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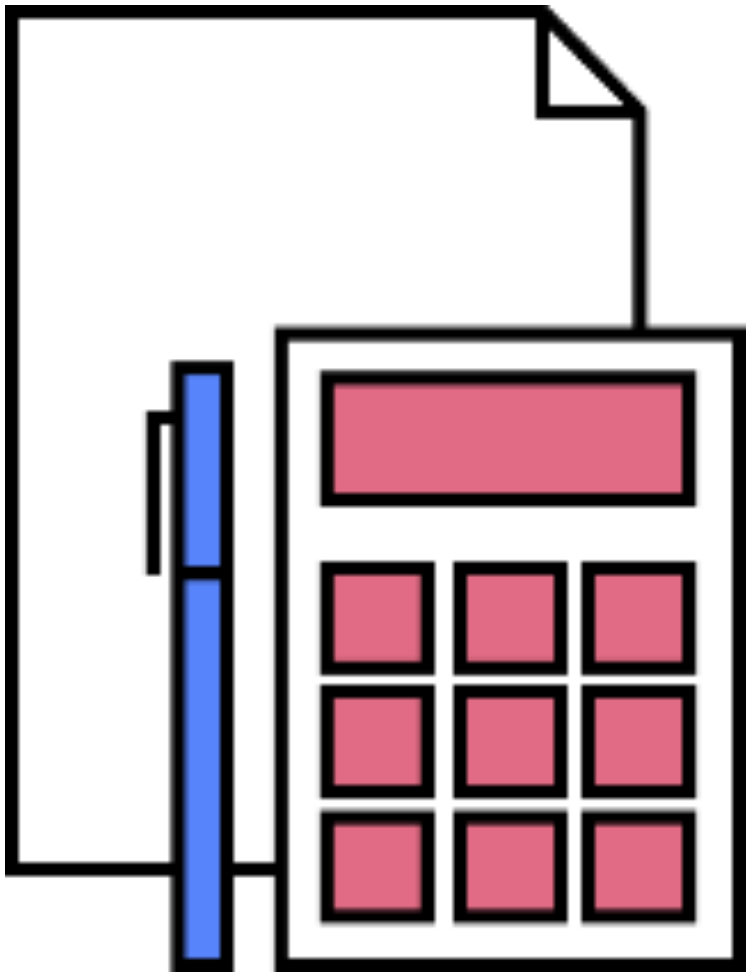

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OpenEU Alliance

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Executive Summary

This Whitepaper document presents OpenEU's Innovation Agenda on Digital Education, developed through a structured process known as the Think and Do Tank (TaDT), an iterative collaborative space that brings together experts and stakeholders to reflect, co-create, and implement innovative solutions aimed at addressing real-world challenges. The agenda aims to define strategic priorities for the digital transformation of European higher education, in line with principles of inclusion, pedagogical quality, and responsible innovation.

This Agenda is based on a process of mapping and consensus-building among TaDT experts, combining qualitative analysis with quantitative validation. This approach made it possible to identify clear areas of convergence around the main challenges and opportunities in digital education, providing a solid empirical basis for the recommendations presented.

The results highlight a vision of digital transformation that is centered on people rather than technology alone. Across the consultation rounds, recurring themes pointed to the need for smart, interoperable, and secure digital infrastructures, alongside the importance of equipping educators and students with key competences such as artificial intelligence literacy, critical thinking, autonomy, and lifelong learning.

The Agenda also underlines the importance of ethics, institutional governance, and data protection, placing principles such as transparency, equity, and accountability at the core of innovation processes. Overall, this document brings together these priorities through an integrated perspective that connects pedagogy, technology, ethics, and governance. In doing so, it positions OpenEU as a strategic actor in shaping a more inclusive, resilient European higher education ecosystem, oriented toward future challenges and opportunities. In the final sections, we highlight the key priorities identified and demonstrate how they are integrated within the project's research cluster, as well as how they extend into outreach and dissemination activities involving a broad range of stakeholders.

OpenEU Foreword

Charting the present and future of digital education in the European Higher Education Area

As the first pan-European open university alliance, OpenEU is more than a collaboration; it is a bold laboratory for the future of the European Higher Education Area (EHEA). Our mission, rooted in the knowledge and experience of our partner Universities, is to dismantle the traditional boundaries of time and space, utilizing technology not merely as a tool but as a catalyst to scale access and foster radical inclusion. This Whitepaper, developed under the OpenEU Think and Do Tank, serves as our strategic compass, aligning our collective expertise with a singular OpenEU Innovation Agenda to contribute to architect a modern "Union of Skills".

The strategic priorities explored in the following chapters are the direct result of a rigorous Delphi process, designed to breathe life into our core value proposition. We believe that to truly empower the working learner and reach the underrepresented, we must innovate at the intersection of pedagogy and technology. By building intelligent digital infrastructures and embedding ethics and data-safeguarding into the very fabric of our institutions, we are ensuring that the digital transformation remains human-centered and inclusive. These priorities are not isolated goals; they are the essential pillars that support our vision of a “Knowledge Square” where lifelong learning is a seamless, accessible reality for all Europeans, regardless of their professional status, personal situation, or geographical location.

What makes this document truly exceptional is the collective intelligence that forged it. We are immensely proud that partners from across the Alliance have taken direct responsibility, ensuring that these pages reflect a genuine sense of shared ownership and institutional diversity that was built with external partners’ participation as well. This collaborative workflow mirrors our commitment to leading the twin digital and green transitions within higher education, demonstrating that a robust, sustainable model for internationalization can be achieved through digital education and innovative governance.

This whitepaper provides the critical policy and strategic framing necessary to move from vision to action. It offers a clear methodology and evidence-based recommendations intended to recognize the digital reality of our present days. As we present these action lines, we position the OpenEU Alliance as a forward-looking, strategic actor ready to lead. We invite our stakeholders and European policymakers to join us on this journey, as we turn shared challenges into a shared, digital-first future for European higher education.

Pastora Martínez Samper
OpenEU Alliance Coordinator

March 2026

Introduction and Scope

Haline Costa Maia

The digital transformation of European higher education has increasingly become a strategic priority within European Union policies, particularly in the context of building more inclusive, resilient, and lifelong learning-oriented education systems (Morawska & Carayannis, 2024; Zhanneta & Oleh, 2022). In this context, OpenEU, formally established in 2025 under the European Universities Initiative, brings together higher education institutions, academic, industrial, and social partners to advance innovative models of digital education, expanding access, quality, and relevance within the European Higher Education Area.

This document is part of Work Package 5 of the OpenEU project (2025-2028) and is developed within the scope of the Think and Do Tank (TaDT), a participatory mechanism designed to connect research, practice, and strategic development in digital education. Drawing on a diverse network of experts, students, institutional decision-makers, and external stakeholders, the TaDT was structured as a co-creation process aimed at developing an evidence-based innovation agenda aligned with the contemporary challenges of digital transformation in higher education.

The Innovation Agenda presented here results from a multi-stage methodological process, combining an initial exploratory round with a broad panel of participants and a structured expert deliberation process based on the Delphi method. The exploratory round enabled the mapping of perceptions, the identification of gaps, and the definition of an initial set of relevant themes.

In the second round of this process, consensus points were consolidated around key strategic areas, referred to here as innovation thematic areas, which form the foundation of this Agenda. The six priorities presented throughout the document are therefore not arbitrary thematic categories, but the result of convergence among experts through a rigorous qualitative approach. Within each thematic area, the Delphi process was further refined through rounds of scrutiny within a core group, ultimately leading to the identification of key priorities emerging from their consensus. Within the Delphi method applied, priorities were defined based on a 70% consensus threshold, whereby items rated as high by at least 70% of participants were established as the key priorities presented in this Agenda.

Structurally, the document is organised into three main levels. First, it presents a general framework that contextualises the digital transformation of European higher education. Complementing this, the document defines a set of cross-cutting principles that apply across all areas analysed, including transparency, equity, accountability, and data protection.

It then develops the innovation thematic areas, which include pedagogical innovation through digital practices, the development of smart digital infrastructures, the upskilling of educators and students, the integration of ethics into digital transformation, the strengthening of institutional governance, and the safeguarding of data and systems. Within each of these priorities, the elements that emerged as consensual in the Delphi consultation process (Thangaratinam & Redman, 2005) are highlighted, offering a structured interpretation of the factors considered most critical by experts.

The final section of this document further strengthens the Agenda by outlining its alignment with the broader OpenEU research agenda and by incorporating stakeholder perspectives through a Triple Helix approach, bringing together how we intend to collaborate between academia, industry, and society. The following section, then, highlights how the identified priorities connect with ongoing and future OpenEU research directions, ensuring coherence between innovation, evidence production, and institutional strategy.

In short, the following sections of this document bring together the main insights derived from the participatory and iterative process described above, while positioning OpenEU as a strategic actor at the intersection of policy, research, and practice. This approach contributes to advancing a European vision of digital education that prioritises human-centred approaches, pedagogical quality, and social responsibility in the adoption of emerging technologies.

European Policy and Strategic Context for Digital Education

Maite Fernández-Ferrer, Teresa Guasch Pascual

This section provides the European political and strategic framework from which the results of the OpenEU Delphi survey should be interpreted. In this way, rather than presenting an exhaustive catalogue of European initiatives, it describes the main policy, competence-based and regulatory frameworks that currently shape digital education in Europe. Its objective is, therefore, to provide the context and political framing needed to situate the collective voice emerging from the TaDT consultation process within a European agenda for digital higher education.

The European policy landscape increasingly conceives digital education not as a marginal or purely technological agenda, but as a strategic pillar of educational cooperation, social inclusion, resilience, and long-term competitiveness, as recent work on the European Higher Education Area (EHEA) and the Digital Education Action Plan (2021-2027) shows. This shift forms part of a broader process of Europeanisation of education policies, in which common standards, shared priorities, and a value-based vision of education increasingly complement the different national approaches (Outeda, 2024; Smuha, 2025). And in this context, in official terms, the Digital Education Action Plan establishes a common vision of high-quality, inclusive, and accessible digital education, structured around two strategic priorities: developing a high-performing digital education ecosystem and strengthening digital competences and capacities for all. This orientation is embedded within the broader framework of the European Higher Education Area, which seeks to foster collaboration among member states and build more resilient and inclusive education and training systems.

More specifically, a central component of this European policy landscape is the development of common competence frameworks that provide the operational basis for digital transformation. DigComp identifies digital competence as a key competence for lifelong learning, defining it as the confident, critical, and responsible use of digital technologies to learn, work, and participate in society (Vuorikari, Kluzer, Punie, & Dahl, 2022). It's 2022, explicitly incorporates emerging issues such as artificial intelligence, misinformation and disinformation, datafication, privacy, security, and sustainability, thus showing that European policy aims to keep digital competence aligned with a rapidly changing technological environment. DigComp 3.0 (Cosgrove & Cachia, 2025) also reinforced that reference frameworks facilitate the creation of a shared vocabulary that can be applied consistently, from policy formulation and the definition of common objectives to curriculum development, assessment, and monitoring.

In parallel, DigCompEdu transfers this same policy logic to the educational professional field by proposing a common European framework for instructors' digital competence (Redecker, 2017). The DigCompEdu framework identifies 22 competences organised into six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners, and developing students' digital competence. The framework is intended to support public policies and provide a common language among member states, while remaining open to adaptation. At the organisational level, complementary frameworks such as DigCompOrg extend this perspective by addressing institutional capacity. Considered together, DigComp 2.2, DigCompEdu, and DigCompOrg make clear that the European understanding of digital education goes far beyond access to devices or platforms. Rather, it is fundamentally centred on pedagogical quality, critical digital literacy, learner empowerment, professional development, and the institutional capacity in meaningful, inclusive, and pedagogically sound ways (Kampylis, Punie, & Devine, 2015; Redecker, 2017; Vuorikari et al., 2022).

This broader European orientation also resonates with previous work by many online education universities (Sangrà, Guitert Catasús, & Behar, 2023), which has stressed that technology must be embedded within techno-pedagogical design, pedagogical and technological mediation, and competence development, and should not be treated as an end in itself. From this perspective, digital transformation requires support and guidance in the construction of knowledge and competence development, as well as the cultivation of

critical digital attitudes. In line with this view, therefore, technology must contribute to learning through mediation, and not through technological domination.

Alongside competence development, the European context places increasing emphasis on ethics, rights, and governance. The Ethics4EU report is especially useful in showing that digital ethics should not be reduced to a narrow discussion about software or technical design. Rather, it encompasses privacy, agency, data governance, accountability, transparency, equity and the broader socio-technical systems through which digital technologies affect people and institutions (Ethics4EU, 2021). The report underlines that digital ethics does not concern only hardware and software, but also the interaction between people, organisations, society and technology, and explicitly links digital ethics with data ethics, AI ethics, privacy and surveillance, digital regulation, digital Governance, and the GDPR (General Data Protection Regulation).

For this reason, within the European ethical tradition, it has always been crucial to insist that privacy must be understood not only as an individual good, but also as a social and democratic good. The Ethics4EU report itself connects equity, transparency, and accountability with this GDPR framework and highlights the importance of human intervention in automated decision-making. This reinforces the idea that digital transformation in education must remain aligned with autonomy, public trust, and fundamental rights.

In parallel, it is important to take into account authors such as Pirozzoli (2024), who points out that the European regulatory approach to artificial intelligence is increasingly shaped by a human-centric and risk-based perspective, which seeks to balance technological innovation with the protection of fundamental rights. From this point of view, AI must be at the service of human well-being, while regulation must protect health, safety, non-discrimination, dignity, autonomy, and people's capacity to decide whether they want to interact with AI systems and under what conditions. In the field of digital education, the importance of this framework is clear: the expansion of AI, learning analytics, and data-intensive educational systems cannot be dissociated from issues such as transparency, human oversight, inclusion, the possibility of contestation, and public accountability (Pirozzoli, 2024).

As we will soon show, this direction of European policies is clearly reflected in the results of the OpenEU TaDT intern consultations. Quantitatively, the areas with the strongest overall profile were Category 3, Empowering Educators and Students, which obtained the highest average priority and consensus, and Categories 2 and 4, related respectively to digital infrastructure and ethics. More specifically, the items with the greatest consensus emphasised self-regulation, agency and lifelong learning; critical, reflective and metacognitive skills; AI literacy; collaborative and inclusive digital education; data and information literacy; and cybersecurity awareness. Likewise, the ethics-related items that achieved consensus highlighted a human-centric AI that preserves autonomy and the possibility of opting out, the transparency and integrity of AI systems, equity and participatory design, and privacy, data protection, and robust data governance. Infrastructure priorities also emphasised secure, privacy-preserving and well-governed data infrastructures, inclusive access, and sustainable and sovereign digital infrastructures. Read together, these results suggest that the collective intelligence generated by the Delphi process does not point towards a purely technocentric model of digital transformation. On the contrary, it aligns closely with the dominant direction of European policies: a people-centred, capability-oriented and ethically governed approach to digital education.

Taken together, the European political and strategic context for digital education can therefore be understood as the convergence of three mutually reinforcing dimensions: first, the development of common competence frameworks for citizens, instructors and institutions; second, the growing role of ethical and regulatory principles in shaping a trustworthy digital transformation; and, third, the consolidation of a shared European vision of high-quality, inclusive and accessible digital education. For this reason, the results presented here should not be read as an isolated consultation exercise, but as an empirically grounded contribution to the broader European agenda for the transformation of higher education in the digital era.

Cross-cutting Principles: Cognitive Ecosystems, Emergent Technologies, Empowerment of Participants, Ethics

Leonel Morgado

Several principles recur across the priorities of the Innovation Agenda. Below, we outline these cross-cutting principles are outlined. While each priority reflects distinct perspectives and areas of focus, all consistently address four key aspects: Cognitive Ecosystems, Emerging Technologies, Participant Capacity Building, and Ethics.

Cognitive Ecosystems

A transversal principle emerging throughout Innovation Priorities is that both educators and students contribute as active agents to digital learning processes. Artificial intelligences also emerge, not as technological services or tools, but as human-centric co-agents: present, participatory companions, as co-agents or co-intelligences. The pattern is one of cognition being performed and emerging from a learning ecosystem: one where human and non-human participants participate in joint acts of collaboration, co-creation, and co-design (Schlemmer & Morgado, 2024). This ecosystemic perspective requires reflecting on and researching its challenges and opportunities. For instance, roles, learning objectives, and learning agency may vary over time across participants, across activities, and across humans and artificial intelligences. Reflecting this, co-regulation (Kaplan, 2014) is already being mentioned in the priorities.

Emergent Technologies

Several types of emergent technologies are found across the priorities. A common theme is that the priorities address technological impacts and contributions to the learning ecosystem, not technocentric evangelism. A cross-cutting concern is developing literacy on their use and impacts: AI, data, and cybersecurity. Another example of this focus on impacts and contributions is how immersive technologies, such as Virtual/Augmented/Extended Reality, are discussed both in terms of enabling experiential and situated learning, and in terms of instructional design that considers their technological envelopment affordances alongside other conceptual dimensions of immersion: narrative and agency (Beck, Elmendorf, & Morgado, 2026). Finally, data analytics also emerge in terms of their affordances and challenges, such as how decisions by all participants can be empowered, which ethical issues are raised, and how activities can be constructively aligned.

Empowerment of Participants

Possibly the most common cross-cutting principle is that priorities unequivocally take stances of empowerment of participants. This is seen in aspects such as enhancing personalization (across priorities dealing with individualized pacing and feedback, for instance), and even more so in the regular mention of the priority of developing soft skills such as critical thinking, self-regulation and co-regulation, adaptability, information literacy, and resilience.

Ethics

Finally, also a common cross-cutting concern of the various priorities is the need for clarification and addressing of ethical aspects, both in general and in specific mentions of privacy, transparency, auditing, accountability and access to digital learning. The latter including beyond physical access issues aspects such as cost limitations and technological lock-in.

Innovation Priorities

Thematic Area 1 – Innovating Pedagogy through Digital Practices

Lifelong learning skills development, human-centered AI and reflective digital pedagogy.

Ines Gil Jaurena

Regarding the pedagogical aspects of digital ecosystems, there was less agreement among experts compared to other areas, along with the lowest average score (3.74 on a 0–5 scale). Still, three items reached higher levels of agreement (above 70%) in relation to digital practices that support pedagogical innovation. These were broader themes: competence-oriented ecosystems, human-centered AI, and reflective digital pedagogy, all aligned with the cross-cutting perspectives mentioned earlier.

On the other hand, more technical and specific aspects that can facilitate innovation reached a very low consensus. This is the case for items such as pedagogy that disruptively applies mobile devices and other gadgets (wearable biosensors, etc.); immersive, gamified, and XR pedagogy; or data-driven and analytics-driven innovative pedagogy; these items were reported in Delphi round 1, but did not reach a relevant consensus to be identified as priorities as digital practices that can lead to pedagogical innovation. Three priority themes emerged from the analysis, reflecting the main areas of consensus among experts.

Priority 1: Competence-oriented and lifelong learning ecosystems

This theme, as a general frame for innovating pedagogy through digital practices, refers to process-oriented digital learning, so shifting the focus from outcomes to digitally supported learning processes. It also refers to the development of soft skills and transversal competences, along with analytical and interpretive skills development. In a more concrete level, digital practices such as e-portfolios or microcredentials can support a competence-based learning approach and a lifelong learning ecosystem.

A recent UNESCO roadmap for the transformation of higher education (2026) which proposes a lifelong learning orientation and fostering inquiry, critical thinking, and creativity as essential competences, is totally aligned with the priority identified in the Delphi group.

Priority 2: Ethical, inclusive, and human-centred AI in pedagogy

The second main theme that reached a strong consensus frames the use of AI in an ethical and human-centered framework. On the one hand, the implications of an ethical and reflective use of AI, both by instructors and students, stress aspects such as an intentional ethical integration of AI as a learning and feedback partner

and not as a substitute, or a conscious use of AI. The maintenance of human agency is at the core of this priority and recognizes both the potential of AI for personalization and adaptive learning processes, and also the need to focus on agency and human–AI co-learning ecosystems. With regards to inclusion, policy and frameworks for digital education and AI-driven equity are needed to reduce digital divides.

The already mentioned UNESCO document (2026) also strongly highlights a human-centered role for digital technologies and AI.

Priority 3: Reflective and evidence-based digital pedagogy for open and collaborative learning

Finally, there was consensus on a third theme related to how digital pedagogy can promote innovation, which highlights the active and reflective role of instructors in selecting, adapting and using appropriate and reliable teaching and assessment methods. The purpose is to promote an active role on the students' side, as well, and facilitate open and collaborative learning.

Among the different teaching approaches that can be considered, we find, in Delphi round 1, among others: challenge-based and problem-based learning, collaborative online learning, agency-based learning and co-creation, or authentic and evidence-based digital assessment. Students as co-designers and digital environments, renewable assignments, and peer learning, are mentioned as innovative digital education approaches that lead to open and collaborative learning. At a more specific level, collaborative digital tools and apps that facilitate teamwork besides an LMS or learning platform are addressed as facilitators of innovation.

Again, this priority is aligned with the UNESCO (2026) recommendation of transforming higher education "towards active, problem- and project-based learning (that) means reorienting higher education study toward active engagement with a vibrant, ever-changing world" (p. 46).

Thematic Area 2 – Building Intelligent Digital Infrastructure

Platforms, Interoperability, AI Integration and Resilient Systems

Adamantini Peratikou

The consultation results identify intelligent digital infrastructures as a key enabling condition for innovation in higher education. This area emerged as a strategic priority, reflecting the need for digital environments that support advanced technologies, cross-institutional collaboration, and data-informed decision-making. Strong consensus among experts highlights the importance of infrastructures that combine technological robustness with pedagogical alignment and ethical governance.

At the same time, the qualitative findings emphasise the need to move beyond fragmented systems toward integrated digital ecosystems capable of supporting interoperability, responsible data use, and scalable innovation across institutions. Together, these insights point to three interrelated priority areas that structure this dimension of the Innovation Agenda.

Priority 1 – Interoperable Platform Ecosystems for Digital Education

The first priority concerns the development of interoperable ecosystems of digital platform ecosystems capable of connecting educational services, institutional systems, and collaborative infrastructures across institutions. Delphi participants highlighted the importance of infrastructures that enable experimentation, continuous improvement and innovation within digital learning environments.

Consensus around this topic reflects the growing complexity of digital education ecosystems. Higher education institutions increasingly rely on multiple technological systems, including learning management platforms, digital credentialing infrastructures, collaboration tools, and data analytics systems (Williamson, Macgilchrist, & Potter, 2021). Without interoperability between these systems, institutions risk creating fragmented digital environments that limit both educational innovation and institutional efficiency.

The qualitative contributions from experts reinforce this perspective. Several respondents noted that existing institutional infrastructures are often characterised by disconnected platforms and incompatible technological standards. This fragmentation makes it difficult to exchange learning data, manage digital credentials across institutions, or support collaborative learning environments within university alliances.

Participants also emphasised the strategic importance of open standards and platform-based architectures that allow institutions to integrate new services without rebuilding core infrastructures. Interoperability was therefore framed not only as a technical challenge but as a prerequisite for scalable digital education models, particularly in contexts involving transnational collaboration, joint programmes, and micro-credential ecosystems.

From a strategic perspective, interoperable infrastructures are essential to support emerging European higher education initiatives. As universities increasingly collaborate through alliances and joint digital campuses, shared technological frameworks will be necessary to enable mobility of learners, recognition of learning outcomes, and the seamless exchange of educational data across institutional boundaries.

Priority 2 – AI-Enabled Infrastructure and Learning Analytics

Experts identified AI-enabled infrastructures as essential to support emerging educational innovations such as adaptive learning systems, intelligent tutoring environments, automated feedback tools, and data-driven institutional decision-making. At the same time, participants emphasised that the deployment of AI technologies must be guided by human-centred design principles and pedagogical objectives, ensuring that technological innovation enhances rather than replaces meaningful educational interaction.

The qualitative responses highlight both the opportunities and the challenges associated with this transformation. Several participants noted that institutions currently lack the infrastructure required to effectively manage educational data and deploy AI-supported learning systems. Data infrastructures remain fragmented, limiting the potential for institutions to use analytics to improve learning outcomes or identify student support needs.

Learning analytics systems were frequently mentioned as a key infrastructure component. When implemented responsibly, such systems allow institutions to better understand learning patterns, monitor student engagement, and identify barriers to academic success. However, experts also emphasised the importance of transparent governance frameworks that ensure accountability, fairness, and responsible use of educational data.

Participants therefore stressed that AI-enabled infrastructures should be developed alongside clear governance mechanisms, including ethical oversight, transparent data management practices, and institutional policies guiding the responsible use of algorithmic systems in education. This reflects a broader shift from purely technological innovation toward AI ecosystems embedded within accountable institutional governance structures.

Priority 3 – Inclusive, Secure and Sustainable Digital Infrastructure

Inclusive digital infrastructures were highlighted as a critical condition for widening participation in higher education. Experts pointed to persistent digital divides affecting learners across regions, socio-economic backgrounds, and accessibility needs. Infrastructure development should therefore prioritise accessible design standards, reliable connectivity, multilingual platforms, and user-centred digital services capable of supporting diverse learning communities.

At the same time, the expansion of digital learning environments increases the volume and complexity of educational data generated within institutional systems. Experts consistently emphasised the importance of secure and well-governed data infrastructures capable of protecting personal data while enabling responsible educational innovation. Secure architectures, transparent governance frameworks, and privacy-preserving technologies were therefore identified as key components of resilient digital infrastructures.

Finally, participants stressed the strategic importance of sustainability and digital sovereignty in infrastructure development. Reliance on external technological ecosystems may create long-term dependencies that limit institutional autonomy and increase operational risks. Experts, therefore, highlighted the need for infrastructures that support open technological ecosystems, institutional control over educational data, and environmentally sustainable digital practices. These considerations align with broader European priorities concerning digital sovereignty, responsible AI governance, and sustainable digital transformation.

Thematic Area 3 – Empowering Educators and Students

Pedagogical Innovation, Competence Development and Digital Transformation in Higher Education

Annabell Bils

In building an innovation agenda for European higher education, the empowerment of educators and students constitutes a precondition for sustainable digital transformation. Our expert mapping identified this area as a ranked priority, structured around two central themes.

Priority 1 – Pedagogical Innovation Through Digital Practices

The most frequently referenced innovation across panellists was AI-driven adaptive learning. Experts in the Delphi study described systems that personalise learning pathways, adjust content difficulty in real time, and provide individualised feedback. Multiple respondents identified AI tutoring and coaching systems, including generative AI acting as Socratic tutors, ethical feedback partners, and personalised coaches. The data reveal a strong emphasis on AI as a co-intelligent partner rather than a replacement for human cognition. Several panellists stressed the importance of treating AI as a reflective learning companion, a position consistent with research on AI-supported self-regulated learning showing that effective integration requires balancing technological capacity with human-centred agency.

Open-ended responses further identified virtual reality (VR), augmented reality (AR), and extended reality (XR) technologies as the second major innovation cluster. Panellists emphasised virtual labs, metaverse campuses, XR simulations, and immersive instructional design that reframes learning around narrative, systems thinking, and learner agency. These contributions indicate that pedagogical innovation in the OpenEU context extends beyond AI integration to encompass experiential, spatially situated learning environments. While the general pedagogical deployment of immersive technologies remains at a relatively early stage of maturity and consensus, as highlighted in Innovation Thematic Area 1, experts nevertheless recognise XR as a critical emerging domain for experiential learning.

Priority 2 – Competence Requirements for Educators and Students

Consensus on competence requirements centred on AI literacy as the most prominent theme. Panellists emphasised that both educators and students must be able to critically evaluate AI-generated outputs and deploy them for pedagogically meaningful purposes. Prompt engineering was identified as an increasingly relevant technical skill for productive interaction with generative AI. These findings align with the UNESCO AI Competency Framework for Teachers (Miao & Shiohira, 2024) and Students (Cukurova & Miao, 2024), which structures AI literacy around the dimensions of understanding, evaluation, responsible use, and creation.

Collaborative and co-creative competences were regarded as equally essential. These include the ability to co-design learning experiences in digital environments,

engage in cross-institutional peer learning, and participate in inclusive design processes. The DigCompEdu framework positions digital communication and collaboration as a core competence domain for educator (Redecker, 2017).

Opinions from experts reinforced the centrality of critical thinking about AI outputs and information quality. Respondents described competences such as evaluating AI-generated content for accuracy and bias, questioning algorithmic decisions, and maintaining human judgment in AI-rich environments. Cybersecurity awareness and data protection were identified as indispensable competences, encompassing information security practices, knowledge of GDPR and FERPA compliance, secure authentication, and the ability to recognise threats such as phishing. Ferguson (2019) confirms that the integration of AI and learning analytics amplifies privacy concerns, with scholars calling for governance frameworks that protect sensitive information while enabling pedagogically valuable data use.

Data literacy and information literacy were emphasised in equal measure. Several respondents argued that these competences constitute prerequisites for transparent and ethical analytics use. The DigCompEdu supplement on AI competences also lists data literacy and computational thinking as key areas for educator development (Bekiaridis & Attwell, 2024). DigComp 2.2 identifies information and data literacy as one of five foundational components of digital competence (Vuorikari et al., 2022), while more recent developments, such as DigComp 3.0, further emphasise areas including artificial intelligence and cybersecurity within the evolving digital competence framework (Cosgrove & Cachia, 2025).

Contributions highlighted the need to develop competencies in AI-integrated assessment design. This includes the creation of authentic, process-oriented tasks, the use of digital rubrics and analytics for constructive alignment, and the deployment of AI-generated feedback as a formative instrument. Respondents argued that assessment design must differentiate between tasks where AI support is pedagogically appropriate and tasks intended to develop foundational skills without AI assistance. The final competence theme addresses self-regulation, agency, and adaptability. Panellists described the need for students to develop self-regulation and co-regulation skills, including the capacity to plan, monitor, and evaluate their own learning. Lifelong learning, resilience, and adaptability in the face of continuous digital transformation were regarded as essential dispositions.

Thematic Area 4 – Embedding Ethics in Digital Transformation

Fairness, AI ethics, transparency, accountability, and alignment with educational values.

Clara Maathuis

Given the increased development and use of educational data-intensive platforms, learning analytics solutions, and AI-enabled decision-support tools, a shift is being made to assuring that these systems are responsible, safe, and trustworthy by design (Shwedeh, 2024). This includes adopting and respecting values such as transparency, autonomy, fairness, privacy, and accountability while understanding and managing associated risks. As the expert-based analysis expresses, embedding ethics dimensions in digital transformation for digital education can be done through socio-technical design and governance commitment

sustained by relevant mechanisms such as participatory design, ethical assessment, documentation and auditability, and continuous monitoring. These dimensions are captured in our expert mapping into six themes.

Priority 1 – Human-centred AI use that preserves autonomy, agency, and operation

Human-centered AI is perceived by experts as an enabling condition for innovation as it preserves learner and educator autonomy in day-to-day decisions and activities. Moreover, AI is referred to as having an augmentation role instead of a substitutional one in educational judgement, reflecting some existing view, e.g.: “AI systems that *support*, rather than *replace*, human judgment” (Lu & Wu, 2024), further explicitly connecting its role and contribution to the autonomy and control that the learners and educators have in a particular task or decision. Hence, an education agenda can be developed, deployed, and used as an ethically credible agenda when AI is embedded as an assistive, optional, and controllable tool that is designed to expand instructors’ professional judgment and students’ capacity for self-directed learning and informed choice. This perspective is aligned with the EU’s vision and operational practice that aims at building human-centric and trustworthy digital innovation (Pirozzoli, 2024) while embedding concrete safeguards against default automation and surveillance-oriented systems.

Priority 2 – Transparency and integrity of AI systems in education

Transparency and integrity represent a direct area of consensus among the experts. In these lines, considerations are given to the fact that these values can be achieved by both assuring technical explainability and a comprehensive integrity regime for teaching, assessment, and educational decision-making. As one expert stated, it is important to ensure the transparency of algorithms and clarity about how AI supports learning and assessment, and be able to further relate these to institutional accountability in “data use and decision-making”. This implies that transparency has to be operationalised as an educational and governance capability in which institutions need communicable accounts of system purpose, limits, and decision traceability (Reséndiz & Moreno Reyes, 2026) that protect the educational standards and prevent the epistemic mystification of AI that would otherwise undermine both trust and responsible innovation in the educational domain.

Priority 3 – Equity, inclusion and participatory design in digital education

Another important dimension expressed by the experts is the role and meaning that equity, inclusion, and participatory design have by means of a combined ethical-innovation axis. In this context, fairness is considered a fundamental design constraint that shapes procurement, access, and ongoing evaluation of innovation solutions. In these lines, the experts stress the importance of avoiding and mitigating bias and ensuring “accessibility for all learners” complemented by a distributional justice lens expressed by one expert as being able to “ensure all students have access to AI-enhanced tools and digital resources, regardless of socioeconomic background”. This aspect captures again the socio-technical perspective that reflects the EU ethical embedding in digital transformation that dedicates efforts to addressing both algorithmic bias (e.g., training data, modelling) and structural

inequality, such as infrastructure, digital skills (Ethics4EU, 2021). With this scope, the stakeholders involved are seen as co-design patterns since inclusion is first of all about the voice that shapes the system, an aspect that is crucial for innovation through digital transformation.

Priority 4 – Privacy, data protection, and strong data governance for digital innovation

To ensure that digital innovation is developed in a trustworthy way, privacy, data protection, and strong data governance measures are framed by the experts by assuring, as one expert put it, g that "strict data governance policies that protect student and institution information" exist, together with implementing a privacy-by-design approach as an operational practice. At the same time, compliant with the EU perspective, the data governance emphasis also intersects with transparency and fairness since the evaluators need to be able to have access to the datasets used for training the AI systems used (Lora, 2025) and make sure they understand the available documentation in a given educational context.

Priority 5 – Accountable AI governance aligned with educational purposes

At the same time, the experts consider that accountable AI governance needs to be aligned with the educational purposes in order to translate the ethical principles into enforceable institutional responsibility, especially where AI influences decisions such as admissions, grading, and progression. To this end, the experts call for "clear lines of responsibility for AI decisions," (here we are employing one expert's formulation of this idea), which implies that the innovation agenda needs to treat governance as a foundational architectural layer by means of including ethics oversight structures, impact assessments, procurement standards, and continuous monitoring as the core infrastructure that enables responsible scaling without value drift. Moreover, the existence of verification methods and contesting channels for the AI-supported decisions need to be considered to assure an accountability model grounded in due process and contestability as attributes of legitimacy in EU higher education innovation (Alfaleh, 2026).

Priority 6 – Institutional cultures, communities of practice, and dialogue

Consensus among the experts positions institutional cultures, communities of practice, and sustained dialogue as the social engine for ethical digital transformation. In these lines, the respondents argue for using "workshops, forums, and open dialogues" to foster "critical reflection and shared responsibility" (these are two sample formulations individual experts used for this effect). This points to a central implementation lesson for an EU digital education innovation agenda: ethical embedding is maintained through an institution's capacity to learn over time, assuring and building peer networks and continuous deliberation about educational goals (Outeda, 2024). The direct formulation that captures this continuous improvement approach is embedded in a reflective question posed by one expert, which pointed to the need to "keep asking what purpose does our education serve?" This reflects the ethical stance adopted, in which digital transformation is repeatedly re-anchored to public educational missions to ensure that AI adoption is both educationally justified and technologically viable, and socially accountable.

Thematic Area 5 – Institutional Support and Governance

Organisational backing, training, recognition, and resource provision.

Magnús Árni Skjöld Magnússon

Digital transformation in higher education is frequently framed as a question of technological adoption: the integration of artificial intelligence, immersive environments, learning analytics, and data-driven systems. However, the combined qualitative and quantitative findings of this Delphi study suggest a different conclusion. Sustainable digital transformation is not primarily a technological project; it is an institutional and cultural one. Governance structures, professional development, ethical oversight, and long-term resource allocation form the structural backbone upon which meaningful digital innovation depends.

Across both strands of analysis, a consistent pattern emerges: technology must be embedded within coherent governance systems, aligned with pedagogical values, and supported by sustained investment in human capacity. The results point toward a human-centred, ethically grounded, and strategically coordinated model of digital transformation.

Priority 1 – Continuous professional development in digital pedagogy, AI, and data literacy

The quantitative findings from Round 2 demonstrate broad agreement among experts on the importance of governance-related measures. More than half of all items reached consensus, and no items were collectively deemed low priority. Within Institutional Support and Governance, four of nine items achieved consensus, including continuous professional development, institutional assessment policies and workload recognition, ethically driven technology governance, and frameworks for open access and data stewardship. This priority reflects consistent findings that continuous professional development is essential to support educators' digital readiness and sustainable engagement with innovation (Choi-Lundberg, Butler-Henderson, Harman, & Crawford, 2023).

These findings indicate that governance is not a marginal concern but a recognised pillar of transformation. The highest-rated category overall was "Empowering Educators and Students," which achieved both the highest mean priority and strongest consensus. This reinforces the interpretation that governance is expected to enable capacity-building rather than simply regulate the deployment of technology. Infrastructure and ethics categories also scored highly, further underscoring the perceived importance of systemic support mechanisms.

At the same time, items related to highly innovative technological applications (such as AI tutors and immersive systems) ranked comparatively lower. This quantitative pattern aligns with a sequencing logic: institutions must first consolidate governance, ethics, and human capacity before accelerating technology-intensive innovation.

Priority 2 – Institutional policies for assessment, workload recognition, and safe innovation spaces

The qualitative responses provide a clear elaboration on what governance should entail in practice. Participants consistently call for strategic leadership structures and clearly articulated digital transformation roadmaps aligned with institutional mission and academic values. Governance is conceived not as administrative control but as strategic coherence.

Several respondents emphasise embedding digital quality assurance within existing governance systems to ensure that digital initiatives are evaluated against pedagogical and ethical criteria. Dedicated digital transformation committees, AI ethics boards, and oversight mechanisms are proposed to provide transparency and accountability. Algorithmic auditing, ethical AI policies, and explicit guidelines for AI use in teaching and assessment illustrate the need for institutional mechanisms that safeguard autonomy, fairness, and integrity. This aligns with research highlighting that strategic planning and institutional leadership are key prerequisites for effective and coordinated digital transformation (Deacon, Laufer, & Schäfer, 2023).

Importantly, governance is framed as participatory. Faculty, students, researchers, and administrative actors should be involved in shaping digital strategy. Transparent communication, shared responsibility, and collective ownership enhance legitimacy and trust. The quantitative evidence, showing moderate rather than strong consensus, reinforces the importance of such inclusive governance structures to manage diverse perspectives.

Priority 3 – Ethically and pedagogically driven technology governance

A second central pillar is sustained professional development. Both data strands converge on the conclusion that human capacity-building is foundational. The high priority accorded to educator and student empowerment in the quantitative results directly complements qualitative calls for continuous training in digital pedagogy, AI literacy, assessment design, feedback literacy, and data competences.

Training should be ongoing, context-sensitive, and integrated into institutional culture rather than offered as one-off workshops. Respondents stress the importance of reflective, evidence-based pedagogical development rather than narrow technical instruction. This priority is supported by studies emphasising the need for policy frameworks that address data privacy, equity, and the broader social impact of digital education (Qolamani & Mohammed, 2023).

Institutions are encouraged to support instructional designers and digital learning specialists who collaborate with faculty to redesign curricula and develop authentic assessment practices in AI-rich environments.

This emphasis reflects a shift from *technology adoption* to *pedagogical transformation*. Digital transformation thus being sustainable only when educators possess the confidence, skills, and critical awareness to integrate technology meaningfully into teaching and learning processes.

Priority 4 – Institutional frameworks for open access, data sharing, and long-term stewardship

Governance and training must be complemented by incentive structures that recognise digital innovation as scholarly labour. The qualitative findings highlight

teaching awards, tenure incentives, career advancement opportunities, seed funding, and public recognition mechanisms as tools for cultural change.

Crucially, respondents advocate recognising not only innovation but also reflective improvement and evidence-based experimentation. Safe "sandboxes" for innovation are proposed to allow experimentation without punitive consequences. Workload models should acknowledge the complexity of digital teaching, including continuous assessment, project-based learning, and process orchestration. This reflects broader discussions on digital transformation that stress the importance of accessibility, inclusion, and sustainable data practices in higher education (Crisol-Moya, Herrera-Nieves, & Montes-Soldado, 2020).

The quantitative confirmation of consensus around institutional policies for assessment and workload recognition underscores that governance must extend beyond strategy documents to everyday academic practice. Sustainable transformation depends on aligning institutional reward systems with digital ambitions. Resource allocation emerges as a fourth structural dimension. Respondents consistently argue for multi-year strategic investment rather than short-term project funding.

Thematic Area 6 – Safeguarding Data and Modernising Systems

Privacy, GDPR Compliance, Data Governance and Modernisation of Legacy Systems

Haline Costa Maia

In building an innovation agenda, the process of digital transformation necessarily rests on the pillar of data security and system modernisation. The experts mapping identified this area as a ranked priority, structured around three central themes. These priorities reflect not abstract regulatory concerns, but concrete institutional challenges experienced by partner institutions.

Priority 1 – Ethical and Value-Aligned Data Use

Consensus on this topic emphasised that personal data processing in higher education must remain aligned with institutional missions, academic freedom, and fundamental rights. Ethical alignment was framed as an operational governance principle, requiring privacy-by-design routines, structured Data Protection Impact Assessments (DPIAs), and risk-based oversight mechanisms for AI-supported tools. This aligns with emerging compliance–capability frameworks that connect EU regulatory duties to institutional governance structures (Britchenko & Lysiak, 2025b; Molchanova, 2025). However, the Delphi data reveal that institutions still experience fragmentation in translating legal obligations into integrated workflows.

Opinions from experts reinforced this concern. Several participants noted that procurement of digital tools often precedes structured privacy assessment, resulting in reactive rather than anticipatory governance. Others highlighted uncertainty regarding joint controllership arrangements in collaborative digital platforms across institutions. These insights confirm empirical findings that governance gaps, rather than legal ambiguity, are the principal obstacles to effective GDPR implementation (Fernandes, Machado, & Amaral, 2023).

Priority 2 – Cybersecurity, Technical Safeguards and Secure Infrastructure

Cybersecurity emerged as the strongest area of consensus in this category. Experts recognised that increasingly interconnected digital ecosystems expose institutions to cascading risks. Secure infrastructures, encryption standards, access controls, and incident-response coordination were identified as essential enablers of trust.

Open-ended responses further indicated concern about legacy systems coexisting with cloud-based and AI-driven tools. Fragmented architectures were described as limiting visibility over data flows and increasing vulnerability. This corresponds with research highlighting the need to integrate information governance with enterprise architecture to ensure compliance-ready digital systems (Zaguir, de Magalhães, & de Mesquita Spinola, 2024). Without systemic integration, institutions risk technical compliance without operational resilience.

Priority 3 – Training, Literacy and Awareness for Safe and Ethical Data Practices

The third priority concerns institutional capacity. Respondents stressed that governance frameworks cannot function without distributed literacy across leadership, IT units, academic staff, and administrative actors. Data protection and AI governance were repeatedly described as collective responsibilities rather than isolated DPO tasks.

Contributions highlighted limited internal expertise and uneven awareness regarding DPIA workflows, vendor governance, and AI-related risks. This mirrors findings from studies identifying leadership commitment, role clarity, and staff empowerment as critical success factors for GDPR implementation in higher education (Fernandes, Machado, & Amaral, 2022). Capacity-building therefore, emerges as both a governance and innovation imperative.

The data generated through our consultation indicates that safeguarding data must be positioned as an enabling condition for all other innovation priorities within OpenEU. Ethical data use ensures legitimacy. Secure infrastructures ensure continuity. Institutional literacy ensures operationalisation.

Modernisation of legacy systems should prioritise interoperability, transparency and traceability of data flows. Integrated governance models, which combine GDPR obligations, AI oversight, cybersecurity standards, and digital strategy, are necessary to support cross-border collaboration and scalable digital services (Britchenko & Lysiak, 2025a; Molchanova, 2025).

Safeguarding Data and Modernising Systems, therefore, represents a shift from reactive compliance toward designed governance capability. It establishes privacy, cybersecurity, and institutional stewardship as foundational pillars of trustworthy digital education.

Alignment with the Research Cluster and Work Pachege 4 Priorities

Dimitrios Kalles, Mitropoulos Sarandis

An important dimension of this project is the alignment between the empirical findings of the TaDT and the broader research agenda developed within the framework of OpenEU's Work Package 4 (WP4). "Joint research and innovation in digital education" WP4 focuses on research and innovation alignment across institutional and policy dimensions, providing the structural framework for this integration. In this context, it is relevant to outline this research direction and its connection to the themes emerging from the TaDT process. The Research Cluster of the OpenEU project, broadly speaking, is responsible for running the Living Lab, creating Educational Prototypes, organizing the PhD candidate community, and promoting Open Science within OpenEU. Hereafter, an indicative list of the OpenEU Research Cluster activities is provided, which are expected to substantially interact with activities implied by the Innovation Agenda on Digital Education.

The "Living Lab" Approach

The OpenEU Innovation Agenda is linked to the European Research Cluster for Digitally-enabled Education, which functions as the Alliance's "Living Lab". This alignment promotes a continuous "Research-to-Policy" cycle: the Research Cluster generates empirical evidence and prototypes, while the Innovation Agenda provides the strategic framework and infrastructure to scale these innovations across the Alliance.

Addressing SDGs through Priorities

The Innovation Priorities defined in this Agenda have been cross-validated with the joint research in digital education (namely, the Research Cluster) mandate to address pressing Sustainable Development Goals (SDGs). The Delphi outcomes are closely related to the complex SDG problem definition and the subsequent co-creation of solutions:

➔ Addressing Priority 1 (Innovating Pedagogy) via Educational Prototypes: The Delphi consensus highlighted the need for challenge-based learning and human-centred AI. The joint research in digital education of OpenEU directly answers this by utilizing a challenge-based approach to co-create at least five innovative educational prototypes. The targeted deliverables – such as AI-driven skills training, generative AI feedback tools, and gamification community interventions for climate action – correspond to the practical applications of the pedagogical shifts demanded by Priority 1.

➔ Operationalizing Priorities 3 (Empowerment) and 4 (Ethics) via Participatory Design: Priority 3 emphasizes collaborative digital education, while Priority 4 mandates equity and participatory design. The OpenEU Research Cluster translates this into action by organizing ten thematic open research workshops and planning to organize five intensive co-creation events. By actively engaging PhD students, senior researchers, citizens, and industrial stakeholders, the OpenEU Research Cluster promotes participation by ensuring that digital tools are driven by community needs, not just technological push, thus empowering Educators and Students and Embedding Ethics in Digital Transformation.

➔ Addressing Priority 2 (Intelligent Infrastructure): According to the OpenEU Grant Agreement (Task 4.1.2), the Research Cluster focuses, among others, on developing "learning apps incorporating generative AI feedback tools". Correspondingly, the Agenda's Priority 2 (Building Intelligent Digital Infrastructure) mandates high-speed connectivity and AI-supporting ecosystems, which should accommodate these prototypes and their technical requirements. Towards this direction, Priority 3 (Empowering Educators and Students), Priority 5 (Institutional Support and Governance), and Priority 6 (Safeguarding Data and Modernizing Systems) can be expected to be positively impacted.

From Prototype to Pipeline

A core function of the Innovation Agenda is to establish a Scaling Pipeline for the 5 educational innovative prototypes that the OpenEU Research Cluster will deliver.

The intelligent infrastructure defined in Priority 2 acts as a digital "sandbox". This will allow the OpenEU researchers to safely test their prototypes across the Alliance. The OpenEU Research Cluster plans to launch a seed-funding Call based on the above-mentioned prototypes. By aligning the Call with the Agenda, financial resources can be directed towards innovations that have potential for widespread adoption.

Empowering Human Capital: The PhD Community

The Agenda aligns with the Research Cluster objective of building an OpenEU PhD Community:

➔ Digital Skills for Researchers: The Agenda advocates for AI Literacy (Priority 3) and for Innovating Pedagogy through Digital Practices (Priority 1), which directly aligns with some of the Doctoral training courses organized by the Research Cluster. The breadth of courses available to PhD students, as well as the versatility of the Winter/Summer schools, should provide a wealth of opportunities for training.

➔ Mobility and Collaboration: The Agenda's emphasis on collaborative digital education supports the Research Cluster goal of fostering joint multidisciplinary collaboration and Doctoral stays, so that young researchers can collaborate seamlessly across borders.

Alignment in Open Science and Data Sovereignty

The Innovation Agenda reinforces the OpenEU Open Science and Innovation Plan developed by the Research Cluster of the OpenEU project:

➔ FAIR Data Principles: Priority 6 (Safeguarding Data) of the Agenda is aligned with the designed to operationalize the FAIR Data principles (Findable, Accessible, Interoperable, Reusable) mandated by the Research Cluster (Living Lab).

➔ Open Infrastructure: The Agenda's push for sovereign digital infrastructures (Priority 2) aligns with the Alliance's plan to host an open repository for Open Science outputs.

Together, this alignment ensures that the Innovation Agenda not only reflects current institutional challenges but also actively contributes to shaping a coherent and forward-looking research and policy ecosystem.Ultimately, the Innovation Agenda sets the strategic direction, while the Research Cluster acts as its testing ground, ensuring that new educational solutions are empirically proven before being scaled across the OpenEU Alliance.

Stakeholder Perspectives and 3-Helix Engagement

Stakeholder engagement in online lifelong learning

Angelique Lansu, Francis Brouns

A key challenge for OpenEU is to design and support learning for its diverse community of learners. This by taking into account the flexible, changing professional demands which arise from the knowledge triangle (or quadruple) of stakeholders, to be merged with the more rigorous requirements which arise from academic learning in formal curricula (Lansu, 2013). We focus on how the regional knowledge infrastructure – the knowledge triangle of private, public and research sectors – may and perhaps should be strengthened by linking it up with traditional players in academic learning: HEI or universities. What makes OpenEU university students so special is that they play a pivotal role in the knowledge society. Unlike at regular universities, they are active both as professionals (or volunteers) in the workfield with their demands on the one hand, and as academic learners in the OpenEU community on the other. The integration of these different roles academic professionals have to play nowadays – both academic and professional – is already illustrated quite well in Gibbons' notion of mode 2 knowledge production (Gibbons, 1994).

Mode 2 points at an ad hoc multidisciplinary, context-driven collaboration on real world problems. The dynamic transitions in the knowledge triangle – or Triple helix (Etzkowitz & Leydesdorff, 2000) – make a strong appeal to knowledge workers once graduated to keep on learning and innovating. The OpenEU could – at the level of curriculum design, digitalisation and didactic models, – offer such learners in the mid of the workfield programmes of ensured academic quality. Such real-world problem and solution-oriented curricula imply that in addition to a scientific basis, considerable attention must be paid to the complexity of these problems, the societal context, multi, inter and transdisciplinarity, and on handling uncertainties. Such a dynamic knowledge community could be co-created with the OpenEU students and their hinterland workfield through effective stakeholder engagement within the educational design to enhance online lifelong learning as a key in modern society.

Key Stakeholders

The four key stakeholder groups can be defined as the learners themselves, the lecturers, including the academic community, the future, current, and former employers of the learners, and policymakers, for whom lifelong learning (LLL) is an important policy objective to ensure a dynamic and innovative knowledge society. To enhance stakeholder engagement in online LLL, it should be seen as an iterative collaboration via online tools to co-create learning experiences and research findings. At the same time, as OpenEU learners are working professionals within their own field, creating iterative collaboration within a course could serve as a foundation. In some stages of the curricula, this collaborative interaction with the workfield could be designed within the complexity of thesis research assignments, commissioned by employers and policymakers.

This gives OpenEU students, more than in regular programs, the opportunity to learn within a highly dynamic knowledge context, and thus to experience multi-,

inter-, and transdisciplinarity, as well as handling uncertainties. For example, we refer to the TaDT that we created in OpenEU. We invited both internal and external experts and students to participate in the TaDT and provide their expertise on digital transformation and innovation in higher education, and to jointly build a shared vision on digital education.

The invitation was disseminated broadly and asked all to express their interest. Following registration, we selected up to 100 participants, balancing institution, country, expertise domain, diversity, staff and students to take part in a large panel to discover priorities and gaps. From the large panel, we selected a core group of 30 participants to arrive at a consensus on priorities. This already resulted in six priorities in the digital transformation that need to be addressed in the near future. This is incorporated into this Innovation Agenda, ensuring that policies are aligned. By engaging with the OpenEU research cluster, we ensure that innovative research outcomes are incorporated into the Innovation

To operationalise these interactions, the following table 1 summarises the main stakeholder groups, their roles, and their specific engagement needs within online lifelong learning ecosystems.

Table 1. Agenda and vision on digital higher education.

Stakeholder Group	Role in Online LLL	Engagement Needs
Learners	End-users seeking competences	Personalized content, feedback forums, workfield action opportunities
Lecturers	Content creators/facilitators	Academic research networks (projects), collaborative design platforms, learning analytics tools.
Employers	Demand-driven training	Integration with job skills, real world practises, certification
Policymakers	Funding and standards	Data on outcomes, scalable models and implementation frameworks

Engagement Strategies within academic curricula

- Personalized content (flexibility to carry out assignments within one's own work) learning objectives
- Define course assignments on current workfield action (like a current municipal policy action)
- Feedback forums (multi-level throughout curricula, to meet peers)

Engagement Strategies within academic thesis research

- Allow students to participate in larger (EU Horizon, etc.) research projects, like bachelor group assignments, master's and doctoral thesis topics
- Define course assignments based on current research work, readings and webinars

Engagement Strategies with workfield/ real world

- Iterative online panels (e.g., Delphi-study-like discussion boards).

- Feedback loops like peer reviews and analytics dashboards.

Challenges and Solutions

Despite the potential of these engagement strategies, several structural and operational challenges may emerge. Table 2 below outlines key barriers and corresponding mitigation approaches.

Table 2 – Stakeholder Engagement Challenges and Mitigation Measures

Engagement strategy	Barriers	Mitigation
In academic curricula	Low participation	Schedule fixed in semesters, but flexible in daily bases
In academic curricula	Imbalance between learners active in the workfield and those that are not	Design some group work, of mixed groups; support student communities entrepreneurial skills and workfield webinars
In thesis research	Inclusive design addressing limitations (e.g., accessibility for diverse users; lab and field experimentation).	Focus research on big data, machine learning and other digital shifts
With real world	Digital shifts	Ensure staff rejuvenation, introducing new topics and skills Ensure collaboration multi/interdisciplinary
With real world	Policy alignment	Support horizontal network, within the triple helix

Piloting collaborative learning frameworks

To illustrate how these engagement principles can be implemented in practice, the following examples (table 3) present piloted collaborative learning frameworks across different contexts.

Table 3 - Piloting published examples

Learning framework/model	Example
Virtual Environmental Consultancy	Bachelor thesis teamwork inn geo-dispersed teams, commissioned by an employer or policymaker (OUNL)
Virtual Seminar Series	Inter-universities group work,
Online Legal Advice Centre for Practically Trained Citizens	Interactivity with citizens and workfield
Participatory Workshops	Workshop organized with EADTU Hagen 2025 Conference

Recommendations and Action Lines

Maite Fernández-Ferrer

The results of the Delphi process indicate that digital transformation in higher education should not be conceived as a sum of isolated technological innovations, but rather as an integrated institutional strategy capable of aligning infrastructure, pedagogy, ethics, Governance, and human capacity-building. In this sense, the recommendations emerging from the analysis do not point towards a technocentric model, but rather towards a transformation sustained by interoperable digital ecosystems, critical competences, ethical oversight and governance structures capable of providing coherence, legitimacy, and sustainability to the change currently being experienced. This reading is consistent with both the qualitative priorities and their quantitative distribution observed in the Delphi round.

1 - Building an intelligent, interoperable, secure and sustainable digital infrastructure

➔ First, OpenEU should prioritise the construction of an intelligent, interoperable, secure and sustainable digital infrastructure as the basis for all other lines of innovation. The Delphi shows clear consensus around pedagogically oriented infrastructures, inclusive and equitable infrastructures, secure and well-governed data architectures, ecosystems that support the development of digital and AI competences, and sustainable and sovereign digital infrastructures. This implies moving towards open and interoperable platform ecosystems that enable connections between LMSs, analytics systems, digital credentials, repositories and collaboration tools, thus avoiding the technological fragmentation that currently limits cooperation between institutions and the capacity to scale innovation. It also implies ensuring that digital infrastructures are not only technically efficient, but also inclusive, accessible, multilingual, privacy-respecting and compatible with institutional autonomy.

➔

2 - Promoting a progressive strategy for empowering educators and students

➔ Second, the institutions of the alliance should promote a progressive strategy for empowering educators and students that places AI literacy, data and information literacy, cybersecurity, and critical and metacognitive skills at the centre of transformation. Category 3 is the one with the highest level of consensus, and the highest-rated items emphasise self-regulation, agency, lifelong learning, AI literacy, inclusive digital collaboration, and the capacity to critically analyse data and information. Based on this, a first line of action should consist of deploying institutional AI literacy programmes for academic staff and students, integrating technical competences, critical understanding, bias detection, ethical judgement and the responsible use of generative systems. A second line should consist of reviewing these competences at curricular level so that they are not confined to occasional workshops, but are instead incorporated transversally across programmes, with specific attention to disciplinary differences. Finally, the pedagogical dimension of this empowerment should be strengthened by promoting collaborative, co-creative methodologies oriented towards the development of independent judgement, rather than limiting action to the functional adoption of tools.

3 - Redefining pedagogical design and assessment for AI-enabled environments

➔ Third, OpenEU should translate this commitment to empowerment into a redefinition of pedagogical design and assessment for environments in which AI already acts as a co-agent. The qualitative contributions collected through the Delphi show that this requires rethinking learning activities, feedback and assessment in order to distinguish between tasks in which AI support is pedagogically appropriate and tasks in which spaces must be preserved for the development of fundamental competences without automated assistance. In this direction, it is recommended to promote authentic, process-oriented tasks, the use of learning analytics to provide formative feedback, and the development of learning experiences that reinforce reflection, collaboration, metacognition, and intellectual responsibility. This line may also include the gradual expansion, where it makes disciplinary sense, of immersive solutions, provided that these are accompanied by faculty development, open resources, and strategies to reduce barriers of access and cost.

4 - Establishing ethics as a constitutive condition of digital transformation

➔ Fourth, the recommendations must place ethics as a constitutive condition of digital transformation, and not as a subsequent corrective. The consensus reached in the Delphi study clearly reinforces the centrality of human-centric AI that preserves autonomy and the possibility of choosing not to use it, as well as transparency and integrity of systems, equity and participatory design, and privacy alongside robust data governance. It follows that OpenEU should establish, as a transversal line of action, that every relevant technological adoption incorporates principles of human-centric design, explainability, meaningful human control, and mechanisms for review and contestation. Likewise, procedures for ethical assessment, documentation, auditability, and the continuous monitoring of AI and analytics systems should be institutionalised. Above all, however, this ethical dimension should not be understood only in normative terms, but also in formative ones: educators and students must be enabled to develop what AI cannot replace, namely critical judgement, the ability to learn how to learn, ethical reasoning, creativity, situated interpretation, and responsibility for the consequences of technological uses.

5 - Strengthening institutional governance as an enabling condition for transformation

➔ Fifth, the implementation of these priorities requires strengthening institutional governance as an enabling condition for transformation. The sections already drafted in the document strongly suggest that sustainable digital transformation is not primarily a technological project, but rather an institutional and cultural one. Governance must translate into strategic roadmaps, leadership and oversight mechanisms, participatory structures, digital quality criteria and policies aligned with educational values and evidence. In operational terms, this implies creating or consolidating digital transformation committees, AI ethics bodies, algorithmic auditing mechanisms and explicit policies on the use of AI in teaching, assessment and decision-making. It also implies recognising that professional development cannot be occasional or ancillary: it must form part of the institutional culture, with sustained investment in training on digital pedagogy, AI, data and assessment design, as well as support from specialists who can work jointly with

academic staff. Likewise, incentives, academic recognition, workload and multiannual funding must be aligned so that digital innovation does not depend solely on individual effort or short-term projects.

6 - Ensuring data protection and systems modernisation as a transversal strategic capability

➔ Sixth, OpenEU should assume data protection and systems modernisation as a transversal strategic capability. The Delphi confirms consensus on the ethical and values-aligned use of data, on cybersecurity, and on the need for training and institutional awareness regarding safe and ethical practices. This suggests that lines of action should not be limited to reactive compliance, but should move towards a designed governance capability: modernising legacy systems in order to make data flows visible and traceable; strengthening secure infrastructures and cybersecurity coordination; incorporating privacy-by-design routines and impact assessments; and distributing responsibility for data protection, AI and risk across leadership teams, IT services, academic staff and administrative personnel. This orientation is especially important in the context of a European alliance, where interoperability and transnational collaboration require trust, regulatory clarity and institutional maturity.

These recommendations should not be understood as a closed list of actions, but rather as a strategic orientation for building a European ecosystem of digital transformation capable of aligning technological innovation, educational values, human capacities and institutional responsibility.

Methodological Note

Haline Costa Maia, Pedro Duarte Pestana

Development Process of the OpenEU Innovation Agenda

The OpenEU Innovation Agenda was developed through a structured, multi-phase consultation process conducted between July 2025 and February 2026. The methodology combined exploratory mapping, iterative Delphi rounds (Thangaratinam & Redman, 2005), and Participatory (Salazar, 2022) engagement through the TaDT framework under OpenEU's Work Package 5, "Build capacity and harness the power of digital education". The objective was to generate a robust, evidence-based, and collectively validated set of innovation priorities for digitally enabled higher education.

Phase 1 – Exploratory Large Panel Round

The process began with the Large Panel Research Round, distributed on 14 July 2025, with responses collected until 25 July 2025. A total of 82 experts were invited, and 53 valid responses were received, resulting in a response rate of 65%. The panel ensured strong geographical and professional diversity, with 88.7% of respondents based in Europe and additional representation from North and Latin America. Participants included teaching staff, students, researchers, and administrative and leadership roles, integrating pedagogical, strategic, and operational perspectives.

The survey instrument combined 10 Likert-type items and 5 open-ended questions. Closed items were analysed descriptively following best practice for ordinal data analysis, while open-ended responses were examined through reflexive thematic analysis (Clarke & Braun, 2017). Reliability testing using Cronbach's alpha indicated that constructs such as infrastructure, ethics, and staff capacity should be treated as multidimensional rather than aggregated into a single composite scale.

This exploratory phase identified strong convergence around infrastructure renewal, ethical frameworks, and data protection, while exposing ambivalence regarding AI's disruptive role and institutional readiness. The findings provided the empirical foundation for defining six thematic scopes that structured the next Delphi rounds.

Phase 2 – Delphi Round 1 (Qualitative Consolidation)

Delphi Round 1 translated exploratory insights into a structured expert consultation instrument grounded in established Delphi principles of anonymity, iteration, controlled feedback, and convergence-building (Keeney, McKenna, & Hasson, 2010).

The analytical procedure combined manual coding and AI-assisted qualitative structuring, inspired by Morgado and Beck (2024). The first question was coded manually to stabilise interpretative criteria. Subsequent questions were analysed using a structured AI-assisted protocol, with all AI-generated outputs explicitly reviewed, validated, and, where necessary, reformulated by the researcher. AI functioned strictly as analytical support rather than as a decision-making agent.

Excerpts were segmented into meaning-bearing units, traceability to respondents was preserved, and codes were progressively consolidated into subthemes and final themes. The Round 1 questionnaire consisted of six open-ended questions, each corresponding to one of the six thematic domains identified in the exploratory phase, where experts were invited to list priority ideas and practices.

Phase 3 – Delphi Round 2 (Quantitative Prioritisation)

While 30 experts initially formed the core Delphi panel, participation in Round 2 resulted in 16 complete responses, reflecting typical attrition patterns in multi-round Delphi studies. Given the voluntary nature of participation and the timing of the consultation across the academic calendar, some panel members were unable to complete the second round. Delphi Round 2 focused on structured prioritisation. Sixteen experts evaluated the 49 items using a defined consensus threshold of ≥70% top-two-box agreement. Twenty-six of the 49 items reached consensus. No item reached consensus as low priority (i.e., no item met the ≥70% bottom-two-box threshold). While overall agreement on importance was high, ranking convergence was moderate (Kendall's W ≈ 0.203), indicating diversity in sequencing preferences rather than disagreement about relevance. This reflects institutional heterogeneity within the Alliance while confirming shared strategic direction.

Quantitative analysis followed a pre-defined analytical plan. Consensus was operationalised as ≥70% top-two-box agreement (ratings of 4-5 on the priority scale), a threshold consistent with established Delphi practice (Keeney, McKenna & Hasson, 2011). Bottom-two-box agreement (ratings of 0-1) was examined symmetrically to identify any items collectively deprioritised. Descriptive statistics (median, mean, standard deviation, interquartile range) were computed for each item to characterise central tendency and dispersion. Inter-rater agreement was assessed using Kendall's W, appropriate for ordinal rankings across multiple raters.

Think and Do Tank Participation Structure

The TaDT operated with a layered participation model. A total of 120 expressions of interest were received. From these, 30 experts were selected for the Core Delphi Group, and 81 participants formed the extended consultation panel. Selection followed structured representativity criteria, including geographical balance, institutional distribution, diversity considerations, alignment with WP5 objectives, engagement potential, and dissemination impact. This architecture ensured both depth (core consensus-building) and breadth (stakeholder diversity).

Methodological Strengths and Challenges

The multi-stage design enabled progressive refinement: exploratory openness, structured convergence, and quantitative validation. Strengths of the process include triangulation between qualitative and quantitative data, transparent AI-assisted coding with full human oversight, structured consensus thresholds, and cross-national diversity. Challenges included the timing of the exploratory round during the academic recess period in August, moderate inter-rater agreement in ranking intensity, and institutional heterogeneity affecting priority sequencing. However, these elements reflect contextual complexity rather than methodological weakness.

The methodological trajectory evolved from exploratory mapping of systemic tensions toward structured strategic prioritisation. The final Innovation Agenda should therefore be understood not as a prescriptive blueprint, but as a collectively validated strategic framework grounded in empirical consultation, iterative refinement, and participatory engagement.

Conclusions

Haline Costa Maia

Integrating the Findings: A Human-Centred Governance Model

The Innovation Agenda on Digital Education presented in this document consolidates the results of a participatory and iterative process developed within the OpenEU TaDT, reflecting a shared vision of the strategic pathways for the digital transformation of European higher education. More than a synthesis of trends, this Agenda represents a structured effort to articulate different dimensions which, together, shape a more integrated, inclusive, and sustainable digital education ecosystem.

Across the Agenda, the identified principles reinforce the centrality of a human-centred approach, in which emerging technologies, such as artificial intelligence and immersive environments, are understood as mediators of educational processes rather than ends in themselves. At the same time, the need to ensure institutional conditions that sustain this transformation is emphasised, including investment in professional development, strategic alignment, and governance models capable of integrating innovation with responsibility.

The integration of findings across the different priorities also highlights the importance of coordination and coherence mechanisms across pedagogical, technological, and institutional levels. As observed in the analyses conducted, digital transformation initiatives require the alignment of innovative pedagogical practices with appropriate infrastructures, consistent institutional policies, and clearly defined ethical principles. A qualitative analysis of these dimensions also reveals underlying tensions between priorities, highlighting the importance of sustained dialogue and critical debate. Such tensions reinforce the need to seek informed consensus as a way to guide responsible and ethical directions for the future of digital education. This articulation between tensions constitutes one of the main contributions of this Agenda, as it provides not only a set of priority areas but also an integrated framework for action.

It is also important to emphasise that this Agenda reflects the outcomes of a first cycle of work carried out between 2025 and 2026 within the OpenEU project. However, its nature is intentionally dynamic and evolving. The Innovation Agenda has been designed as a living instrument, to be updated annually through new rounds of consultation and participatory processes involving the TaDT network. This continuous character allows not only for the incorporation of new evidence and emerging challenges, but also for strengthening the legitimacy and relevance of the priorities identified over time.

By positioning itself as an evolving strategic reference, this Agenda contributes to strengthening OpenEU as a space for articulation between research, policy, and practice. More broadly, it provides a structured foundation to support higher education institutions, policymakers, and other stakeholders in developing digital education models that are simultaneously innovative, inclusive, and socially responsible.

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