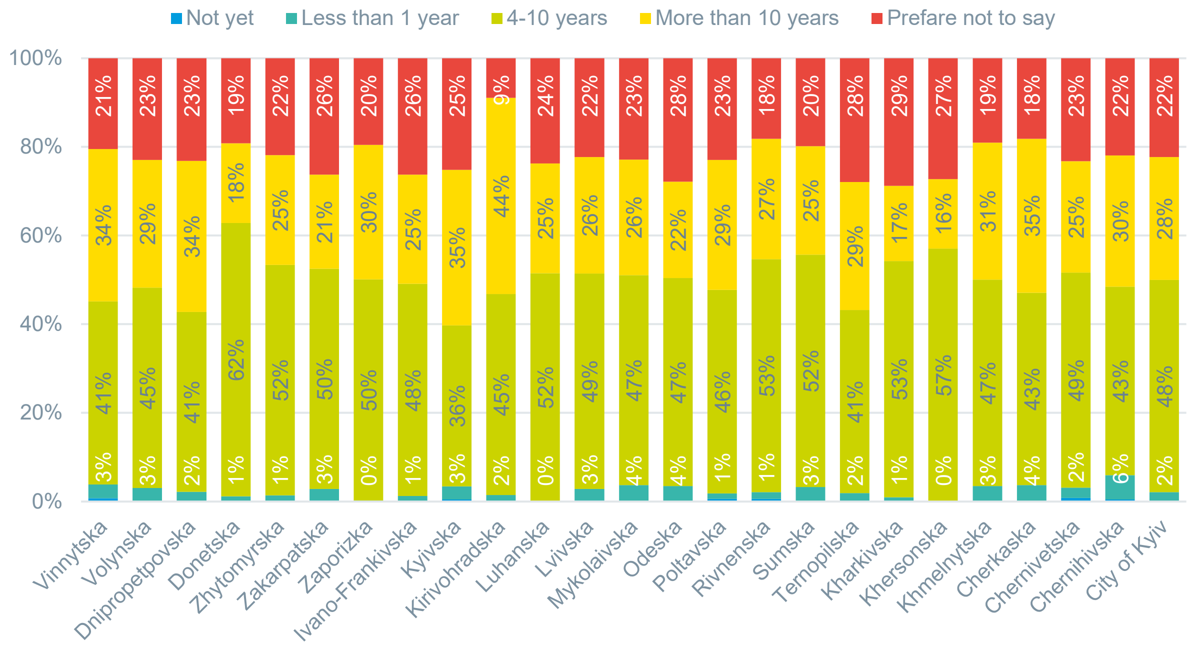
Teaching experience is consistently high across all regions, with most oblasts characterised by a mature and stable workforce (Figure 38). In many regions, more than half of the teachers have over 15 years of experience. However, the distribution varies in meaningful ways. Luhanska has the highest share of very experienced teachers (23% with more than 36 years), while Donetska has the lowest share of this group (5.3%), reflecting the impact of displacement and workforce turnover. The proportion of early career teachers (1–5 years) also varies, from around 18% in Kyivska to below 4% in Khersonska, suggesting recruitment challenges in some areas.

**Figure 38. Years of experience in teaching w/ digital technologies by regions**




Experience with digital technologies shows the greatest regional variation (Figure 39). In most oblasts, teachers with 4–10 years of digital experience form the largest group, typically between 41% and 53%. Rivnenska stands out with the highest share of mid-experienced digital users (53.3%), indicating strong uptake over the past decade. The share of teachers with more than 10 years of digital experience ranges widely: Odeska has the highest proportion (28.8%), suggesting early integration of digital tools, while Kyivska has the lowest (18.1%), likely reflecting a younger workforce. Across all regions, the share of teachers with no digital experience is extremely small, confirming that digital technologies have become a standard part of teaching practice nationwide.

**Figure 39. Experience of using digital technologies in teaching by region (years)**




Overall, regional patterns are broadly consistent, with differences largely reflecting structural characteristics of local education systems. A few oblasts stand out: Luhanska with its unusually high share of female, computer science, and highly experienced teachers; Ternopilska with the strongest STEM orientation; Rivnenska with the highest proportion of mid experienced digital users; Odeska with the highest share of highly experienced digital users; Khersonska with the lowest share of early career teachers; and Donetska with the lowest share of very experienced teachers. These deviations provide important context for interpreting regional differences in digital competence outcomes.

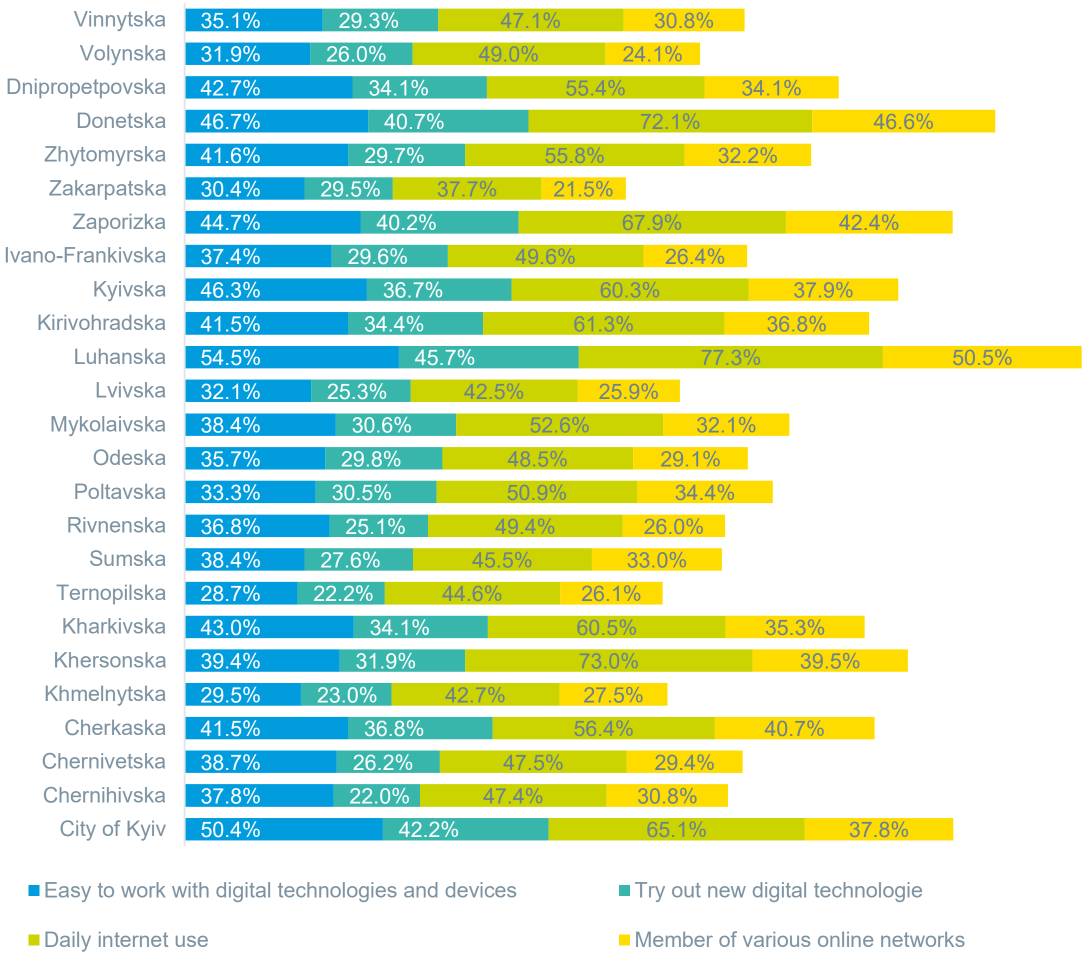
Across regions, teachers' experience with digital technologies shows substantial variation (Figure 40), reflecting differences in both experience and confidence. The share of teachers who find it easy to work with digital technologies ranges widely: while most oblasts fall between 32% and 44%, several regions stand out. Luhanska (54.5%), City of Kyiv (50.4%), and Donetska (46.7%) show the highest levels of strong confidence, indicating a more digitally mature workforce. At the lower end, Zakarpatska (30.4%), Khmelnytska (29.6%), and Ternopilska (28.7%) report the smallest shares of teachers who strongly agree, suggesting more limited digital familiarity.

A similar pattern appears in teachers' willingness to try out new digital technologies. Most oblasts cluster around 26–35%, but Luhanska (45.7%), City of Kyiv (42.2%), and Donetska (40.7%) again show the strongest levels of digital experimentation. In contrast, Ternopilska (22.2%), Khmelnytska (23.0%), and Zakarpatska (22.5%) show the lowest levels, indicating more cautious or constrained adoption of new tools.

Daily internet use is widespread but varies significantly. While many oblasts fall between 47–56%, several regions show exceptionally high levels: Luhanska (77.3%), Khersonska (73.0%), and Donetska (72.1%). These high-intensity users likely reflect both necessity and digital integration in teaching. At the lower end, Zakarpatska (37.7%), Khmelnytska (42.7%), and Lvivska (42.5%) show more moderate levels of daily use.

Participation in online networks – a proxy for digital engagement beyond teaching – also varies. Most oblasts fall between 26-34%, but Luhanska (50.8%), Donetska (46.6%), and Zaporizka (42.4%) show the highest levels of strong agreement. Lower levels in Zakarpatska (21.5%), Ternopilska (26.1%), and Khmelnytska (27.7%) suggest more limited involvement in digital professional communities.

**Figure 40. Strong agreement with everyday use of digital technologies by region**



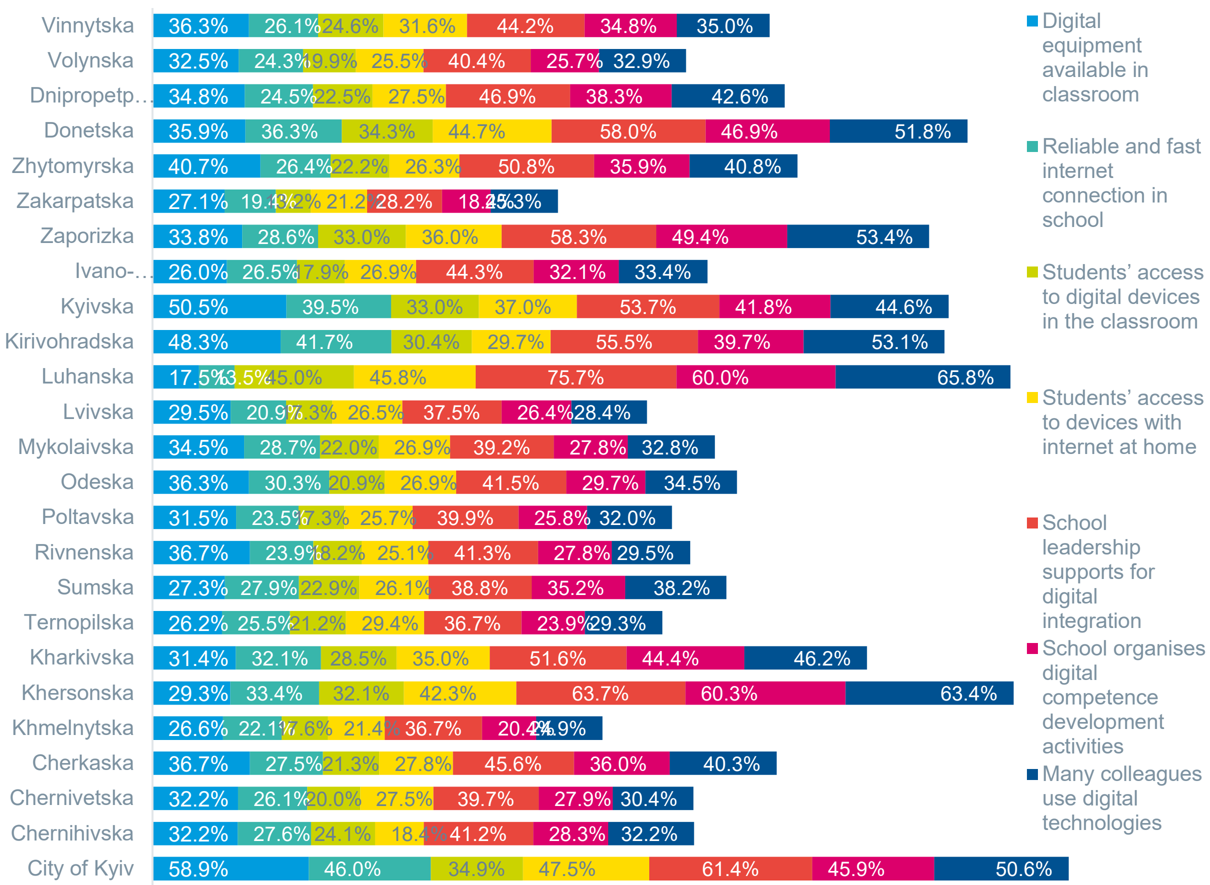

Taken together, these patterns indicate that regions such as Luhanska, Donetska, and City of Kyiv display the strongest digital confidence and behavioural indicators associated with longer digital experience. In contrast, oblasts such as Zakarpatska, Ternopilska, and Khmelnytska show consistently lower levels across indicators, suggesting more limited digital readiness. These behavioural differences provide important context for interpreting regional variation in digital competence and the depth of digital integration in teaching practice.

The use of digital technologies and the quality of the school's digital environment vary substantially across regions (Figure 41). Access to digital equipment in classrooms is generally moderate, with most oblasts clustering around 45–52%, but several regions deviate from this pattern. Lvivska (52.5%), Kyivska (50.4%), and Ternopilska (50.0%) report the strongest availability, while Donetska (37.3%) and Zakarpatska (40.3%) show more limited access. A similar pattern appears in the availability of a reliable and fast internet connection in schools. Most oblasts fall between 41–47%, but Luhanska stands out with exceptionally high agreement (77.3%), indicating unusually strong infrastructure, whereas Donetska (25.0%) and Khersonska (33.3%) report the weakest connectivity.

Students' access to digital devices in the classroom is also uneven. While many regions fall between 47–52%, Lvivska (53.4%) and Ternopilska (52.4%) show the highest levels of access, whereas Donetska (41.0%) and Zakarpatska (42.0%) remain below this range. Access to devices with internet at home is generally higher, with most oblasts between 55–61%, but again Ternopilska (61.0%) and Rivnenska (57.4%) show the most favorable conditions while Donetska (49.7%) and Zaporizka (51.0%) fall behind.

Supportive school environments also differ across regions. School leadership support for digital integration is strong in most oblasts (around 50–60%), but Luhanska (59.9%) shows the highest concentration of strong agreement, while Khersonska (46.3%) and Zakarpatska (47.0%) show more modest levels. The organisation of digital competence development activities is relatively consistent across regions, typically between 45–55%, though Luhanska (57.3%) and Kyivska (54.0%) stand out positively, while Khersonska (41.7%) and Donetska (42.0%) show lower levels of structured support.

**Figure 41. Strong agreement with digital environment in schools by region**



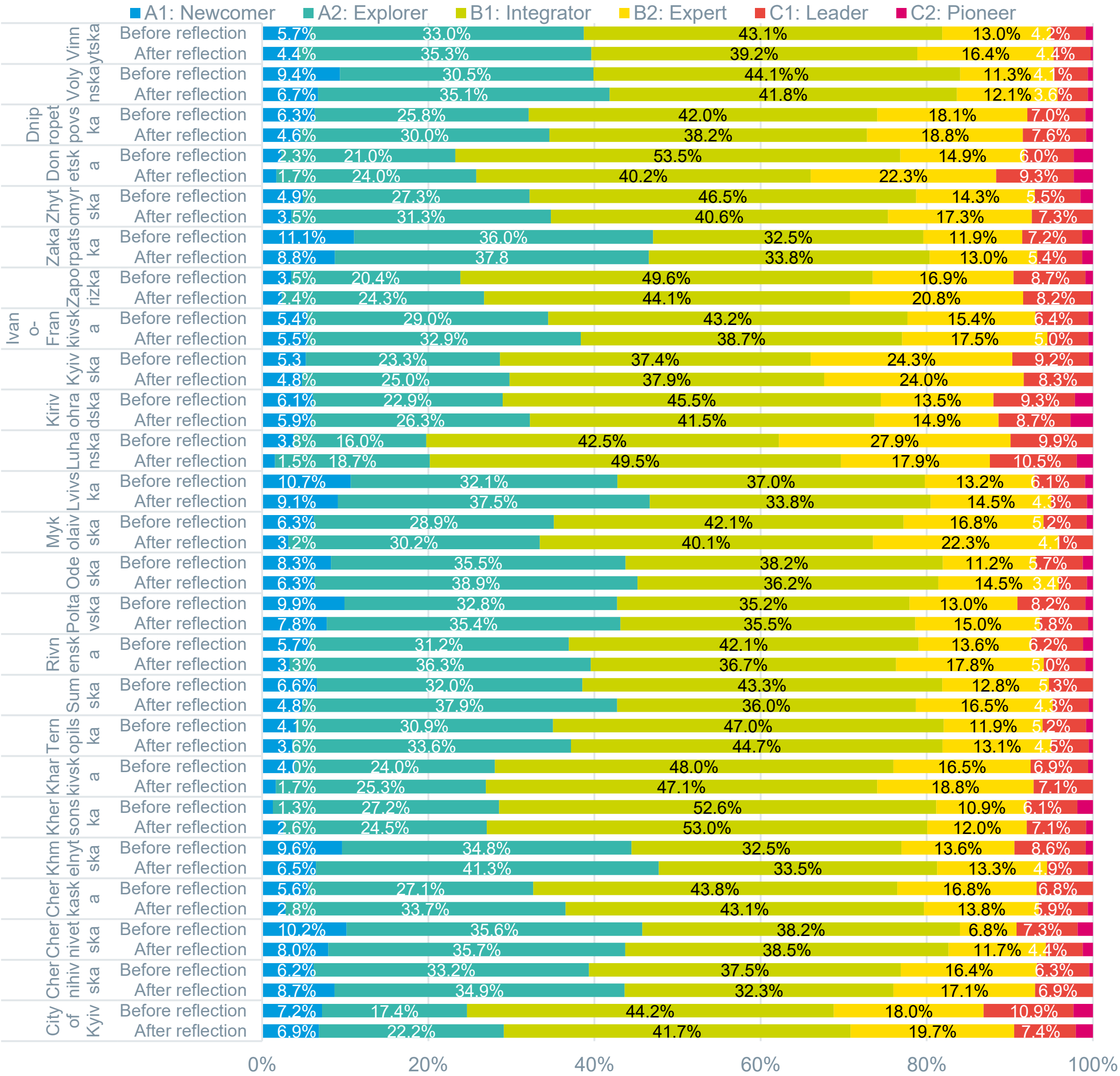

Finally, the perception that many colleagues use digital technologies varies widely. Most oblasts fall between 55–64%, with Rivnenska (64.0%) and Lvivska (62.0%) showing the strongest peer digital engagement. In contrast, Donetska (49.0%) and Khersonska (50.0%) report lower levels, suggesting weaker peer driven digital culture.

## 5.2. Regional Outlook in Digital Competence

This section presents regional differences in teachers' self-assessment before and after reflection, followed by oblast level results for overall digital competence and the six DigCompEdu areas. The SELFIE for Teachers tool is as a self-reflection instrument. The results thus do not serve as a basis for comparative evaluation between regions. Instead, they offer a descriptive picture of how teachers in each oblast perceive their digital competence and the areas where they feel more or less confident. The same SfT scoring logic used at national level applies to all regions, with competence levels ranging from A1 – Newcomer to C2 – Pioneer, based on the total number of points achieved.

Across all oblasts, the distribution of competence levels before and after reflection (Figure 42) follows the same pattern observed nationally. Before reflection, the majority of teachers in every region place themselves at the Integrator (B1) level, with shares typically between 37% and 47%. Explorer (A2) is the second largest group, while only a small proportion of teachers identify as Leaders (C1) or Pioneers (C2).

**Figure 42. Teachers' self-assessment of digital competence BEFORE and AFTER reflection by region**




After completing the reflection process, teachers in all oblasts tend to reassess their practices more critically. The share of teachers identifying as Explorers (A2) increases in most regions, while the proportion identifying as Integrators (B1) decreases slightly. A modest increase in the Expert (B2) category is also visible in many oblasts, suggesting that some teachers recognise more advanced practices after reviewing the competence descriptors. At the same time, the proportion of teachers identifying as Leaders (C1) or Pioneers (C2) decreases slightly, reflecting a more cautious and realistic self-evaluation.

These changes suggest that teachers across regions reassess their practices more critically after reviewing the competence descriptors. The strongest increases in the Expert (B2) category are observed in Donetska, Zaporizka, Khersonska and Luhanska, regions that also show the highest overall competence scores. In contrast, oblasts such as Zakarpatska, Khmelnytska and Odeska show smaller shifts, consistent with their lower overall digital competence levels.

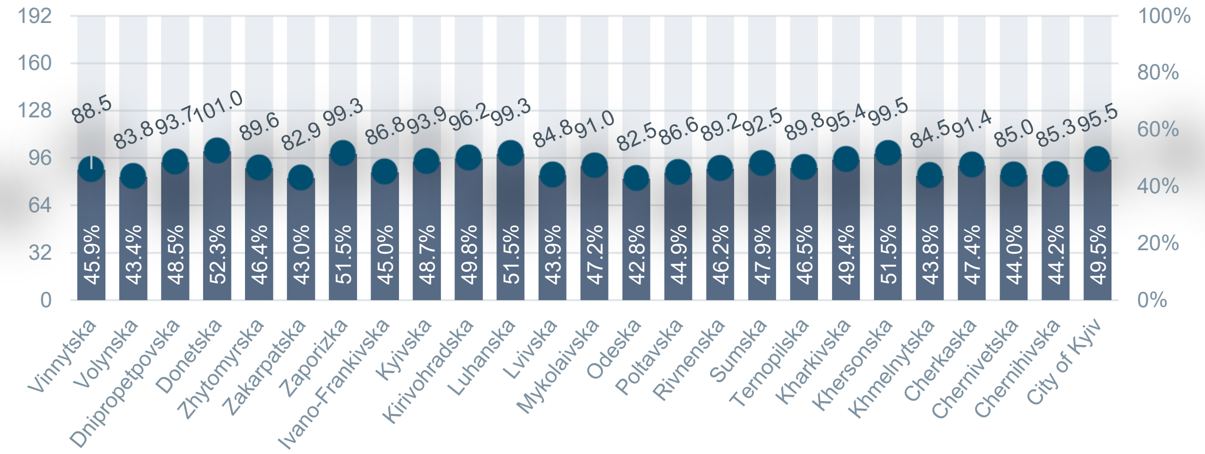
### 5.2.1. Overall digital competence level by regions

As in the national analysis, oblast level results are presented using the SELFIE for Teachers scoring scheme and the six proficiency levels of the DigCompEdu framework. These levels are based on the total number of points achieved:

- A1 – Newcomer: 0 – 32 points
- A2 – Explorer: 33 – 64 points
- B1 – Integrator: 65 – 96 points
- B2 – Expert: 97 – 128 points
- C1 – Leader: 129 – 160 points
- C2 – Pioneer: 161 – 192 points

The analysis examines overall digital competence across oblasts, considering both the mean number of points achieved and the percentage of the maximum score. This provides a comparative overview of how teachers position themselves within the proficiency levels and how these patterns vary across regional contexts (*Figure 43*).

**Figure 43. Overall digital competence by regions**




Across oblasts, mean overall digital competence scores range from about 82.5 to 101.0 points, corresponding primarily to the B1 – Integrator level, with several regions reaching the B2 – Expert threshold. This confirms a broadly consistent national pattern, where teachers report regular and functional use of digital technologies in their professional practice. These differences should be read as descriptive signals of local circumstances – such as the intensity of remote or blended teaching, the availability of infrastructure, and the scope of professional development – rather than comparative judgments.

Teachers in Donetska (101.0 points), Khersonska (99.5 points), Zaporizka (99.3 points), Luhanska (99.3 points), and Kirovoohradska (96.2 points) place themselves near the B2 – Expert level. In these contexts, teachers describe more flexible and confident use of digital tools, which is associated with prolonged reliance on distance and blended learning formats, which in turn has likely contributed to more intensive use of digital tools and the development of practice-based digital competences. Conversely, several oblasts report mean scores closer to the lower end of the Integrator band: Odeska (82.5 points), Zakarpatska (82.9 points) and Volynska (83.8 points). These values remain within B1 but indicate that teachers in these regions typically report routine use of digital technologies for lesson delivery, communication, and adaptation of learning materials, while more advanced pedagogical applications remain less widespread.

From a policy and practice perspective, the regional picture points to two practical implications. First, the widespread placement of teachers at the Integrator level suggests that national professional development can build on an existing base of routine digital use, focusing on pedagogical deepening – particularly in assessment practices and in facilitating learners' digital competence. Second, regional variation highlights the need for differentiated support: regions closer to the Expert level may benefit from scaling and sharing advanced practices, while those at the lower end of the Integrator range may require targeted support in infrastructure and practice-oriented training.

Overall, the regional results provide a coherent picture of teachers' digital competence across Ukraine. They serve as a basis for context-sensitive policy design, supporting both system-wide development and targeted interventions where structural constraints remain.

### 5.2.2. Variation across DigCompEdu competence areas (regional component)

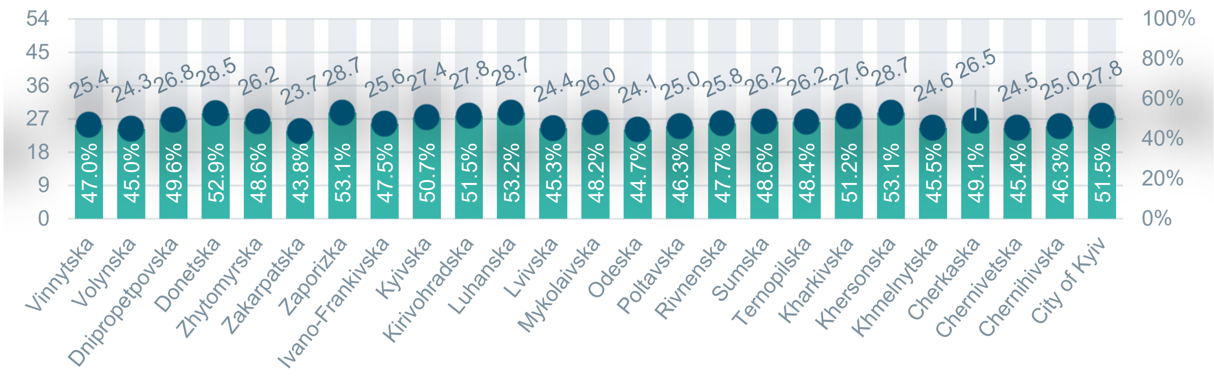
Across the six DigCompEdu areas, oblast level results mirror the national pattern: most teachers place within the B1 – Integrator level, with some variation in specific areas. The mean scores, however, show where teachers feel more confident and where they see room for further development.

#### Professional Engagement (A1)

Most oblasts report scores in the range of 25–27 points (out of 54), placing them in the upper part of the B1 – Integrator level (18–27) and close to the B2 threshold (28+). This indicates a relatively high overall level of professional digital engagement across regions (*Figure 44*). Eight regions have already reached the B2 – Expert level, including Luhanska, Zaporizka, Khersonska, Donetska, the city of Kyiv, Kirovohradska, Kharkivska and Kyivska oblasts (around 27.4–28.7 points). The highest values were observed in Luhanska, Dnipropetrovska and Khersonska oblasts (around 28.7 points). This reflects stronger confidence in using digital tools for communication, collaboration, and professional learning. All remaining oblasts remain within the B1 level, but are mainly positioned in its upper range, indicating that professional digital engagement is broadly developed and close to the transition towards B2 in many regions. The lowest scores are observed in Zakarpatska and Odeska oblasts (around 23.7–24.1 points). Although still within B1, these values are closer to the mid-range of the level, suggesting comparatively lower intensity of digital engagement in professional activities.

Overall, the results show a generally strong baseline of professional engagement across regions, with a sizeable group already at Expert level and the majority of oblasts concentrated near the upper boundary of B1. Strengths include widespread participation in digital professional collaboration and learning, while weaknesses relate mainly to uneven intensity of engagement and a smaller number of regions remaining in the mid-range of B1.

**Figure 44. Professional Engagement by regions**

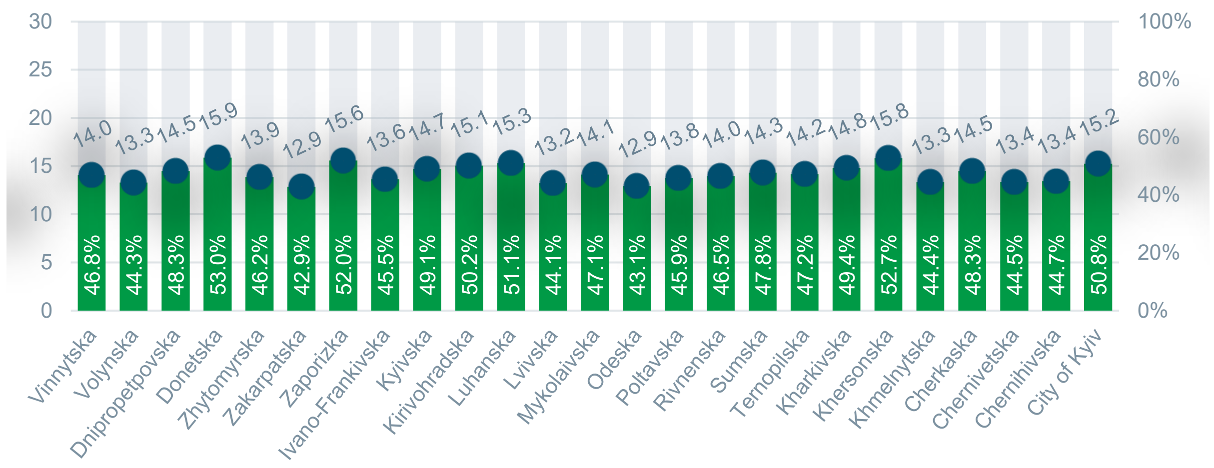



## Digital Resources (A2)

Scores typically cluster around 13–15 points (out of 30), corresponding to the B1 – Integrator level (10–15). Overall, the distribution shows that six regions have already reached the B2 – Expert level (Figure 45), indicating stronger capacity in finding, creating and adapting digital resources. These regions include Donetska, Khersonska, Zaporizka, Luhanska, Kirovohradska oblasts and the city of Kyiv, with scores ranging from approximately 15.1– 15.9 points. This suggests a higher level of confidence and more advanced practices in the use of digital resources in teaching. The majority of oblasts are positioned close to the boundary between B1 and B2, remaining within B1 but generally concentrated in its upper range. This indicates that most regions are relatively close to advancing towards the Expert level. The lowest values are observed in Zakarpatska and Odeska oblasts (around 12.9 points). Nevertheless, these still remain within the upper part of B1 level, suggesting that digital resource use is established but less consistently developed compared to leading regions.

Overall, the results indicate a relatively strong baseline across regions, with a clear group already at Expert level and the majority positioned near the upper threshold of B1. Strengths are reflected in the broad adoption of digital resources and the presence of high-performing regions, while weaknesses relate mainly to uneven depth of practice and slower progression towards full B2-level integration in some oblasts.

**Figure 45. Digital Resources by regions**

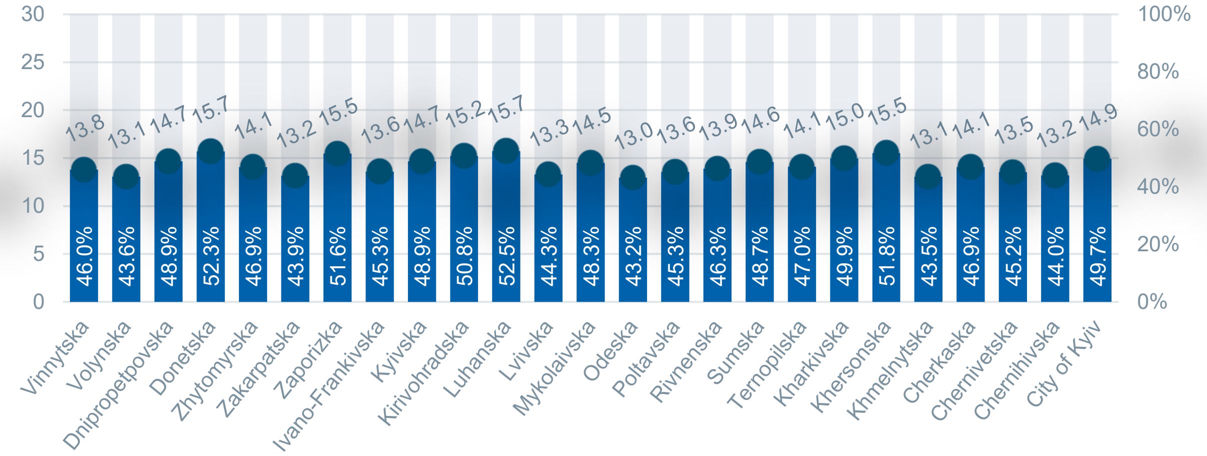



## Teaching and Learning (A3)

Results in this area are also concentrated around 13 – 15 points (out of 30), corresponding to the upper part of the B1 – Integrator level (10–15). Overall, five oblasts have surpassed the 15-point threshold and moved into the B2 – Expert category (Figure 46), indicating a higher level of integration of digital technologies into teaching and e-learning practices. These include Luhanska, Donetska, Khersonska, Zaporizka and Kirovohradska oblasts, with scores ranging around 15.2–15.7 points. Results indicate more systematic and advanced use of digital tools in teaching processes, as well as stronger alignment with digitally enhanced instructional practices. Kharkivska oblast is positioned directly at the B1–B2 boundary, reflecting a transitional stage between Integrator and Expert levels. All remaining oblasts remain within the upper part of B1. Among them, Odeska, Khmelnytska and Volynska oblasts report the lowest values (around 13.0–13.1 points), yet still remain within the higher segment of B1, indicating generally solid but less consistent use of digital tools in teaching and e-learning activities.

Overall, the results suggest a relatively strong baseline in this competence area, with a clear subgroup of regions already operating at Expert level and the majority of oblasts concentrated in the upper range of B1. Strengths are observed in the widespread adoption of digital tools across teaching practices, while the main weakness remains uneven depth of integration between regions.

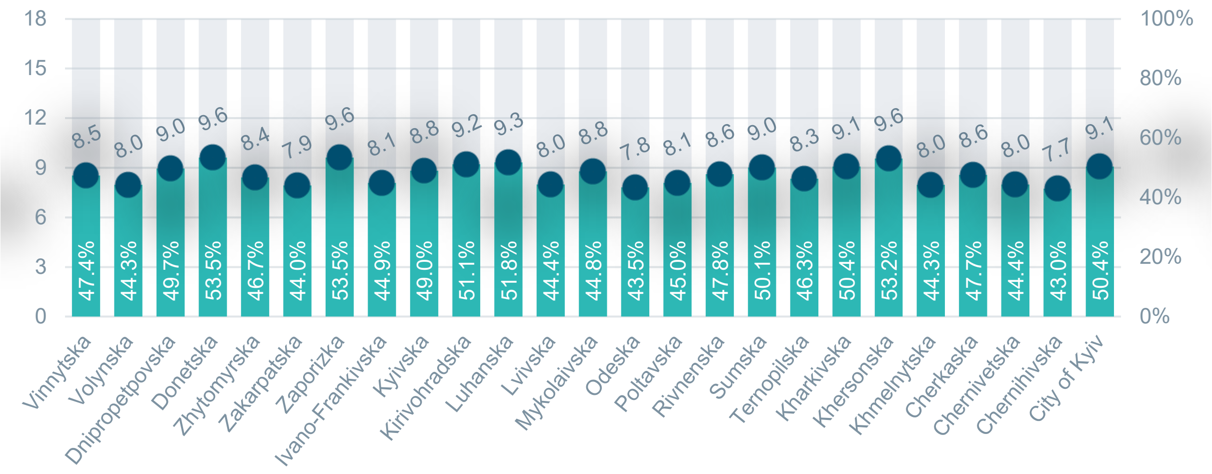
**Figure 46. Teaching and Learning by regions**




## Assessment (A4)

Scores typically range from around 7.7–9.6 points (out of 18), corresponding to the B1 – Integrator level (6–9), with some regions approaching the B2 threshold (9+points). Compared to other competence areas, a relatively large number of regions demonstrate higher levels of competence in this dimension (Figure 47), with seven regions (six oblasts and the city of Kyiv) reaching the B2 – Expert level, having surpassed the 9-point threshold. Among them, teachers in Donetska, Zaporizka, and Khersonska oblasts report the highest values (9.6 points), indicating the most advanced use of digital tools for feedback and assessment. Two regions, Sumska and Dnipropetrovska oblasts, are positioned directly at the B1–B2 boundary (9 points), reflecting a transitional stage between Integrator and Expert levels. All remaining oblasts, while still within the B1 level, are concentrated in its upper part, indicating generally strong and relatively consistent performance across regions. Even the lowest observed values, such as Chernihivska and Odeska oblasts (around 7.7–7.8 points), remain within the upper segment of B1, indicating more frequent use of digital tools for feedback and assessment, although this still remains a developing practice. Strengths include a comparatively strong overall performance across regions, with a substantial number already at or near the transition to B2 and a clear concentration in the upper part of B1. Weaknesses relate mainly to the remaining variation between regions, particularly those still positioned in the lower part of B1, indicating uneven development in the intensity and consistency of digital practices for feedback and assessment.

**Figure 47. Assessment by regions**

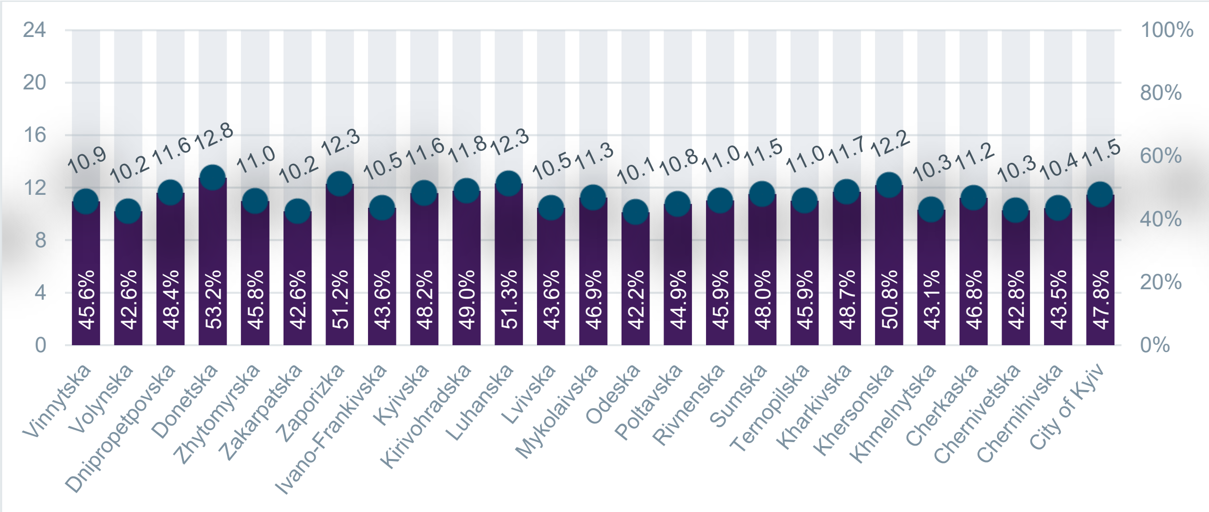



### Empowering Learners (A5)

Most oblasts report values around 10–11 points (out of 24), corresponding to the B1 – Integrator level (8–12), which remains the dominant level across regions and indicates generally developed but still consolidating use of digital tools to support learner autonomy, differentiation and inclusion (Figure 48). Higher scores are observed in Donetska, Zaporizka, Khersonska and Luhanska (range 12.3–12.8 points), which already reach or slightly exceed the B2 threshold. This places them at the transition into the Expert level, indicating stronger and more systematic use of digital tools to support learner autonomy, differentiation, and inclusion. In contrast, lower values are observed in Odeska, Volynska, and Zakarpatska oblasts (around 10.1–10.2 points). While still within B1, these scores are closer to its lower-middle range, suggesting that digital practices in this dimension are less consolidated and remain in an earlier stage of development.

Overall, most oblasts are situated within the B1 level, with a general concentration in its upper half, while a smaller group of oblasts is already approaching or entering B2. Strengths relate to a generally established capacity of teachers to use digital tools to support learner autonomy, differentiation and inclusion, with evidence of emerging more purposeful and learner-centred applications in a number of contexts. Weaknesses remain in the depth and consistency of pedagogical integration, as digital tools are not yet systematically embedded in everyday instructional practice across all regions, limiting their full potential for inclusive and differentiated learning.

**Figure 48. Empowering Learners by regions**

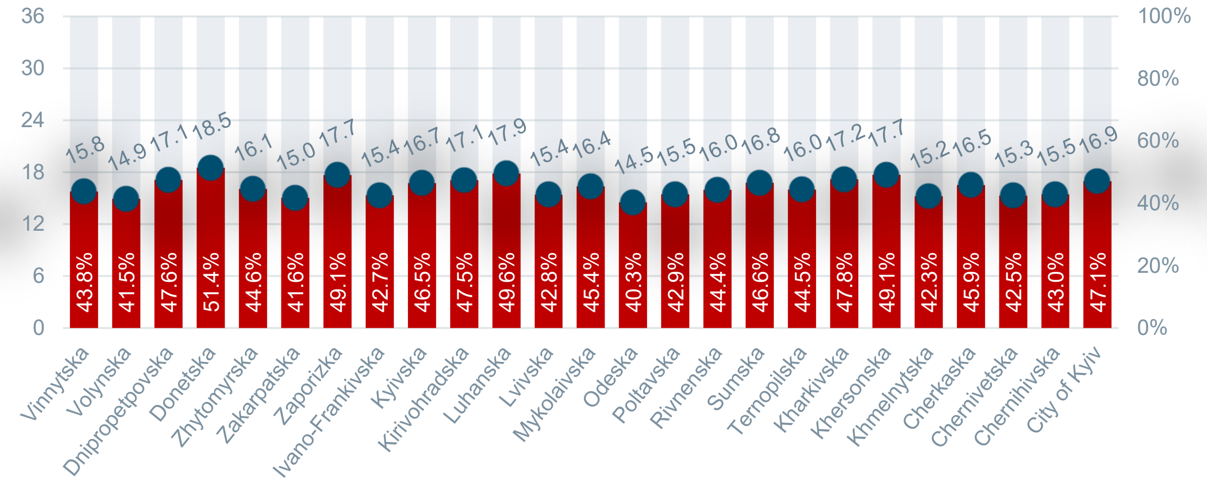


### Facilitating Learners' Digital Competence (A6)

Scores in this area range from 14.5 and 18.5 points (out of 36), corresponding to the B1 – Integrator level (13–18), making it one of the more challenging competence areas (Figure 49). Teachers in Donetska (18.5 points) have moved into the B2 – Expert level, indicating a higher degree of confidence and autonomy in supporting students' digital skills compared to other regions. Zaporizka, Khersonska, and Luhanska regions (approximately 17.7–17.9 points) remain within B1, but are positioned very close to the B2 threshold (18 points), suggesting a transitional stage with relatively strong self-assessed competence. In contrast, several regions demonstrate lower self-assessment within the B1 level. Odeska region (14.5–14.9 points) is close to the lower boundary of B1 (12 points), while Zakarpatska, Khmelnytska, and Chernivetska regions (approx. 15.0–15.3 points) also remain in the lower-to-mid range of the Integrator level.

These results suggest that many teachers feel less prepared to systematically support the development of learners' digital competence. Strengths are reflected in the presence of relatively strong self-perceived competence among a group of teachers, indicating confidence in supporting students' digital skills and a growing sense of autonomy in applying digital practices in teaching. Weaknesses relate to uneven levels of confidence and pedagogical readiness across the system, with a significant share of teachers still not fully prepared to systematically support the development of learners' digital competence, suggesting a need for further strengthening of practical, classroom-oriented digital pedagogy skills.

**Figure 49. Facilitating Learners' Digital Competence by regions**




Overall, the results on teachers' digital competence show a relatively positive and structurally balanced picture, with most oblasts positioned in the upper part of the B1 – Integrator level and a noticeable group already reaching the B2 – Expert level. In terms of overall digital competence, five regions have already moved into the Expert category, while the majority of others remain close to the upper boundary of B1, indicating a generally solid system-wide foundation with emerging advanced practices.

Across the competence areas, a relatively consistent pattern is observed in the first four domains (Professional Engagement, Digital Resources, Teaching and Learning, and Assessment), where a comparable share of regions has already reached or approached the B2 level. This suggests that teachers are increasingly confident in both the professional and pedagogical use of digital technologies, and that digital tools are becoming an established part of everyday teaching and professional practice.

In contrast, the weakest results are observed in the last two competence areas, particularly those related to more advanced pedagogical applications, such as facilitating learners' digital competence and more complex instructional use cases. Here, performance remains more concentrated within the B1 level, indicating that while basic and intermediate digital practices are well established, more transformative, and learner-centred uses of technology are still less developed.

## 5.3 Interpretation of Regional Findings

The regional analysis reveals a broadly consistent national profile of digital competence, with variation occurring primarily within the B1 – Integrator level rather than across fundamentally different levels of development. The observed differences between regions are therefore best understood as variations in context, exposure, and practice rather than disparities in underlying teacher capacity.

### Digitally advanced regions

A group of regions – notably Donetska, Zaporizka, Khersonska and Luhanska – consistently report higher overall scores and stronger performance across most competence areas. In these contexts, teachers demonstrate more intensive and confident use of digital technologies, particularly in areas such as Professional Engagement, Teaching and Learning, and Assessment. A key common feature of these regions is prolonging exposure to distance and blended learning environments, which has required teachers to rely on digital tools as a core component of teaching. This sustained and necessity driven use appears to have supported the development of more applied and practice-oriented digital competences. As a result, teachers in these regions more frequently position themselves near or within the B2 – Expert level, especially in areas linked to day-to-day digital practice.

### Regions with basic access but pedagogical gaps

In contrast, regions such as Zakarpatska, Odeska and Khmelnytska consistently report lower scores across multiple indicators, including Overall competence, confidence in everyday digital use, and several DigCompEdu areas. Importantly, these differences do not indicate a lack of access to digital technologies per se. Rather, they point to a pattern where digital use remains more basic, less frequent, and less pedagogically integrated. Teachers in these regions tend to report routine use of digital tools for communication and content delivery, but less engagement with more complex practices such as digital assessment, differentiation, and supporting learners' digital competence. This suggests that the main challenge in these contexts is not initial access, but the depth and quality of digital integration into teaching practice.

### Role of structural and contextual factors

Across all regions, differences in digital competence are closely linked to structural characteristics of the education system. Subject composition plays a key role. Regions with higher shares of computer science and STEM teachers, such as Donetska, Kyivska, Rivnenska and Kirovohradska, tend to demonstrate stronger digital competence outcomes. These teachers are more likely to use digital tools regularly and to integrate them into subject-specific pedagogy.

In contrast, regions with a stronger concentration of languages and humanities teachers, such as Khersonska, Ternopilska and Khmelnytska, may rely on different types of digital practices, which are often less intensive or less technically demanding.

Workforce structure is another important factor. Regions with a higher proportion of experienced teachers may demonstrate stable but more gradual adoption of digital practices, while regions with more dynamic or disrupted workforce patterns may experience faster shifts in digital engagement.

### Behavioural and environmental factors

Differences in digital competence are also reflected in teachers' confidence, behaviour, and school environments. Regions such as Luhanska, Donetska and the City of Kyiv consistently report higher levels of: (1) confidence in using digital technologies; (2) willingness to experiment with new tools; and (3) participation in online professional networks. These behavioural indicators are strongly aligned with higher competence scores and suggest a more mature digital culture.

At the same time, variation in school-level conditions – including access to equipment, connectivity, and institutional support – continues to shape the extent to which teachers can effectively integrate digital technologies into their practice.

### Overall interpretation

Taken together, the regional patterns point to a system where digital competence is broadly established but unevenly deepened. Teachers across Ukraine are generally confident users of digital technologies, but the transition from functional use (Integrator) to pedagogically advanced use (Expert) is uneven and strongly influenced by contextual factors, including exposure to digital teaching environments, subject specialisation, and institutional conditions.

## 5.4. Discussion (regional context)

Across all regions, the findings point to a broadly consistent pattern of teachers' digital competence, shaped by both shared strengths and common systemic constraints. These are outlined below in terms of key strengths and remaining weaknesses.

### Common strengths across Ukraine

1. Teachers demonstrate a solid foundation of digital competence, with the majority positioned at the B1 – Integrator level. This indicates that digital technologies are widely embedded in everyday teaching practice, particularly for communication, lesson delivery, and basic resource adaptation.
2. Professional Engagement (A1) emerges as the strongest competence area. Teachers across regions report high levels of confidence in using digital tools for communication, collaboration, and professional learning. This is supported by strong participation in online networks and a high degree of digital self-efficacy.
3. Teachers show a generally positive attitude towards digital technologies. High levels of confidence, frequent use of the internet, and willingness to experiment with new tools indicate a readiness to further develop digital competence.
4. The school environment provides a relatively supportive foundation. In most regions, teachers report access to digital equipment, internet connectivity, and institutional support from school leadership, creating enabling conditions for continued digital integration.

### Systemic weaknesses

1. The most significant weakness lies in the pedagogical use of digital technologies. While teachers are confident users, their practice remains largely operational rather than transformative. This is reflected in consistently lower scores in Assessment (A4) and Facilitating Learners' Digital Competence (A6). These areas require more complex and student-centred applications of digital tools, including formative assessment, feedback, and the development of learners' own digital skills. The results indicate that these practices are not yet fully embedded in teaching.
2. Empowering Learners (A5) also remains underdeveloped, suggesting limited use of digital technologies for differentiation, inclusion, and learner autonomy.
3. Another systemic challenge is the uneven depth of digital integration across regions. While access to technologies is relatively widespread, differences remain in how effectively these tools are used

in teaching. In some regions, digital technologies are used routinely but not strategically, limiting their pedagogical impact.

4. Finally, disparities in infrastructure, connectivity, and student access continue to influence outcomes. Although not the primary barrier, these factors still constrain the extent to which teachers can fully implement digital practices, particularly in more demanding pedagogical areas.

## Overall conclusion (regional context)

Ukraine has established a solid and system-wide foundation of teachers' digital competence, with digital technologies now embedded in everyday educational practice across all regions. At this stage, the core challenge is no longer ensuring access or promoting basic use but enabling a qualitative shift towards deeper and more pedagogically meaningful integration. This implies strengthening teachers' ability to use digital technologies in ways that enhance assessment and feedback, support learner-centred and inclusive approaches, and foster students' own digital competence. The strategic priority is therefore a transition from functional use towards more transformative and pedagogically impactful applications of digital tools.

The regional analysis points to a system that is broadly coherent in terms of overall competence levels yet differentiated in the depth and quality of digital integration. Most teachers across Ukraine operate at the B1 – Integrator level, indicating widespread and routine use of digital technologies. However, regional variation is not primarily a question of access or basic capability, but rather of confidence, intensity, and pedagogical sophistication.

A clear "depth gap" characterises these differences. In regions such as Donetska, Luhanska, Zaporizka, and Khersonska, teachers display more advanced and practice-oriented competences, often approaching the B2 – Expert level. This appears closely linked to prolonged exposure to distance and blended learning environments, which has accelerated the development of applied digital practices. By contrast, regions such as Zakarpatska, Odeska, and Khmelnytska show more limited and less pedagogically integrated use of digital technologies, with practices remaining largely focused on communication and content delivery rather than on more complex instructional approaches.

Across all regions, the weakest areas of competence relate to student-centred uses of digital technologies, particularly in empowering learners and supporting the development of their digital competence. This suggests that while teachers are generally confident users of technology, more advanced and transformative pedagogical applications are not yet fully embedded. These patterns reflect the influence of structural and contextual factors, including subject composition, prior exposure to digital teaching, school-level conditions, and teachers' confidence and engagement in professional networks.

Overall, the findings indicate that Ukraine has achieved a strong baseline of digital readiness, but progression towards more advanced levels remains uneven and dependent on local conditions.

## Regional Policy Notes

The regional evidence calls for a more differentiated and strategically focused approach to policy and practice, aimed at deepening the pedagogical use of digital technologies while addressing contextual variation. Rather than applying uniform measures, interventions should be adapted to regional levels of digital maturity, combining targeted support in contexts where digital use remains more basic with the systematic identification and scaling of effective practices from more advanced regions.

Professional development needs to move beyond a focus on tools and technical skills towards the pedagogical application of digital technologies. Particular attention should be given to strengthening competences in digital assessment, feedback, differentiation, and inclusion, as well as in supporting learners' own digital development. This shift requires training that is practical, classroom-oriented, and responsive to subject-specific needs, especially in non-STEM areas where digital integration may be less intensive.

At the same time, greater emphasis should be placed on strengthening school-level capacity to sustain digital innovation. This includes reinforcing digital leadership, fostering collaborative cultures among teachers, and expanding participation in professional networks that support peer learning and experimentation. Such conditions are essential for translating individual competence into consistent institutional practice.

Although access is no longer the primary constraint, enabling conditions remain important. Continued attention is needed to ensure adequate infrastructure, connectivity, and access to digital resources, aligned with teachers' capacity to use them effectively in pedagogical contexts.

Finally, a more systematic approach to monitoring and continuous improvement should be embedded through tools such as SELFIE for Teachers, enabling the tracking of regional progress and supporting evidence-based policy adjustment over time. Particular emphasis should be placed on supporting teachers' progression beyond the Integrator level, encouraging more innovative and impactful uses of digital technologies in teaching and learning.

In essence, Ukraine has successfully normalised digital use in education. The next phase requires consolidating this foundation through deeper, more consistent, and pedagogically effective integration across all regions.

# 6. STUDY CONCLUSIONS AND POLICY MESSAGES

This chapter synthesises the main findings of the study into concise and actionable policy messages intended to support evidence-informed policymaking on digital education, teacher professional development, and education system resilience in Ukraine. The conclusions are grounded exclusively in the evidence presented in this report and reflect both the national baseline and the regional and thematic analyses, including AI, STEM, and primary education contexts.

The study confirms that Ukraine has successfully normalised the use of digital technologies in education under highly challenging conditions. However, the next stage of reform requires a transition from operational digital use towards deeper pedagogical integration, learner-centred approaches, and system-wide innovation.

## Final synthesis: policy-oriented interpretation of results

The study demonstrates that Ukrainian teachers possess a solid and nationally consistent foundation of digital competence. Most teachers operate at the DigCompEdu B1 – Integrator level, indicating regular and confident use of digital technologies in teaching practice. This reflects both the mainstreaming of digital tools across the education system and the strong adaptive capacity developed during prolonged periods of crisis and disruption.

At the same time, the findings reveal a clear “pedagogical ceiling”. Digital technologies are widely used for communication, lesson delivery, and access to resources, but more transformative and learner-centred uses remain less developed. This is particularly evident in:

- Area 4 – Assessment;
- Area 5 – Empowering Learners; and
- Area 6 – Facilitating Learners’ Digital Competence.

These areas require more advanced pedagogical integration, including formative assessment, differentiation, inclusion, learner autonomy, and the systematic development of students’ own digital competence.

The regional analysis shows that differences across Ukraine are less related to access or basic competence and more connected to the depth and quality of pedagogical integration. Teachers in high-risk regions frequently demonstrate stronger practical and adaptive digital competences, reflecting prolonged reliance on remote and blended learning. This confirms that digital competence has become a key factor of education system resilience.

The study also identifies important structural differences across professional profiles and subject areas. Teachers in ICT and STEM-related disciplines consistently demonstrate higher competence levels, while teachers in less digitally embedded disciplines and multi-subject teaching contexts report lower levels of advanced pedagogical integration.

The customised AI and STEM components reveal that teachers are actively engaging with emerging technologies, but mostly at exploratory and early integration stages. AI awareness is growing rapidly, yet ethical governance, responsible use, and pedagogically meaningful implementation remain underdeveloped. Similarly, digital STEM practices remain concentrated at exploratory and intermediate levels, with limited evidence of widespread innovative or inquiry-based applications.

Primary education teachers demonstrate broadly comparable digital competence levels to secondary teachers, but are more concentrated at intermediate levels, especially in learner-centred and assessment-related practices. Secondary teachers demonstrate a somewhat stronger presence at advanced levels, particularly in digital assessment and facilitating learners' digital competence.

Finally, the study confirms the strong systemic value of SELFIE for Teachers as both a monitoring and professional learning instrument. The tool supports individual reflection, institutional planning, regional analysis, and evidence-informed policymaking, while also promoting more realistic self-assessment and reflective professional cultures.

## Policy Message 1 – Institutionalising SELFIE for Teachers as a national system instrument

### Strategic objective

*Embed SELFIE for TEACHERS into the Ministry of Education's regular operational cycle, transforming it into a*

*SELFIE for Teachers should be adopted as one of the national instruments for a regular engagement of teacher in a self-reflection process, to promote their agency and better understand their sentiment and needs in terms of digital competences, rather than remaining a one-off project activity.*

### Why these matter

**The study demonstrates that SELFIE for Teachers:**

- Generates reliable and scalable evidence across national, regional, and school levels;
- Supports reflective professional learning among teachers;
- Enables targeted identification of competence gaps;
- Strengthens evidence-based policy planning; and
- Supports alignment with DigCompEdu and European education reforms.

The implementation experience also confirms that decentralised coordination models based on regional and school-level ownership are highly effective, particularly under crisis conditions.

### Policy actions to be considered:

**At Ministry level:**

- Establish a regular national cycle for SELFIE for Teachers implementation aligned with the Digital Education Action Plan and national education reform priorities.
- Explore the use of aggregated SELFIE for Teachers data to inform and analytically support the formulation of professional development policies for educators.
- Strengthen coordination and analytical support for the utilization of research findings within existing institutional mechanisms.
- Incorporate European approaches and practices when formulating national policy in the fields of AI and digital education.

**At regional level:**

- Use aggregated SELFIE for Teachers results for regional planning and targeted interventions.
- Establish regional digital competence support mechanisms and mentoring networks.
- Scale effective practices from digitally advanced regions.

| | |
|---|---|
| **At the school and provider level** | ▪ Recommend the use of digital competence self-assessment tools for planning the professional development of pedagogical staff.<br>▪ Promote the use of professional reflection and self-assessment tools to support the professional development of pedagogical staff.<br>▪ Strengthen collaborative professional learning cultures through peer exchange and mentoring. |

### Expected system impact

- Stronger evidence-informed policymaking;
- Continuous monitoring of digital transformation;
- Improved alignment between teacher needs and professional development;
- More adaptive and resilient education governance; and
- Better targeting investments and support measures.

## Policy Message 2 – Moving from operational use towards transformative digital pedagogy

*Ukraine should shift from widespread operational use of digital technologies towards deeper pedagogical integration focused on learning quality, inclusion, and learner competence development. TPD should move beyond basic digital tool use and focus on pedagogically meaningful, learner-centred, inclusive, and data-informed integration of digital technologies.*

### Why these matter

The study demonstrates that most teachers confidently use digital technologies in everyday professional practice. However, digital use remains predominantly functional and resource-oriented, while more advanced pedagogical applications – particularly assessment, differentiation, learner empowerment, and development of learners' digital competence – remain less widespread.

This indicates that the next phase of digital transformation is no longer primarily about access or basic digital skills, but about improving the pedagogical quality of digital teaching and learning.

### Strategic policy directions

- Refocus professional development on pedagogy rather than tools;
- Strengthen formative assessment and feedback practices;
- Support inclusive and differentiated digital learning;
- Promote learner autonomy and active participation;
- Expand reflective and collaborative teaching practices; and
- Support practical and responsible integration of emerging technologies, including AI.

### Expected system impact

- Improved quality and effectiveness of digital teaching and learning across all education levels;
- Stronger integration of digital technologies into pedagogically meaningful classroom practice;
- Increased learner engagement, autonomy, and participation;
- More inclusive, differentiated, and competency-based learning environments;
- Wider use of formative assessment and evidence-informed teaching practices;
- Reduced disparities in pedagogical digital competence across regions, school types, and subject areas;
- Stronger teacher capacity for reflective, adaptive, and innovative practice; and

- Improved preparedness of the education system for future technological and crisis-related disruptions.

## Policy Message 3 – Strengthening education system resilience through digital competence

*Digital competence should be established as one of the key competencies ensuring system resilience and the continuity of the educational process.*

### Why this matters

The findings show that teachers in high-risk and disrupted regions frequently develop stronger adaptive and practice-oriented digital competences. This confirms that digital competence is no longer an innovation priority, but also a resilience and continuity mechanism.

### Policy actions to be considered:

At national level

- Integrate digital education resilience into emergency preparedness and continuity planning.
- Better integrate national guidelines for resilient blended and remote learning models.
- Develop indicative recommendations for ensuring digital resilience and continuity of the educational process, taking into account the type and capacity of educational institutions.
- Prioritise cybersecurity, digital safety, and data protection.

At the regional and school levels

- Expand local digital learning ecosystems and peer-support networks.
- Strengthen school preparedness for rapid modality shifts.
- Develop local repositories of resilient teaching practices.

## Policy Message 4 – Accelerating responsible AI and STEM integration

*AI and STEM integration policies should move beyond awareness-building towards structured pedagogical implementation, ethical governance, and future-oriented competence development.*

### Why this matters

The customised study components display growing teacher engagement with AI and STEM, but largely at exploratory levels. Without structured support, the gap between technological availability and pedagogical readiness may widen.

### Policy actions to be considered:

- AI integration
    - Develop national AI literacy frameworks for teachers.
    - Integrate ethical and responsible AI use into professional development.
    - Establish guidance on assessment, authorship, privacy, and academic integrity.
    - Support practical classroom applications of AI for feedback, differentiation, and inclusion.
- STEM and innovation
    - Expand inquiry-based and interdisciplinary digital STEM learning.
    - Strengthen partnerships between schools, universities, and innovation ecosystems.
    - Scale regional STEM and digital innovation hubs.
    - Promote creative, project-based, and problem-solving pedagogies with digital technologies.

## Policy Message 5 – Reducing digital inequities and strengthening enabling conditions

*Long-term digital transformation requires sustained investment not only in teacher competence, but also in equitable enabling conditions across the education system.*

### Why this matters

Despite strong national competence levels, the study confirms persistent disparities in infrastructure, connectivity, device access, and student learning conditions.

### Policy actions to be considered:

- Prioritise equitable infrastructure investments in vulnerable and rural regions.
- Expand student access to devices and connectivity.
- Ensure accessibility and inclusive digital learning environments.
- Strengthen technical and pedagogical support services.

## SWOT–VUCA Policy Perspective

The findings of the study suggest that Ukraine's digital education transformation should be interpreted not only through a traditional SWOT perspective, but also through a VUCA lens reflecting the volatile, uncertain, complex, and ambiguous realities of education under crisis conditions and martial law.

### SWOT ANALYSIS BASED ON THE STUDY RESULTS

| Strength | Weaknesses |
|---|---|
| ▪ Strong national baseline of digital competence.<br>▪ High levels of teacher digital confidence and adaptability.<br>▪ Established use of digital technologies across all regions.<br>▪ Strong institutional support from school leadership.<br>▪ Highly scalable implementation capacity using decentralised coordination.<br>▪ Emerging teacher leadership in high-risk regions. | ▪ Predominantly operational rather than transformative digital use.<br>▪ Lower competence in assessment, inclusion, differentiation, and learner empowerment.<br>▪ Uneven pedagogical integration across regions and subjects.<br>▪ Limited AI governance and ethical literacy.<br>▪ Persistent infrastructure and access disparities. |
| **Opportunities** | **Threaths** |
| ▪ Alignment with EU Digital Education Action Plan and DigCompEdu.<br>▪ Expansion of AI and STEM innovation.<br>▪ Institutionalisation of SELFIE for Teachers.<br>▪ Development of regional digital innovation ecosystems.<br>▪ Scaling of resilient digital practices from high-risk contexts.<br>▪ Integration of micro-certification and digital career pathways. | ▪ Ongoing security disruptions and instability.<br>▪ Teacher workload and digital fatigue.<br>▪ Uneven access to infrastructure and connectivity.<br>▪ Rapid AI expansion without adequate governance.<br>▪ Risk of widening regional and pedagogical inequalities. |

## VUCA interpretation

- Volatility. The education system operates under rapidly changing security and operational conditions. Policies therefore require flexible, adaptive, and decentralised implementation models.

- Uncertainty. Rapid technological change, particularly related to AI, creates uncertainty regarding future pedagogical practices and teacher competence requirements. Continuous monitoring and iterative policy adjustment are therefore essential.
- Complexity. Digital competence development is shaped by multiple interacting factors, including infrastructure, subject profile, school culture, leadership, regional context, and teacher experience. One-size-fits-all solutions are unlikely to be effective.
- Ambiguity. The distinction between basic digital use and pedagogically meaningful integration remains blurred in many contexts. Policies should therefore prioritise practical classroom application and reflective pedagogical development rather than technical tool acquisition alone.

## Differentiated policy guidance by education context

### Primary education (Grades 1-4)

| Policy focuses | Implications for professional development |
|---|---|
| Strengthen foundational pedagogical uses of digital technologies for inclusion, accessibility, learner engagement, and safe participation. | ▪ Prioritise practical and classroom-ready approaches.<br>▪ Support formative assessment through simple digital tools.<br>▪ Strengthen inclusive and differentiated learning strategies.<br>▪ Develop age-appropriate digital competence approaches.<br>▪ Ensure a balance between technological training and the practical pedagogical needs of the educational process |

### Secondary education (Grades 5-9)

| Policy focuses | Implications for professional development |
|---|---|
| Strengthen advanced pedagogical integration, digital assessment, learner autonomy, and development of students' digital competence. | ▪ Expand data-informed teaching and feedback practices.<br>▪ Strengthen AI literacy and critical digital skills.<br>▪ Support collaborative and project-based learning models.<br>▪ Foster digital leadership and innovation. |

### Profile education (Grades 10-12)

| Policy focuses | Implications for professional development |
|---|---|
| Support inquiry-based, project-based, and interdisciplinary digital STEM learning. | ▪ Promote innovative use of simulations, virtual labs, coding, and creative digital tools.<br>▪ Develop AI-supported STEM pedagogy.<br>▪ Scale innovation hubs and peer-learning networks.<br>▪ Strengthen digital competence leadership in specialised schools. |

## Strategic messages for progression from B1 to C2

### I. School level – building collaborative digital cultures

| Policy message | Recommended actions |
|---|---|
| Schools should move from isolated digital practices towards collaborative cultures of innovation and peer-supported progression. | ▪ Introduce structured peer mentoring and "micro-mentorship" models.<br>▪ Use SELFIE for Teachers regularly to generate school-level professional learning plans. |

| | |
|---|---|
| | ▪ Strengthen practice-oriented professional development formats, in particular, the demonstration of pedagogical practices and collaborative lesson planning.<br>▪ Support teacher experimentation and collaborative innovation. |

### II. Regional level – strengthening expertise ecosystems

| Policy message | Recommended actions |
|---|---|
| Regional systems should function as expertise and innovation layers for connecting schools, training providers, and digital learning centres. | ▪ Modernise in-service teacher training institutes towards innovation-oriented digital pedagogy.<br>▪ Develop regional digital competence centres or hubs, mentoring networks to foster teachers' professional growth.<br>▪ Use high-performing regions as demonstration ecosystems.<br>▪ Expand communities of practice focused on AI, STEM, assessment, and inclusion. |

### III. National level – building the regulatory and incentive ecosystem

| Policy message | Recommended actions |
|---|---|
| Digital competence progression should be embedded into national standards, career development, certification, and leadership frameworks. | ▪ Incorporate DigCompEdu framework requirements and progression levels into the further development of professional standards and support systems for the professional development of pedagogical staff.<br>▪ Develop national digital micro-certification pathways.<br>▪ Support the engagement of pedagogical staff with high levels of digital competence in the implementation of mentoring and expert functions.<br>▪ Align AI governance and digital education policy with European frameworks.<br>▪ Integrate SELFIE for Teachers into long-term monitoring and reform processes. |

## Conclusion

The study demonstrates that Ukraine has successfully established a strong and resilient national baseline of teachers' digital competence despite highly disruptive conditions. Digital technologies are now embedded in everyday educational practice across the system.

However, the next stage of transformation requires a strategic shift from operational digital use towards pedagogically meaningful, learner-centred digital education.

The core policy challenge is therefore no longer access or basic adoption, but progression beyond functional integration towards deeper pedagogical transformation.

SELFIE for Teachers provides Ukraine with a scalable and evidence-based mechanism to support this transition. Used systematically, it can strengthen reflective professional culture, support targeted policy interventions, and contribute to long-term alignment with European digital education priorities.

Overall, the findings confirm that digital competence is no longer simply a technical requirement, but a strategic component of education system resilience, quality, and future-oriented transformation in Ukraine.

# ANNEX 1. CUSTOMISED COMPONENTS

The SFT tool customisation in Ukraine was focused on four thematic areas:

## I. AI Integration and Ethics

Recognising the transformative impact of AI, three distinct statements were dedicated to assessing how educators navigate this technology:

- AI Usage Models. frequency and specific methods by which teachers integrate AI tools into their daily professional activities and the learning process.
- AI Ethics and Policy. current state of school-level policies and the need for ethical standards to govern the responsible use of AI by both teachers and students.

Resource Generation with AI. How frequently do educators use AI to generate, adapt, or enhance learning materials, assignments, and assessments?

## II. Digital Innovation in STEM Education

Three self-reflection questions have been added on STEM to foster a reflection on the extent to which teachers support a shift from teacher-led instruction to learner-driven, inquiry-based STEM (Science, Technology, Engineering, and Mathematics) education:

- Integrating Digital Tools in STEM. Assessing the effectiveness of using digital simulations and resources to support interdisciplinary projects.
- Creative and Project-Based Learning (PBL). Measuring the use of advanced tools (e.g. 3D modelling, coding, virtual labs) to stimulate teamwork and creative problem-solving within the STEM field.

## III. National Platforms and Data-Driven Teaching

To align with Ukraine’s digital infrastructure, specific questions were included regarding local tools and data analytics:

- The ”Mriya” Educational Platform. Assessing the level of teacher involvement and the integration of the ”Mriya” platform into daily planning, teaching, and assessment workflows.
- Learning Analytics. Determining the extent to which teachers use data from digital platforms (LMS, Google Classroom, and Moodle) to analyse student performance, identify knowledge gaps, and adjust their teaching methods.

## IV. Inclusion, Methodology, and Demographics

Some questions added to address the structural and pedagogical diversity of the Ukrainian teaching workforce:

- Universal Design for Learning (UDL). the use of digital technologies to enable the UDL approach, ensuring that learning environments are accessible and effective for all students.
- Remote, Distant, and Blended Learning: teacher readiness and the application of digital tools in the context of Ukraine’s ongoing need for flexible learning modalities.
- Professional Demographics. To allow for deeper data segmentation, a question regarding pedagogical work experience was added, categorised into tiers ranging from first-year teachers to those with over 40 years of experience.

Although there were 10 customised components developed, not all of them were actually used. Due to the technical issues, the customisation process could not be automated.

# ANNEX 2. AN EXAMPLE OF SFT CUSTOMISED AREA

## AI Regulations in Education

The questions are focused on identifying current policies and needs for implementing rules and ethical standards that regulate responsible and effective use of AI by all participants in the educational process. Implementing rules and ethical standards that govern the responsible and effective use of AI by all participants in the educational process.

| Level | Short statement (self-assessment) | Recommendations for development |
|---|---|---|
| 1. Newcomer | I understand that AI use in education must be regulated, but I need to learn more about it (e.g., how to guide students, what rules to apply for homework or projects). | You recognise the importance of ethical approaches to AI use.<br>*[Suggestions for advancing]:*<br>Familiarise yourself with principles of AI ethics—responsibility, transparency, fairness, and safety. Draft a short set of AI usage guidelines for students. Discuss with colleagues on how to ensure fair and responsible AI use. Experiment with AI tools to understand their strengths and limitations. |
| 2. Explorer | I have tried to set rules for how students can use AI tools, for example, by giving them clear instructions or classroom policies. | You are beginning to implement responsible AI practices in learning.<br>*[Suggestions to level up]:*<br>Use case studies to illustrate ethical and unethical AI use. Co-create an “AI use code of conduct” with students. Discuss academic honesty when using AI-generated content. Encourage students to reflect on how AI supports or hinders their understanding. |
| 3. Integrator | I use a variety of AI tools to modify and adapt learning materials to meet students’ needs (e.g. differentiated tasks, adjusted content, real-life examples). | You use AI practically and ethically for pedagogical purposes.<br>*[Suggestions to level up]:*<br>Identify safe, transparent AI tools suitable for educational use. Label AI-generated content clearly. Teach students how to verify AI-produced information. Integrate AI creatively into lessons while maintaining fairness and inclusion. Reflect on how AI affects students’ motivation and critical thinking. |
| 4. Expert | I critically select AI tools that best serve learning goals and can be safely used by students (e.g., content creation, video editing, interactive exercises). | You apply ethical criteria when selecting AI tools.<br>*[Suggestions to level up]:*<br>Develop a checklist for evaluating AI tools based on transparency, privacy, and bias. Teach digital responsibility and algorithm awareness. Encourage students to analyse how AI tools shape outcomes. Mentor colleagues on building AI literacy and critical evaluation skills. |
| *5. Leader* | I redesign approaches to AI integration, supporting other teachers in embedding ethical AI practices into digital and interactive learning. | You model responsible AI usage models and promote ethical culture in your school.<br>[*Suggestions to level up]:*<br>Organise professional development on AI ethics for teachers. Create school-wide AI usage guidelines. Lead collaborative resource design that respects authorship, privacy, and equity. Promote use of |

| Level | Short statement (self-assessment) | Recommendations for development |
|---|---|---|
| | | integrity-checking tools and discussions about responsible AI use. |
| *6. Pioneer* | I initiate and contribute to developing institutional or national recommendations on ethical AI use in education, sharing expertise through publications, workshops, or public outreach. | You are shaping future-oriented ethical AI practices, being aware of international regulations such as the AI Act.<br>*[Suggestions to level up]:*<br>Participate in developing AI ethics strategies for your school or region. Collaborate with ministries, universities, and EdTech organisations. Publish articles or lead webinars on responsible AI in education. Advocate for inclusion of AI ethics in teacher education and digital competence frameworks. |
| *0. No awareness* | I am not familiar with AI literacy or AI tools and do not know how to regulate their use in the classroom. | |

# ACRONYMS

| | |
|---|---|
| AI | Artificial Intelligence |
| CPD | Continuing Professional Development |
| CSV | Comma-Separated Values |
| DG EAC | Directorate-General for Education, Youth, Sport, and Culture of the European Commission |
| DigCompEdu | Digital Competence Framework for Educators |
| EACEA | European Education and Culture Executive Agency |
| ETF | European Training Foundation |
| EU | European Union |
| IBL | Inquiry-Based Learning |
| ICT | Informatics and Computer Science |
| ISCED | International Standard Classification of Education |
| JRC | Joint Research Centre |
| MDT | Ministry of Digital Transformation in Ukraine |
| MoESU | Ministry of Education and Science of Ukraine |
| NUS | New Ukrainian School |
| PBL | Project-Based Learning |
| RQs | Research questions |
| RVK | Retrospective Verification Key — standardised forms used by researchers and international organisations to verify data that was collected in the past |
| SELFIE | Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies |

| | |
|---|---|
| SfT | SELFIE for Teachers |
| STEM | Science, Technology, Engineering and Mathematics |
| SWOT | Analysis of Strengths, Weaknesses, Opportunities, Threats |
| TPD | Teacher Professional Development |

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