Beyond the Pandemic:
Digitalisation in Teacher Education and Emerging Trends

The digiTED Project is an Erasmus+ project, which ran from 2022-2025, aimed at enhancing the digitalisation of teacher educators across Europe. The project brings together a diverse consortium of teacher education institutions from Sweden, Spain, Estonia, Ireland and Germany to develop innovative strategies, resources, and professional development opportunities for teacher educators to support their own digital teaching practices. The project consists of several results, including a CPD programme, a Virtual Makerspace, and a European digitalisation strategy. One particularly innovative outcome is Project Result 6, which focuses on capturing diverse perspectives on digital transformation in teacher education. To achieve this, the project partners created a Post-COVID-19 Vlog for Ideas and Solutions to Innovate Teacher Education, featuring interviews with leading experts, practitioners, and stakeholders in the field. These interviews provide valuable insights into the challenges, opportunities, and future directions of digitalisation in teacher education, addressing topics such as hybrid learning, AI integration, pedagogical innovation, and institutional strategies.

The following document presents a thematic comparison of the insights shared in the vlog interviews. By analysing key similarities, differences, and emerging themes from the discussions, this comparative overview provides a deeper understanding of the current state of digital transformation in teacher education. The findings presented here will not only inform the ongoing work of digiTED but also contribute to broader policy discussions and strategic planning for sustainable digitalisation in teacher education. To better disseminate the findings from the Vlog interviews and thematic analysis, the AI software Notebook LM was trialled to generate a podcast based on the insights presented in this paper. This experiment aimed to explore how AI-driven content generation can facilitate knowledge sharing and enhance accessibility for a wider audience. By converting key themes and expert discussions into an engaging audio format, the podcast offers another option to reach teacher educators, policymakers, and stakeholders interested in the digital transformation of teacher education. The use of Notebook LM represents a further step in the digiTED project's commitment to using innovative digital tools for professional development and dissemination. The podcast can be retrieved here:

Findings

The following section presents a thematic analysis of the digiTED Vlog interviews, which were conducted as part of Project Result 6: A Post-COVID-19 Vlog for Ideas and Solutions to Innovate Teacher Education.

The table below provides a comparative overview of the main findings, offering a structured summary of how different experts perceive the ongoing digital shift in education.

Transcript	Key patterns	Insights	Emerging trends
Prof. Mart Laanpere	Hybrid teaching expectations post-pandemic, need for redesigning activities	Teachers must design activities that engage both online and in-person students	Growing demand for hybrid and blended learning solutions
Louise Jones	Digital literacy challenges, AI-driven content, need for critical thinking skills	AI-driven tools require educators to rethink media literacy and misinformation	AI-generated educational content shaping learning experiences
Prof. Bianca Roters	Digital collaboration as a key driver for innovation, need for reflection on tech use	Collaboration fosters professional growth, but adaptability is key in digital contexts	International collaboration made easier by digital platforms
Dr. Olivia Wohlfart	Challenges of maintaining personal interaction in digital settings, flipped classrooms	Face-to-face interactions remain crucial, but structured online formats can help	Importance of flexible learning spaces and hybrid meetings
Prof. Reijo Kupiainen	Digital pedagogy vs. technology-driven approaches, critique of tech dominance	Pedagogical approaches should drive digital adoption, not the other way around	Skepticism toward digital tools that lack pedagogical foundations
Prof. Ira Diethelm	Need for hybrid learning structures, shift in professional development formats	Short online training formats are more accessible but must be complemented by hands-on practice	Increasing institutional investment in digital training for educators
Dr. Ilka Nagel	Balancing digital adoption with traditional pedagogies, AI integration in assessment	AI and analytics can enhance assessment but should be used critically and ethically	Shift towards evidence-based digital education strategies, including AI ethics

Key Patterns in the Digitalisation of Teacher Educators: Insights from the digiTED VLog Interviews

The analysis of the seven expert interviews conducted for the digiTED VLog has revealed a set of recurring themes in the digitalisation of teacher education. While each expert shared unique perspectives based on their institutional and national contexts, clear commonalities, differences, and challenges emerged across the discussions. These insights provide a valuable foundation for shaping future strategies within the digiTED project and beyond, particularly in the areas of hybrid learning, AI and emerging technologies, institutional digital strategies, and professional development.

Hybrid and Blended Learning: A Necessary but Challenging Shift

A key theme across the interviews was the increased reliance on hybrid and blended learning models in teacher education, which many experts acknowledged as an inevitable and necessary adaptation. However, opinions varied significantly on the feasibility and effectiveness of these models. Prof. Mart Laanpere (Tallinn University) described the challenges of hybrid teaching, particularly the expectation from students that online participation should offer an equal experience to in-person teaching. He remarked that teaching in hybrid mode often feels like running two parallel classes, requiring a complete redesign of teaching strategies to maintain student engagement. Similarly, Dr. Olivia Wohlfart and Prof. Bianca Roters

highlighted the loss of informal interaction and networking in fully digital settings, stressing that digital tools alone could not replace the social and collaborative aspects of learning. While many experts viewed hybrid learning as a necessary adjustment, Dr. Ilka Nagel was more critical, pointing out the technical and logistical challenges of running effective hybrid sessions. She observed that technical failures and infrastructure limitations frequently disrupt hybrid learning experiences, making it a frustrating process for educators. Prof. Reijo Kupiainen offered a different perspective, arguing that the focus on hybrid learning often overemphasised technology rather than pedagogy, stating: "The emphasis is often placed on tools and platforms rather than on pedagogy." These varying perspectives suggest that while hybrid models are here to stay, their implementation requires careful planning, infrastructure investment, and pedagogical adaptation. For the digiTED project, this reinforces the need to develop best practice models for hybrid learning that balance technological feasibility with engaging teaching strategies.

AI and Emerging Technologies: Between Optimism and Caution

Artificial intelligence (AI) emerged as both a game-changing tool and a potential challenge for teacher education. Some experts saw AI as an opportunity for enhancing personalisation, accessibility, and automation, while others were more sceptical, warning of ethical, pedagogical, and transparency issues. Louise Jones (ThingLink) was the most enthusiastic, describing AI as a transformative force for accessibility in education. She highlighted AI-generated automatic translations and immersive content creation, stating: "With the click of a button, everything can be translated into a selected language." In contrast, Prof. Bianca Roters viewed AI primarily as a tool for differentiation and individualised feedback, but also warned about misinformation and critical digital literacy challenges, particularly in language education. Prof. Mart Laanpere focused on AI's role in assessment and learning analytics, predicting that AI could revolutionise evidence-based assessment methods. However, he also foresaw a backlash against AI-driven assessment, leading educators to revert to more traditional methods out of fear of manipulation. This cautious stance was also reflected in Dr. Ilka Nagel's perspective, which focused on data privacy and ownership concerns. While AI offers undeniable benefits, the experts collectively agreed that its integration in teacher education must be carefully guided by ethical and pedagogical considerations. The digiTED project could play a key role in developing a structured approach to AI adoption, ensuring that critical reflection, ethical guidelines, and teacher training accompany technological advancements.

Institutional Digital Strategies: Fragmentation vs. Long-Term Commitment

Another recurring theme was the inconsistent and often fragmented approach to digitalisation at institutional levels. Several experts expressed frustration over the lack of continuity in digital strategies, particularly when leadership changes led to shifting priorities. Prof. Mart Laanpere (Tallinn University)

shared an experience in which he was invited to lead a digital education strategy task force, only to see the initiative abandoned when a new rectorate took over. He noted that digitalisation efforts often lack sustainability, stating: "Digital education is no longer as prominently featured in our university's strategy." A similar sentiment was expressed by Prof. Reijo Kupiainen, who described a disconnect between digitalisation discussions and actual implementation, noting that many universities lack clear digitalisation strategies beyond administrative and business-related applications. In contrast, Prof. Ira Diethelm reported a more structured institutional approach, where dedicated funding and projects have enabled long-term digital transformation efforts. Her institution actively invested in training programmes, infrastructure improvements, and hybrid learning tools, providing a sustainable framework for digital education. Dr. Olivia Wohlfart, meanwhile, emphasised the importance of bottom-up initiatives, arguing that peer learning and practitioner-led networks often drive more meaningful digital innovation than top-down mandates. She describes sharing experiences as one of the best ways to learn digital teaching strategies. These insights reinforce the idea that sustainable digitalisation in teacher education requires a combination of top-down support and bottom-up engagement. The digiTED project could help develop strategies for maintaining digital momentum within institutions, ensuring that initiatives remain robust despite leadership changes.

Conclusion: A Shared Vision with Differing Approaches

While perspectives varied across the interviews, there was broad consensus on the importance of digitalisation in teacher education. The key areas of agreement and divergence can be summarised as follows:

- Hybrid and blended learning remain challenging to implement effectively, requiring both technical infrastructure and pedagogical adaptation.
- AI was viewed as both an opportunity and a risk, with some experts emphasising its transformative potential and others highlighting concerns around ethics and transparency.
- Institutional digitalisation strategies are often inconsistent, with some universities investing heavily in sustainable transformation, while others experience fragmentation and a lack of continuity.

For the digiTED project, these findings reinforce the need to:

1. Develop best practice models for hybrid teaching, integrating technology while maintaining student engagement.
2. Create structured guidelines for AI adoption, balancing innovation with ethical considerations.
3. Advocate for long-term digital strategies in teacher education, ensuring sustainable implementation despite leadership changes.

These insights align strongly with the mission of digiTED, highlighting the need for evidence-based approaches to digitalisation in teacher education that address both technological opportunities and institutional challenges.

Insights from the digiTED VLog Interviews

While the key patterns identified across the interviews reveal overarching themes in the digitalisation of teacher education, the insights gained from individual perspectives provide a deeper understanding of the specific challenges, opportunities, and strategic directions that could shape future initiatives, including those within the digiTED project. These insights not only reflect personal and institutional experiences but also highlight potential pathways for innovation, collaboration, and sustainable digital transformation.

The Challenge of Digital Competence: A Divide Among Educators

A significant insight from the interviews is the uneven distribution of digital competence among teacher educators. While some have fully embraced digitalisation, others remain sceptical or struggle to adapt. Prof. Bianca Roters expressed concern about this digital divide, stating: "We need to be more flexible and develop a certain level of serenity when faced with new technological changes." Her perspective aligns with Dr. Olivia Wohlfart, who highlighted that many educators felt overwhelmed by digitalisation and often lacked structured support to develop their competencies. However, Prof. Ira Diethelm offered a contrasting view, suggesting that many educators have already incorporated digital tools into their practice, albeit without recognising it as digitalisation. She noted: "However, the current teaching routine already contains numerous digital elements, often without being consciously noticed."

The Role of Critical Digital Literacy in Teacher Education

Several interviewees stressed that digital competence is not just about using tools but about understanding their implications, particularly in relation to AI, media literacy, and online information assessment. Louise Jones (ThingLink) strongly advocated for integrating digital literacy into teacher training, warning of the risks associated with misinformation and digital bias. She stated: "AI-generated content becomes more prevalent, we can teach young people to distinguish between content created by humans and content created by AI. More importantly, this awareness can encourage them to critically analyze all content, regardless of its source. If we can instill this habit, people might develop a more skeptical and analytical approach to the media they consume, allowing them to question why something is being posted and how it aligns with their own viewpoints, biases, and learning." Similarly, Prof. Reijo Kupiainen raised concerns about the lack of transparency in educational technology, questioning: "Who owns the technology? How is it being used? Are digital platforms truly designed to benefit teaching and

learning?" This aligns with Prof. Mart Laanpere's argument that evidence-based digital assessment should become a priority to ensure that digital education remains pedagogically sound. For digiTED, these insights highlight the importance of embedding critical digital literacy into teacher education programmes. This could involve developing guidelines, training modules, and case studies to help educators and students navigate digital content critically.

Institutional Commitment to Digitalisation: Sustainable Strategies vs. Short-Term Reactions

A key takeaway from the discussions is the varying levels of institutional commitment to digitalisation. Some universities have established clear digital strategies, while others have relied on short-term, reactive measures in response to crises like the COVID-19 pandemic. Prof. Mart Laanpere (Tallinn University) provided a first-hand account of how digitalisation strategies can be disrupted by leadership changes, stating: "a new rectorate was elected, and they had a different vision. They preferred a single overarching strategy rather than multiple separate ones. As a result, digital education is no longer as prominently featured in our university's strategy." In contrast, Prof. Ira Diethelm described a more structured institutional approach, where universities provided long-term investment in digital infrastructure and training. Dr. Ilka Nagel, however, pointed out that even in well-funded institutions, the lack of clear communication and training opportunities can hinder digitalisation. She remarked: "Many instructors simply do not have the time to participate in digital training while managing their regular workload." These insights indicate that successful digital transformation requires sustained commitment at the institutional level. The digiTED project could advocate for policy recommendations that encourage long-term investment in digital infrastructure, training, and leadership engagement, ensuring that digitalisation is not dependent on individual initiatives or short-term funding cycles.

AI, Automation, and the Future of Teaching and Assessment

Opinions on the role of AI in teacher education varied significantly among interviewees, ranging from enthusiastic adoption to cautious scepticism. Louise Jones and Prof. Bianca Roters saw AI as a powerful tool for differentiation and adaptive learning, with Jones stating: "The future of education is not just about using AI as a shortcut for learning but about leveraging it to empower learners to think critically, solve problems, and engage in creative collaboration. I have always been a strong advocate for project-based, skills-based, and context-based learning. The blending of pedagogical and andragogical approaches is becoming increasingly prominent, especially in gamified learning." Conversely, Prof. Mart Laanpere and Dr. Ilka Nagel voiced concerns about over-reliance on AI-generated assessments, arguing that some educators are already reverting to traditional teaching methods out of fear that AI will manipulate results. Prof. Reijo Kupiainen added another layer to the discussion, warning that AI and digital tools often

prioritise efficiency over pedagogy. He stressed the need to ensure that AI applications align with educational goals rather than corporate interests, stating: "One of the key challenges is that discussions around digitalization tend to be highly technology-focused. The emphasis is often placed on tools and platforms rather than on pedagogy. A more effective approach would be to focus on digital pedagogy—how we use technology in a way that enhances teaching and learning." For digiTED, these insights underscore the need for a balanced approach to AI in education. The project could develop guidelines and training modules to help educators integrate AI responsibly, ensuring that technology enhances learning experiences rather than replacing pedagogical judgment.

Conclusion: Strategic Takeaways for the digiTED Project

The insights gathered from the digiTED VLog interviews reinforce the need for holistic, structured, and sustainable approaches to digitalisation in teacher education. While interviewees shared common challenges, their perspectives on solutions varied, highlighting both institutional and individual differences in digital adaptation. Key strategic takeaways for digiTED include:

1. Addressing the digital competence divide by creating differentiated training opportunities for teacher educators at various stages of digital engagement.
2. Embedding critical digital literacy in teacher education programmes to ensure that educators and students can assess, navigate, and critically engage with digital content.
3. Advocating for sustainable institutional digital strategies, ensuring that digitalisation efforts remain consistent and well-funded beyond short-term initiatives.
4. Developing AI and automation guidelines to support responsible and pedagogically sound integration of emerging technologies.

The digiTED project has the potential to serve as a model for transnational collaboration on digital education, bringing together institutions, policymakers, and educators to develop innovative and evidence-based digital strategies for the future of teacher education.

<u>Emerging Trends in the Digitalisation of Teacher Education</u>

While key patterns outline recurring themes and insights highlight deeper reflections from individual perspectives, emerging trends focus on future-oriented developments that are shaping the digitalisation of teacher education. These trends highlight shifting pedagogical approaches, evolving institutional priorities, and technological innovations that could play a transformative role in teacher training. The digiTED project is well-positioned to anticipate, support, and further develop these trends through its ongoing research, training programmes, and policy recommendations.

The Shift Towards Hybrid and Flexible Learning Models

A significant trend emerging from the interviews is the normalisation of hybrid learning and the increasing demand for flexible teaching models. Several interviewees observed that the expectation for hybrid learning has become permanent, with students and staff seeking greater autonomy in how they engage with learning. Prof. Mart Laanpere described how students now expect hybrid learning as a given: "what happened after the pandemic was that many students in every group I taught expected that from now on, I would always teach in hybrid mode. This meant that some students were physically present, while others attended via Zoom, expecting to receive a similar level of instruction. This is really tricky if they do not contribute themselves. Essentially, I need to teach two classes in parallel, which is quite complex. However, there is no way around it." Similarly, Dr. Olivia Wohlfart highlighted how hybrid models have facilitated international collaborations, but at the same time, they require careful structuring to maintain engagement: "we rarely hold purely in-person meetings. There is always an option to join digitally, something that would have been unthinkable before COVID-19. We also established a research colloquium in hybrid format, allowing colleagues from different institutions and stakeholders from teacher education programs to participate without having to travel."

The Role of Artificial Intelligence in Personalised Learning and Digital Content Creation

The rise of AI-driven educational tools was one of the most frequently discussed emerging trends, with interviewees debating both the opportunities and risks associated with AI in teacher education. Louise Jones spoke enthusiastically about AI's potential for automating content creation and translation, stating: "Thanks to AI, we at ThingLink developed a solution called 'Panet 360', which allows users to upload panoramic images from their phones. AI then fills in the gaps with intelligently generated pixels to create fully immersive photo spheres. This was a major breakthrough in response to the loss of the Google Street View Camera app." Similarly, Prof. Bianca Roters emphasised the potential of AI as a learning assistant, describing how it can provide individualised feedback and adaptive learning paths: "AI as a learning assistant in the sense of augmented intelligence has great potential, particularly in terms of differentiation, task design, and individualized feedback. However, it also has its limitations, such as dealing with fake news." For digiTED, this trend indicates the need for policy guidelines on AI in teacher education, ensuring that AI tools are used ethically, responsibly, and in ways that enhance learning rather than undermine it. Future project initiatives could explore how AI can be integrated into assessment practices, adaptive learning technologies, and teacher training modules.

The Growing Importance of Digital Pedagogy and Ethical Technology Use

Another key trend is the increasing recognition that teacher educators require not just digital skills but also digital pedagogy competencies. While previous digitalisation efforts focused primarily on tool adoption, the discussion is now shifting towards understanding the pedagogical implications of digital tools. Prof. Reijo Kupiainen stressed that educators must critically assess the role of digital tools in teaching, stating: "We must continuously ask important questions about the role of technology in education. Who owns the technology? How is it being used? Are digital platforms truly designed to benefit teaching and learning, or do they serve other interests? What are the digital rights of students and educators? These are crucial considerations, especially as artificial intelligence and data collection become increasingly prominent in education." Similarly, Prof. Mart Laanpere argued for a more evidence-based approach to digital education, stating that assessment practices must evolve alongside digital learning: "I have high hopes for the wider adoption of evidence-based assessment using relatively simple technological tools like e-portfolios and online platforms for gathering evidence. From a more innovative perspective, I hope that learning analytics will become more prominent in teacher education. Additionally, even simple video tools can be used in powerful ways. For example, educators can use smartphones to record reflections, share insights, and collaborate around digital artifacts. Interactive learning resources can also help study the impact of novel teaching approaches by analyzing data from students' digital footprints. However, when it comes to the current hype around artificial intelligence, particularly ChatGPT and OpenAI services, I believe this will actually lead to a return to more traditional pedagogies and assessment methods. I am already noticing signs of panic among educators who are reverting to older, less effective assessment methods based on memorization—methods that AI cannot easily manipulate."

The Institutionalisation of Digitalisation Strategies

A major shift in digitalisation efforts is the move from ad-hoc solutions towards structured institutional strategies. While some universities have already integrated digitalisation into their long-term planning, others are still in transition. Prof. Mart Laanpere noted how digitalisation strategies can be disrupted by leadership changes. Prof. Reijo Kupiainen describes: "Our university does have a digitalization strategy, but it remains quite broad and abstract. It is often difficult to determine what specific actions are being taken to support digital transformation in practice. On a day-to-day basis, faculty members use multiple applications—perhaps five or six different platforms—for various administrative and teaching purposes. However, there are no specialized digital tools developed specifically for education. There is ongoing discussion about digitalization, but concrete initiatives are not always well-documented. Information about these strategies is not clearly outlined on the university's website or internal communication platforms, which makes it challenging to understand the overall direction." In contrast, Prof. Ira Diethelm described

how her institution has successfully embedded digital training into professional development frameworks, ensuring that educators have time to engage with digital transformation efforts. Similarly, Dr. Ilka Nagel highlighted the importance of collaborative learning and institutional support, describing that collaboration is crucial and that teacher educators need time and structured opportunities to explore digital tools together, rather than being expected to adapt individually.

Conclusion: Future Directions for digiTED

The emerging trends identified in these interviews point to a future where teacher education must not only keep pace with technological advancements but also actively shape their integration into pedagogy. The digiTED project has a crucial role to play in:

1. Developing frameworks for hybrid and flexible learning models to ensure that hybrid education is structured effectively rather than implemented ad-hoc.
2. Creating AI guidelines for teacher educators, supporting the ethical and pedagogically sound integration of AI in learning and assessment.
3. Providing training on digital pedagogy and ethical technology use, ensuring that teacher educators understand not just how to use tools, but when and why to use them.
4. Advocating for sustainable institutional digitalisation strategies, ensuring that digital transformation is systematic, well-supported, and embedded in university policies.

By addressing these trends, digiTED can contribute to shaping the future of teacher education in a digital era, ensuring that digitalisation is not just about technology adoption but about fostering meaningful, inclusive, and high-quality learning experiences.