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Report on methods for holistic literacy and emerging technologies (ET) in Adult Learning and Education (ALE)

Emerging Technologies for Holistic Literacy in Adult Education

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Desk research findings

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Austria has taken significant strides in fostering digital competence across all levels of education through comprehensive strategies, national frameworks, and targeted initiatives. The overarching aim is to enhance digital inclusion, reduce inequalities, and integrate emerging technologies such as artificial intelligence (AI) into both learning and teaching processes.

Policy Framework and Governance

Austria's digital education strategy is anchored in the Digitale Kompetenzoffensive für Österreich (Digital Competence Offensive for Austria). Launched by the Austrian government, this strategy includes the establishment of the Digital Skills Office within the OeAD, Austria's Agency for Education and Internationalisation, on October 12, 2023. The initiative supports Austria's goal to meet the European Commission's target of ensuring that at least 80% of the population aged 16-74 possesses basic digital skills by 2030. Currently, Austria surpasses the EU average with 63% of this demographic having such skills. The initiative is operationalised through nationwide programs, such as 4,500 "Digital Everywhere" workshops designed to enhance digital literacy and facilitate public engagement with digital tools.

Competence Frameworks

Austria has adopted the Digital Competence Model for Austria (DigComp AT), which is based on the European Commission's DigComp 2.1. The most recent version, DigComp 2.3 AT, became effective in April 2023. This model outlines 27 individual competencies across six domains, integrating new focus areas such as sustainable IT practices, legal compliance in digital publishing, and critical engagement with digitality. The model serves as a foundation for curriculum design, certification, and self-assessment tools for learners.

Obstacles and Enablers of Digital Inclusion

Despite progress, Austria still faces challenges in digital inclusion. Research by institutions such as the Arbeiterkammer Wien and the FFG highlights persistent digital inequalities. The "first digital divide" concerns access to infrastructure, while the "second digital divide" relates to disparities in digital usage and skills. Marginalised groups are disproportionately affected due to limited access, lack of educational support, and high entry barriers.

The FFG's Digitale Ungleichheit Report (Digital Inequality Report) further details how technological products may inadvertently exclude users when their design fails to accommodate diverse needs. It advocates for inclusive technology development through participatory design, user feedback, and adaptive development phases.

AI in Adult Education

Austria is actively exploring the integration of AI in adult learning. A dedicated issue of the journal Magazin Erwachsenenbildung examines the potential, challenges, and ethical considerations of AI in education. It addresses critical areas such as learner-centred design, data protection, institutional transformation, and the evolving role of educators.

A pioneering best-practice initiative is the AI-focused training programme offered by bifeb. This structured, modular course targets adult educators and includes core and elective modules on AI in teaching, consulting, and education management. Topics cover AI tools, ethics, bias, and personalised learning, empowering educators to navigate and apply AI effectively.

Community Outreach and Best Practices

Notable outreach initiatives include the Digital Village programme by the Vienna Adult Education Centers, which provides hands-on support in municipal housing areas. Residents can seek help with everyday digital challenges in a supportive, community-driven setting. This initiative aims to build foundational digital skills organically through daily needs and social interactions.

Austria presents a coherent and evolving model for integrating emerging technologies and digital skills into education. Its national frameworks, inclusive outreach, and emphasis on educator training provide valuable insights for other countries seeking to build resilient, inclusive, and future-ready education systems.

Sources and practices

- Digitale Kompetenzoffensive für Österreich
- DigComp AT
- Policy Paper Digitale Inklusion (Arbeiterkammer Wien)
- FFG Digitale Ungleichheit Report
- Magazin Erwachsenenbildung
- Digital Village
- Bifeb AI in Adult Education Course

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Interview findings and perspectives from stakeholders

Emerging technologies integration in adult learning

In Austria, Task 2.1 focused on **institutional and policy-level insights into the integration of emerging technologies (ET) in adult education**. The research team conducted six in-depth interviews with adult educators, education technology experts, and adult learning centre representatives, complemented by a thematic forum at a major adult education event (VHS-Tag 2025) that gathered approximately 90 participants. The participants represented a range of stakeholder roles, including trainers, digital strategy developers, literacy educators, and social inclusion experts—many operating in community-based, non-profit adult learning institutions.

All interviewed stakeholders demonstrated a high degree of familiarity with digital tools, including artificial intelligence (AI), mobile platforms, and communication apps. Several participants were early adopters or long-standing experts in the field, having worked with emerging technologies since the 1990s. Importantly, most respondents viewed technology as a pedagogical tool rather than an end, emphasising that its integration must be grounded in educational relevance and learner needs. Technologies are generally selected based on their accessibility and relevance to learners' everyday lives, rather than their novelty.

Digital tools are widely used in preparation and delivery, with strong emphasis on low-threshold technologies that learners already use, such as WhatsApp, YouTube, Padlet, automatic translators, and school management platforms. More advanced tools, including AI-powered applications, are typically applied in course planning rather than in live teaching, reflecting time constraints and the lack of institutional support.

The guiding pedagogical philosophy centres on participant orientation, with educators adapting technology use to learners' prior digital habits and cultural familiarity. This approach is especially prevalent in literacy and inclusion-focused programs, where tools like Zoom and smartphones are introduced not only for instruction but as a means of building learners' digital confidence in everyday contexts.

The Austrian fieldwork revealed several successful examples of ET use, rooted in flexible, resource-sensitive pedagogies. Educators reported that integrating mobile-based applications such as Google Maps or automatic translation tools into classes increased learner engagement and promoted real-world relevance. In basic education settings, tablets and visual digital tools were seen as effective for making abstract concepts more tangible and enhancing accessibility. However, success often depended on the personal initiative of educators, many of whom work in precarious or freelance positions and frequently finance or develop digital resources themselves.

Collaborative projects and training initiatives were also highlighted as important enablers. Notably, EBmooc 2025, an online training course for adult educators on AI-supported workflows, was seen as a key mechanism for building institutional digital capacity. Similarly, public engagement initiatives such as Vienna's "Digital Village"—which brings digital support services into public housing—illustrate how community-based solutions can enhance digital inclusion and visibility.

Despite promising practices, structural challenges persist. Many educators reported a lack of institutional support for hardware acquisition, software licensing, and pedagogical innovation. Digital infrastructure is often individualised, with little provision for shared devices or IT support, particularly among freelance educators in non-formal adult education. This results in a dependence on learners' own devices and a reliance on free tools, which limits pedagogical possibilities.

Furthermore, digital competence among educators varies, and many lack the time or incentives to explore new tools beyond surface-level use. The fragmented employment landscape, marked by limited paid preparation time and a lack of team-based collaboration, was identified as a key constraint on innovation. Financial and logistical barriers—such as difficulties securing quiet spaces for podcasting activities—further illustrate the everyday obstacles to meaningful technology integration.

Stakeholders emphasised the importance of cultivating an institutional culture that values experimentation, peer learning, and reflection. Educational teams that foster open dialogue and mutual support were seen as better equipped to explore new tools and respond to challenges. By contrast, institutions lacking this culture often failed to capitalise on available resources and fell short in disseminating best practices. Attitudinal barriers were also identified, both among educators and learners. While outright resistance to technology was rare, many stakeholders highlighted the need to overcome technophobia and promote balanced, reflective engagement with ET, avoiding both techno-solutionism and undue scepticism.

The findings from Austria underscore a nuanced, practice-driven integration of emerging technologies in adult learning, shaped by pedagogical pragmatism and constrained by structural limitations. While educators demonstrate strong commitment and ingenuity in adapting tools to learner contexts, the lack of institutional infrastructure, funding, and systemic recognition of digital practices hampers broader innovation. Moving forward, Austria's adult education sector would benefit from coordinated investment in shared infrastructure, professional development, and stable employment structures, ensuring that the integration of ET is not dependent on individual effort alone but embedded within sustainable institutional frameworks.

Holistic literacy programmes and emerging technologies

Task 2.2 explored how **holistic literacy programmes are being addressed and implemented in Austrian adult education**, particularly in programs that serve vulnerable groups. Interviews focused on two key perspectives: (1) educators and stakeholders working in adult education, social inclusion, and workforce development; and (2) vulnerable adult learners themselves, many of whom participate in basic education and literacy programs delivered by community-based institutions.

The Austrian findings indicate that vulnerable adult learners often experience significant barriers to digital participation but also display resilience and openness when supported appropriately. Access to hardware and stable internet remains uneven, particularly for learners in basic education settings or those from low-income and migrant backgrounds. Many rely on smartphones as their sole digital device, which limits their ability to engage with more demanding educational platforms.

Nevertheless, learners tend to show strong motivation and curiosity, especially when digital tools are introduced in ways that align with their everyday lives. Educators reported that using familiar applications such as WhatsApp, Zoom, and Padlet can build learners' confidence and foster digital inclusion. For example, communicating via Zoom during a course not only supports learning goals but also introduces learners to a new medium they can use in other areas of life, such as keeping in touch with family or accessing services. This demonstrates that technology can become an indirect literacy tool, even when it is not the primary focus of instruction.

Educators working with vulnerable learners consistently emphasised that pedagogical intentionality is more important than technological novelty. They reported using digital tools primarily as enablers of communication, collaboration, and personalisation. Importantly, technology is often integrated into face-to-face instruction, rather than deployed in fully online formats, in recognition of learners' varying levels of digital literacy and comfort.

A key insight is that holistic literacy cannot be separated from relational pedagogy. Learners' emotional security and trust in the educator are foundational to their willingness to engage with technology. Many learners have experienced exclusion or failure in formal education systems, and educators must create spaces where experimentation is encouraged and failure is not penalised. This underscores the importance of affective and ethical dimensions of holistic literacy, especially in tech-mediated learning.

Educators also noted that group dynamics strongly influence technology adoption. For instance, social hierarchies within learning groups - related to gender, language proficiency, or perceived digital competence - can inhibit participation.

Some learners may feel reluctant to ask questions or seek help if others in the group dominate or present themselves as more tech-savvy. These subtle dynamics can reinforce exclusion unless proactively addressed through sensitive group facilitation and trust-building.

Despite promising practices, the integration of emerging technologies into inclusive literacy programs remains constrained by resource scarcity and institutional fragmentation. Educators frequently work under precarious conditions, with little access to preparation time, technical support, or dedicated equipment. In many cases, digital engagement depends on learners bringing their own devices, and there is minimal funding for upgrading or maintaining institutional infrastructure.

Notably, no dedicated technology-based approaches were identified that directly target the challenges adults in vulnerable contexts face. Instead, effective practice hinges on the adaptability and creativity of individual educators, who often compensate for systemic shortcomings through volunteerism and personal investment. This reality raises concerns about sustainability and equity in digital inclusion efforts.

Moreover, the prevailing assumption that digital tools inherently increase access and participation is questioned by practitioners. Without sufficient support, technology can become another layer of exclusion, particularly for learners facing multiple forms of marginalisation. Educators stressed that technology must be mediated through pedagogy, rather than imposed as a universal solution.

Learners respond most positively when digital tools are introduced incrementally and with clear, practical purposes. They appreciate tools that are intuitive, mobile-friendly, and directly relevant to their daily lives. Importantly, their preferences reflect a desire for guided experimentation, not passive consumption of digital content.

From the educator's perspective, there is a strong need for ongoing professional development, access to easy-to-use and inclusive digital resources, and institutional support structures that recognise the complex demands of working with vulnerable learners. This includes not only technical training, but also capacity-building in digital ethics, accessibility, and differentiated instruction.

Austria’s experience in Task 2.2 highlights that the integration of emerging technologies into ALE for adults in vulnerable contexts requires more than access to devices or tools. It requires a pedagogical culture grounded in empathy, trust, and contextual relevance. While learners show willingness to engage with digital tools, their participation depends on the scaffolding provided by educators who are often operating under-resourced and unsupported. To move forward, systemic investment is needed in infrastructure, educator support, and inclusive digital pedagogies. Holistic literacy in the digital age cannot be achieved through technology alone - it must be cultivated through intentional, responsive, and equitable educational practices.

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