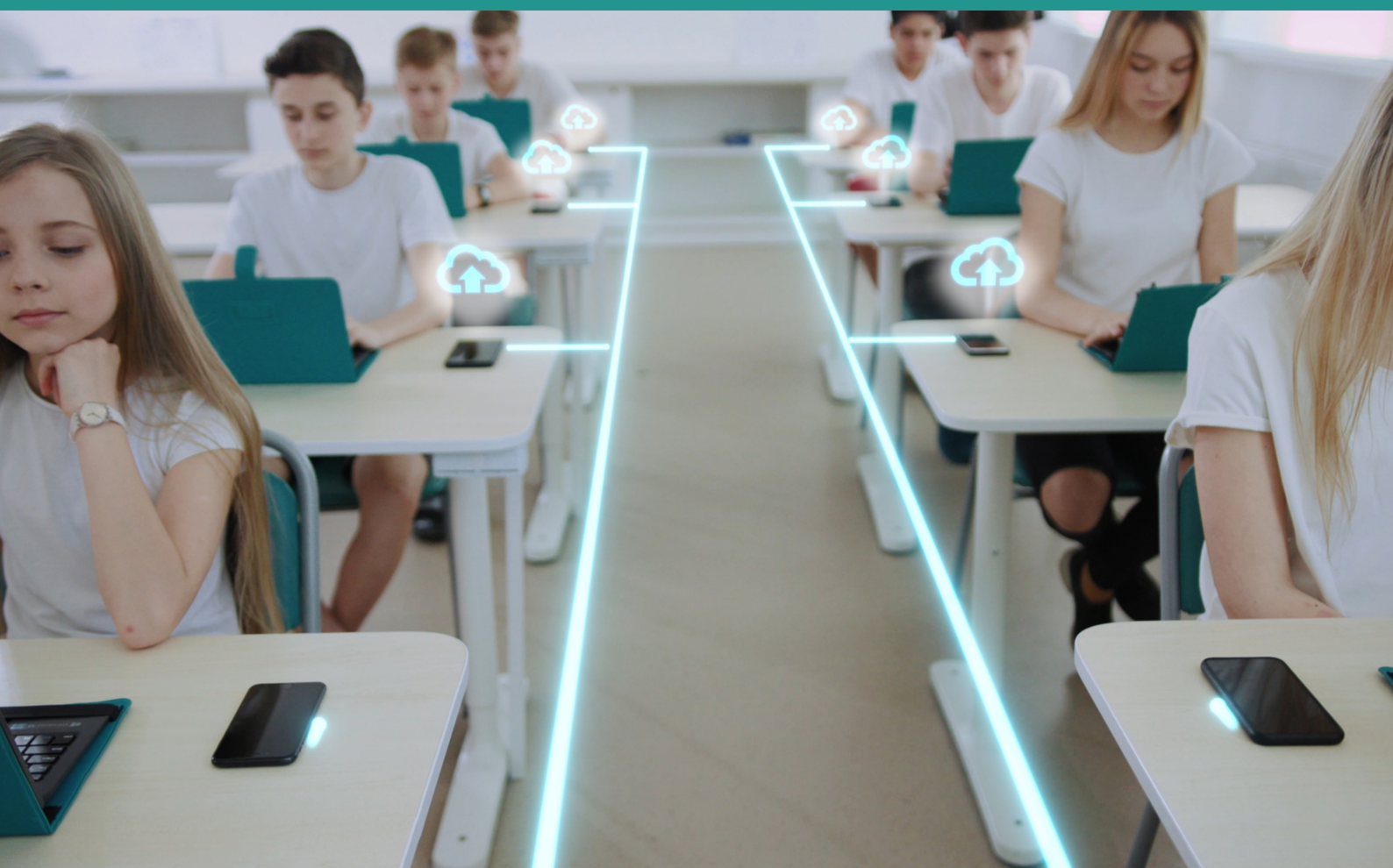


Digitalisation of the Austrian Education System

Digital competences of teacher educators/
Provision of digital educational material

Technical Support Instrument

Supporting reforms in 27 Member States



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Context of the project

The COVID-19 pandemic has sent countries all over Europe and the world into a scramble on how to address distance learning. Insufficient equipment for teachers and pupils alike and inadequate digital skills to master remote teaching have painfully disclosed the deficits of the Austrian education system when it comes to digitalisation.

Austria since has tried to address these deficits, most prominently when in 2020 the Austrian government presented their plan for the digitalisation of its education system. An ambitious 8-Point Plan for Digital Learning, which will invest an additional €200 million in the period up to 2022 to ensure that innovative teaching and learning formats will be broadly implemented throughout the education system.

Stream 1 (Teacher educators) of the TSI project was dedicated to the systematic and curriculum-based training of teacher educators in the field of digital competences. Teacher educators are crucial players for the high quality of the teaching workforce. The COVID-19-related shift of work processes and continuing professional development events to digital formats led to a significant change in teacher educators' activities. The ultimate goal of the project was therefore the development of a curriculum for the digital upskilling of teacher educators, with a tailored competence framework and implementation guidelines.

Stream 2 (Educational material) developed a proposal for a new delivery model for digital teaching and learning materials under the framework of the Austrian Textbook Initiative. The current model relies on the availability of printed versions of textbooks for quality assurance and funding. Digital materials are thus currently always tied to their printed counterparts. The new delivery model aims at enabling digital-only materials to be made available in the Textbook Initiative. It focuses on developing proposals for legal and organisational framework conditions, an extended quality assurance process for digital materials and the technical infrastructure to provide access to these materials for all target groups.

Beneficiary Authority

The project beneficiary is the Austrian Federal Ministry for Education, Science and Research (*Bundesministerium für Bildung, Wissenschaft und Forschung* - BMBWF). The two streams of the project were implemented in close partnership with the two Ministry departments specifically responsible for its key topics:

Stream 1 (Teacher educators): BMBWF - Abteilung II/8 Personalentwicklung von Pädagog/inn/en und schulischem Unterstützungspersonal und Schulleitungen, Chief of Department: Abteilungsleiterin Mag.a Barbara Huemer

Stream 2 (Educational material): BMBWF – Abteilung PräS/15 – Bildungsmedien, Chief of Department: Ableitungsleiterin MinRin Mag.a Sonja Hinteregger-Euller



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Needs addressed by the project

Stream 1 (Teacher educators) addressed the challenge that there was no systematic, curriculum-based approach to the digital competences of teacher educators. In light of the governance and provision of teacher education in Austria, the most promising and efficient approach for this project was to put a clear initial focus on the role and needs of Austrian teacher educators in teachers' continuing professional development and to get an overview of the national and international state of the art in this field. Together with relevant stakeholders, a set of tested and validated tools, including a tailor-made competence framework, a self-assessment tool and a proposal for a curriculum for digital upskilling of teacher educators was developed, ensuring that Austrian teacher educators' needs were considered and met.

Stream 2 (Educational material) addressed the challenge that the current delivery model in the Austrian Textbook Initiative mandatorily ties digital teaching and learning materials to the availability of printed counterparts. The current legal framework does not allow for funding digital-only materials, as it requires ownership to pass over to students – usage licenses for digital materials currently cannot be funded. Furthermore, more extensive use of digital teaching and learning materials requires a refinement of the quality assurance process with particular focus on the didactical and pedagogical dimensions of technology enhanced learning processes. Finally, technical infrastructure to provide access to digital-only teaching and learning materials via a unified access portal needs to be available in a new delivery model.

Methodological approach

Both streams comprised an analysis phase, a design phase and an implementation phase.

Stream 1 (Teacher educators): In a first step, the roles of teacher educators, their needs for digital competence development and the usefulness of existing digital competence training courses were analysed by conducting interviews and an online survey (Deliverable 2). In Deliverable 3, European and international best practice examples for the development of digital competences of teachers and teacher educators were examined through a study visit to Germany and online peer exchanges with experts from Ireland, Germany, the United States, Norway and Finland. On this basis, the project team designed and developed a set of tools, including a tailor-made competence framework, proposals for a self-assessment tool and a proposal for a curriculum for digital upskilling of teacher educators (Deliverable 4), which were tested and validated in Deliverable 5. Finally, a validated roadmap for the adoption and implementation of the curriculum at all 14 Austrian university colleges of teacher education was developed (Deliverable 6).

Stream 2 (Educational material): In the first phase of the project, the existing national framework conditions and stakeholder needs were collected and analysed through document reviews and an extensive set of stakeholder interviews. The results were



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summarised in Deliverable 7. In parallel, international good practices were analysed through a study visit to Estonia and a set of online peer exchanges with experts from Denmark, Germany and France. The international dimension was summarised in Deliverable 8. Based on the results of the analysis phase, an initial proposal for a revised delivery model was developed and presented in Deliverable 9. This proposal was validated in two rounds of stakeholder consultations and another set of individual stakeholder interviews. The results of these interviews were consolidated in a final proposal for a new delivery model, which was presented in Deliverable 10. The pathway towards implementation of the new delivery model was developed after validation and adaptation of the new delivery model with the stakeholders in public administration. The roadmap for implementation was presented in Deliverable 11.

Key deliverables and activities

Stream 1 (Teacher educators):

Deliverable 2: Report on requirements and needs for digital skills development of teacher educators

- Data collection through a combination of desk-based and field-based research methods to:
 - o establish a consolidated overview of the current and evolving roles of teacher educators at Austrian teacher university colleges, including job profiles, competence requirements and working environment, with a view to identifying how digitalisation will reshape their role as educators
 - o identify and cluster categories of digital skills development needs of teacher educators
 - o identify and assess the usefulness of existing digital skills training courses for teacher educators
- Report presenting the results of the analysis, including an explanation of the data and methodology used
- Slideshow presenting the main results of the analysis

Deliverable 3: Report on international good practices on digital skills development of teacher educators

- Data collection (desk-based) and conduction of interviews with relevant national experts and stakeholder representatives
- Identification of international good practices in the area of digital skills development of teacher educators and other types of train-the-trainer profiles – including digital skills curricula, underlying competence frameworks, use of online/hybrid training environments, as well as roll-out and evaluation scenarios – which are relevant for the Austrian context
- On-site study visit to Bavaria



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Study visit to Bavaria (programme overview)

Schedule	Institution	Topic
Day 1: Political context and strategies	Bavarian State Ministry for Education and Cultural Affairs	<ul style="list-style-type: none">Bavarian strategy for digital educationCompetence models (DigCompEduBavaria)Teacher training and continuing educationStiftung Bildungspakt Bayern
Day 2: Teacher training at local and state level	Pädagogisches Institut München Akademie für Lehrerfortbildung und Personalführung (ALP) Dillingen	<ul style="list-style-type: none">Focal points for teacher trainingSelection of contentDifferent training formatsTraining/selection of teacher trainers
Day 3: Teaching and learning in the digital age	Ludwig-Maximilians-Universität (LMU) Technische Universität München (TUM)	<ul style="list-style-type: none">Core competencies of teachers for teaching in a digitalized worldScenario-based self-assessment tool for teachers and university teaching staffToolbox Teacher Education - Learning Platform

Online peer exchanges (programme overview)

Schedule	Institution	Topics
Day 1: Competence framework and assessment tools	Joint Research Centre (European Commission) Goethe-Universität Frankfurt, DE Arizona State University, US	<ul style="list-style-type: none">DigCompEdu and DigCompEdu Check-In Tool for University TeachersDigital Competencies of University Teachers (Eichhorn Model) and Self-Assessment ToolTeacher Educator Technology Competencies (TETCs) and TETC Survey
Day 2: Formal and informal professional development	University of Limerick, IE University of Stavanger, NO University of Oulu, FI	<ul style="list-style-type: none">Analysis of contextual factors for digital professional development of teachers using the example of the Republic of Ireland."No Teacher Educator Left Behind": practice-based learning ("Lesson Study" approach).OpenDigi project: professional learning communities (student teachers, teachers, teacher educators).



Deliverable 4: Proposal for a digital upskilling curriculum for teacher educators

- Organisation of a series of online stakeholder consultations to present the outputs of the analysis phase (deliverables 2 and 3), to hold co-creation workshops and to validate a proposal for a digital upskilling curriculum for Austrian teacher educators
- Development of an adapted version of the Austrian digi.kompP and digi.checkP tools in tailored to the needs and requirements of teacher educators
- Development of a digital upskilling curriculum for teacher educators including suitable training formats together with corresponding implementation scenarios
- Report including a validated version of the digital upskilling curriculum, the adapted version of the digi.kompP and digi.checkP tools as well as an explanation of the methodology and approach used
- Slideshow presenting the new digital upskilling curriculum

Deliverable 5: Pilot evaluation report on the proposed digital upskilling curriculum

- Organisation of a pilot test for the new digital upskilling curriculum for teacher educators, including sample assessment of digital competences and, based on the assessment results, organisation and facilitation of training sessions covering relevant modules of the curriculum
- Evaluation report summarising the pilot results and lessons learned
- Organisation of a stakeholder consultation event to present and discuss the results and lessons learned

Deliverable 6: Implementation roadmap for the adoption and roll-out of the new digital upskilling curriculum for teacher educators

- Development and proposition of an implementation roadmap, based on the designed digital upskilling curriculum for teacher educators (deliverable 4) and its feasibility test (deliverable 5), including:
 - o a detailed action plan and an indicative timeline for the adoption of the new curriculum
 - o guidelines for its roll-out at all Austrian teacher university colleges
 - o an attribution of roles and responsibilities to the different actors involved (inside and outside the BMBWF)
 - o a set of relevant indicators (KPIs) allowing to track and monitor implementation progress, uptake and usefulness
 - o an indicative estimation of staff, financial and other resources required for the roll-out
- Organisation of a consultation event with representatives of the relevant BMBWF departments and key stakeholders, including representatives from the Austrian



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teacher university colleges, to discuss and validate the proposed implementation roadmap

- Final report of the proposal for the implementation roadmap

Stream 2 (Educational material):

Deliverable 7: Report on the current approach and framework conditions for the provision of educational media in Austria

- Collection of data through a combination of desk-based and field-based research methods in order to:
 - o conduct a review of the current approach and framework conditions for the provision of educational media in Austria
 - o identify areas of action for a revision of the current delivery model for educational media to allow for the systematic integration exclusively digital-based education content
 - o establish a mapping of all relevant public and private stakeholders
- Draft a report presenting the results of the review and the analysis, including an explanation of the data and methodology used
- Slideshow presenting the main findings

Deliverable 8: Report on international market research and good practices on educational media provision

- Collection of data (desk-based) and conduction of interviews with relevant national experts and stakeholder representatives
- international market research and a comparative analysis to identify international good practices for the provision of educational media, which are relevant for the Austrian context
- An on-site study visit in Estonia
 - o Aim of the study tour: Analysis of Estonian experience in digital transformation of learning materials.
 - o The program included meetings with different stakeholders, including the Ministry of Education and Research, Tallinn University research teams, private institutions involved in content creation and learning materials delivery, and school visits.
- On-line peer exchanges
- Report summarising the comparative research and international good practices as well as recommendations and lessons learned from the study visit and peer exchanges



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Online peer exchanges (programme overview)

Country	Institutionen	Topic
Denmark	Clio Gyldendal BFU KL & Kombit	<ul style="list-style-type: none">• Market for digital educational media in Denmark• Centrally operated IT infrastructure• Transitions of traditional publishing houses to digital delivery models• Demand for print vs. digital educational media• Design fields Infrastructure - Digital Content - Blended Learning - Adaptive Learning
Germany	Bavarian State Ministry for Education and Cultural Affairs (Bayrisches Staatsministerium für Unterricht und Kultus)	<ul style="list-style-type: none">• Technical infrastructure for the provision of educational media• Quality assurance of digital textbooks
France	Nathan	<ul style="list-style-type: none">• Textbook market and central tenders for digital educational media• Pedagogical requirements for digital educational media

Deliverable 9: Proposal for a revised delivery model for educational media

- Organisation of a first round of online stakeholder consultations to present the outputs of the analysis phase (deliverables 7 and 8) and to identify areas for improvement of the current delivery model for educational media
- Proposal for a revised delivery model for educational media building on the results of the analysis phase (deliverables 7 and 8) and based on areas for improvement identified during the first round of stakeholder consultations
- Organisation of a second round of online stakeholder consultations to present and validate the draft proposal for a revised delivery model for educational media before the finalisation
- Final version of the proposal for revised delivery model for educational media
- Slideshow with a presentation of the main features of the proposed revised delivery model for educational media
- Summary report on the consultation process and its main conclusions

Deliverable 10: Proposal for an implementation concept and proof-of-concept validation

- Proposal for a detailed implementation concept based on the proposal for a revised delivery model for educational media (deliverable 9)



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- Proof-of-concept validation process and organisation of a corresponding online stakeholder consultation (done via interviews with the relevant stakeholder)
- Report of the final version of the detailed implementation concept following the conclusions of proof-of-concept validation process including a summary of the main conclusions of the proof-of-concept validation process

Deliverable 11: Implementation roadmap for the new delivery model for educational media

- Development of an implementation roadmap based on the revised delivery model for educational media and the related implementation concept (deliverables 9 and 10) including:
 - o a detailed action plan for the implementation of the proposed approach
 - o an attribution of roles and responsibilities to the different actors involved (inside and outside the Austrian government)
 - o a set of relevant indicators (KPIs) allowing to track and monitor the implementation progress
 - o an indicative estimation of staff, financial and other resources required for the implementation of the proposed recommendations and changes
- Organisation of online consultations (in an interview format) with representatives of relevant Austrian government departments and key stakeholders to discuss and validate the proposed implementation roadmap
- Finalisation of the proposal for the implementation roadmap in a dedicated report

Stakeholder consultations

In [Stream 1 \(Teacher educators\)](#), a consultation event with representatives of the relevant Ministry of Education, Science and Research (BMBWF) department and key stakeholders, including representatives from the Austrian University Colleges of Teacher Education, was organised to discuss and validate first ideas of the implementation roadmap.

In [Stream 2 \(Educational material\)](#), several rounds of consultations with stakeholders were held. The framework conditions and stakeholder needs were elicited for Deliverable 7 in a round of extensive stakeholder interviews. The initial proposal for a new delivery model presented in Deliverable 9 was validated in two stakeholder consultations (presentation and discussion) and a set of individual stakeholder interviews, which was summarized in Deliverable 10. The roadmap presented in Deliverable 11 was validated in consultations with stakeholders from public administration regarding the feasibility of implementation of the proposals.



Key findings and lessons learnt

Stream 1 (Teacher educators):

- Teacher educators need further professional development on digital competences, especially in the area of methodological-didactic skills
- General framework conditions need to be addressed (e.g. lack of time as a central obstacle for the acquisition of digital competences, technical equipment not always given)
- Clarification of teacher educators' tasks necessary due to the multidimensional activity profile
- Recognition of teacher educators as a distinct professional group with specific professional development needs → development of a new competence framework
- Self-assessment tool: combining self-assessment with scenarios from the professional context
- Training formats: shorter formats ("learning nuggets") might be more attractive, but effectiveness is questionable; combine online formats with face-to-face formats, work and practice-oriented formats ("lesson study" cycle), community-oriented approaches (e.g., use of "digital literacy consultants")
- Create incentives: participation in continuing professional development courses should be rewarded by institutions in some way
- Elements of the modules: Kick-off, self-learning phase, face-to-face event, implementation phase, final date
- Positive and useful for the learning process
- Stronger support throughout the process (especially in the self-learning phase) would be advantageous
- Practical implementation in own context already in the self-learning phase
- Collegial exchange and feedback in face-to-face sessions
- Self-assessment tool: valuable reflection tool for the learning process
- Collaboration between PHs should be encouraged
- Implementation: selection of a team to coordinate the implementation and continuous monitoring is recommended. This includes the following roles and tasks:
 - o general project management (Ministry)
 - o the coordination of the local offers and promotion of cooperation between the University Colleges (one or more University Colleges or the existing national or regional networks)
 - o the continuous monitoring and quality assurance (an external organisation to be selected)



Stream 2 (Educational material):

- Development needs identified for the delivery of digital-only teaching and learning materials:
 - o Further developing means for quality assurance for digital-first / digital-only materials:
 - o Enabling more flexibility in the granularity and personalization of educational media delivery
 - o Addressing potential adaptations of the funding mechanism that accounts for the advantages of digital educational media.
 - o Addressing potentially related legal requirements of educational material ownership in the light of digital delivery models.
 - o Addressing the need for authentication and access mechanisms to digital media that allow more flexible access to educational media on a timely needs-based basis.
- Delivery models for digital-only teaching and learning materials require licensing models, which can only be realized once the legal basis for funding in the Austrian Textbook Initiative is adapted.
- Delivery models for digital-only teaching and learning materials require appropriate technical infrastructure, which provides user-friendly and unified access to all digital materials for all target groups (teachers, students, parents & legal guardians).
- Attractiveness of the new delivery model for the target groups is mainly grounded in more flexible access to learning materials that can be used on an individual, needs-driven basis.
- Attractiveness of new delivery model for content providers is mainly grounded in the opportunity to develop novel products with more comprehensive coverage of the relevant curricula and implement innovative learning support features.
- Sustainable implementation can be supported by the implementation of a license management system that allows schools to flexibly react to changes in their student population and assign access rights to digital learning materials as required.
- Extensive stakeholder consultations are required when undertaking such a development project to comprehensively consider all relevant variable and impact factors when making design decisions for such a novel delivery model.



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Expected results and impact

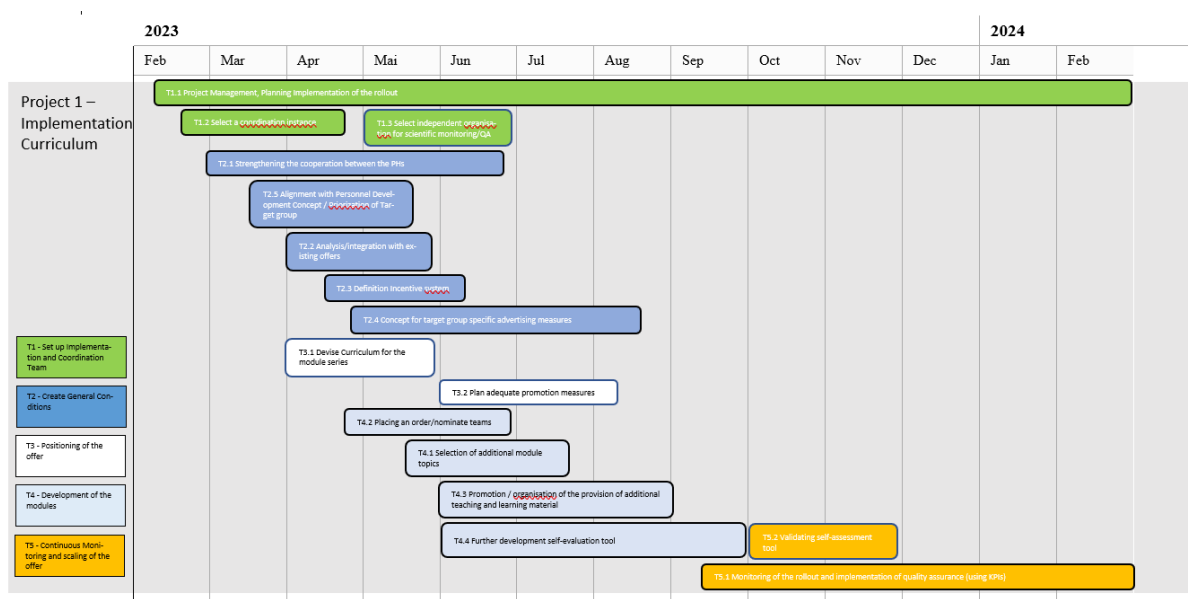
The project outcomes of **Stream 1 (Teacher educators)** are a new curriculum for the digital competence development of teacher educators, with a tailored competence framework and implementation guidelines.

The curriculum can be implemented at all Austrian University Colleges of Teacher Education and gives Austrian teacher educators the possibility to further develop their digital competences. Since teacher educators are considered role models for teachers, positive impacts on teachers as well as students can also be expected.

Stream 2 (Educational material) has proposed a new delivery model for digital-only teaching and learning materials in the framework of the Austrian Textbook Initiative. It proposes legal changes to allow for funding usage licenses for learning materials, different licensing models, a refined quality assurance process for digital materials and describes the architecture of the technical infrastructure necessary for the implementation of the model.

If implemented the new delivery model for digital-only teaching and learning materials will enable more diverse and innovative digital educational media to be funded under the Austrian Textbook Initiative. This will empower teachers in their didactical decisions to better address specific students' learning needs and deal with heterogeneity in their classrooms. The new model furthermore enables and encourages didactical approaches spanning different subjects and provides the opportunity for content providers to collaborate in developing novel and innovative packages of learning materials.

Proposed Implementation Timeline for the adoption and roll-out of the new digital upskilling curriculum for teacher educators (Stream 1 Teacher educators - Deliverable 6)

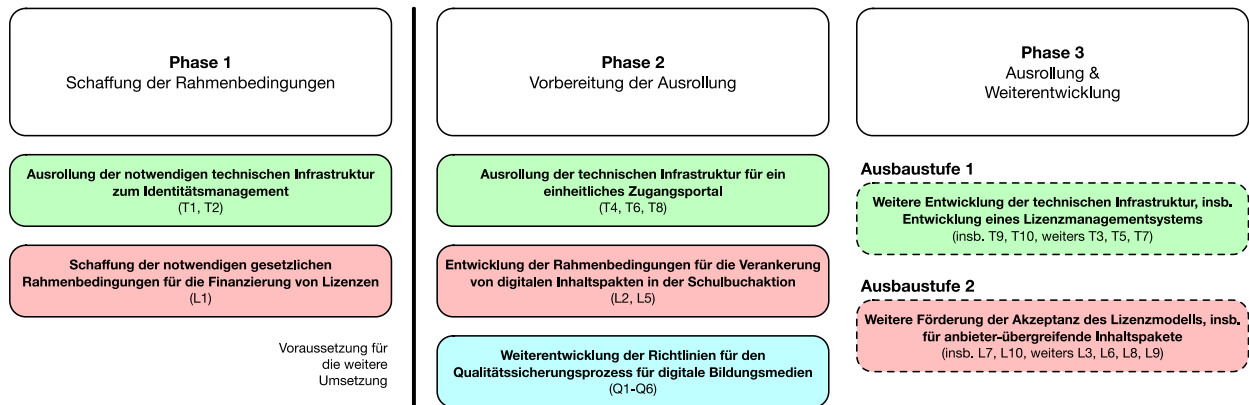




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Proposed roadmap (Stream 2: Educational material – Deliverable 11)





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