WP 3.1 Report

REPORT

Integrating AI into Teacher Education – An Analysis of the Contextualization of the TE-REG Manifesto in the Context of the Second Phase of Teacher Education in Hesse

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SUMMARY

This report was produced as part of the European ERASMUS+ project *"Teacher Education Regenerated (TE_REG). Beyond Competencies. Rethinking and Redesigning Teacher Education Curricula in the GenAI Era"* – Reference No. KA220-HED-CF9D94FC – and aims to contribute to the analysis of the emergence of (generative) artificial intelligence ((Gen)AI) in teacher education, taking into account the demands of a society undergoing rapid social, cultural, and technological change.

The starting point is the contextualization of the TE-REG MANIFESTO *"Teacher Education Regenerated (TE_REG): An Integrated View on Teacher Education in the (Gen)AI Era."* This contextualization was carried out in three focused steps. First, the complete manifesto was made available to all teacher educators. In a second step, those theses considered particularly relevant from their perspective were discussed in greater depth. In a third step, perspectives for concrete pilot projects were developed. In addition, trainee teachers (LiV) were involved in the contextualization process in order to incorporate their perspectives as addressees of teacher education at an early stage and to actively include them in initiatives aimed at further developing teacher education curricula.

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1. INTRODUCTION

The Teacher Training College for Upper Secondary Schools in Marburg is part of the European project team of the ERASMUS+ project *"Teacher Education Regenerated (TE_REG). Beyond Competencies. Rethinking and Redesigning Teacher Education Curricula in the GenAI Era"* – Reference No. KA220-HED-CF9D94FC.

Within the framework of this European partnership, the analysis and discussion of the TE-REG MANIFESTO *"Teacher Education Regenerated (TE_REG): An Integrated View on Teacher Education in the (Gen)AI Era"* was promoted in the partner institutions. The focus was on the question of the extent to which the guiding principles and proposals of this orientation document have implications for the second phase of teacher education and thus for teaching and learning on the path toward a new role of teachers under the conditions of the GenAI era.

In the current context of a complex, globalized society shaped by social transformations and technological advances, it is of central importance to understand to what extent the emergence of AI affects the content and methods of training as well as the competency profile of teachers in Hesse, and to what degree existing guidelines meet today's requirements of the teaching profession.

With the aim of contributing to the analysis of the implications of this complexity and to the development of concrete initiatives for teacher education and the design of a new, contemporary teacher role, the following steps of contextualization were carried out.

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2. THE MANIFESTO

"TEACHER EDUCATION REGENERATED (TE_REG): AN INTEGRATED VIEW ON TEACHER EDUCATION IN THE (GEN)AI ERA"

2.1 Summary of the Manifesto

The manifesto is based on a collaborative development involving six European UNESCO teacher education institutions within the Erasmus+ project *"Teacher Education Regenerated (TE_REG). Beyond Competencies – Rethinking and Redesigning Teacher Education Curricula in the (Gen)AI Era"* (https://te-reg.eu/).

The emergence of generative artificial intelligence (GenAI) is fundamentally transforming teaching and learning processes and affects the epistemological, social, and professional conditions of education. Teacher education faces a dual challenge: on the one hand, rigid, indicator-based, and fragmented practices must be overcome; on the other hand, the potential of AI must be critically integrated while keeping the human being at the center of the educational process.

The manifesto sees itself as a European orientation document with an integrated, holistic, and future-oriented vision of teacher education. It emphasizes quality education, the appreciation of pedagogical attitudes rather than a purely competence-oriented perspective, and a

regenerative horizon that connects technological innovation, ethics, inclusion, and sustainability.

The manifesto is not merely a document, but the result of a long collaborative process. It

- reflects shared expectations of high-quality education;
- outlines regenerative teacher education as a driver of innovation;
- concludes with a clear call to action and active participation.

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3. METHODOLOGY

3.1 Assessment of the Manifesto Theses by All Teacher Educators

The first step of the focus consisted of providing all teacher educators at the Marburg Teacher Training College with the manifesto in German and asking them to position themselves with regard to each thesis in Chapter 2, *"Regenerative Teacher Education: A Possible Horizon."* For each statement, respondents were asked to indicate on a scale from 1 to 6 whether the respective statement was considered relevant for the context of teacher education in Marburg. A total of nine individuals participated in the survey. The figure shows the results, with the height of the bars representing the relative number of ranking points in relation to the maximum possible number.
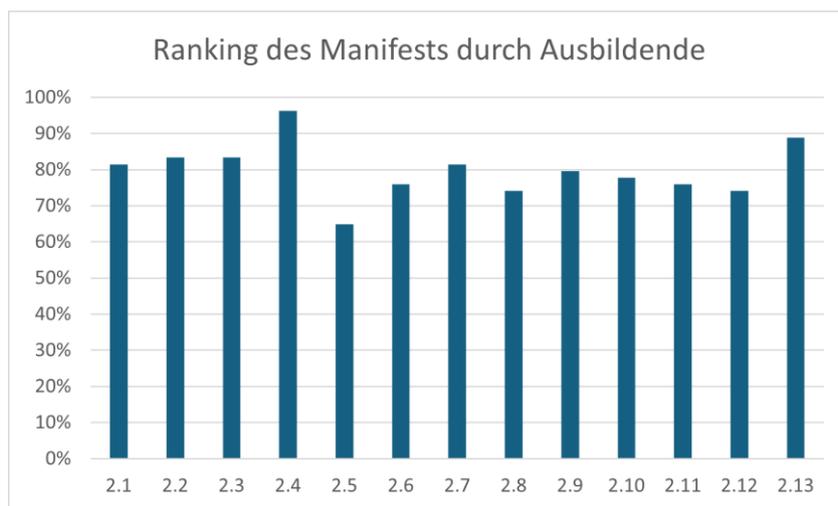
It is noteworthy that all theses from the manifesto were assigned a high level of relevance. Particularly prominent were theses 2.4 (responsibility for the educational process), 2.13 (implements the practices it calls for – double mediation practice), 2.2 (a warm, human environment), and 2.3 (AI literacy).

In addition, theses 2.5 (synergy between teachers and (Gen)AI …) and 2.7 (… strengthens collaborative work … by adding an additional dimension through human–machine interaction) were selected for further in-depth discussion. In addition to the four highest-rated theses, thesis 2.5 was included in further work because the project management considered it particularly relevant for teacher education in Hesse with regard to AI.

Ranking des Manifests durch LiV
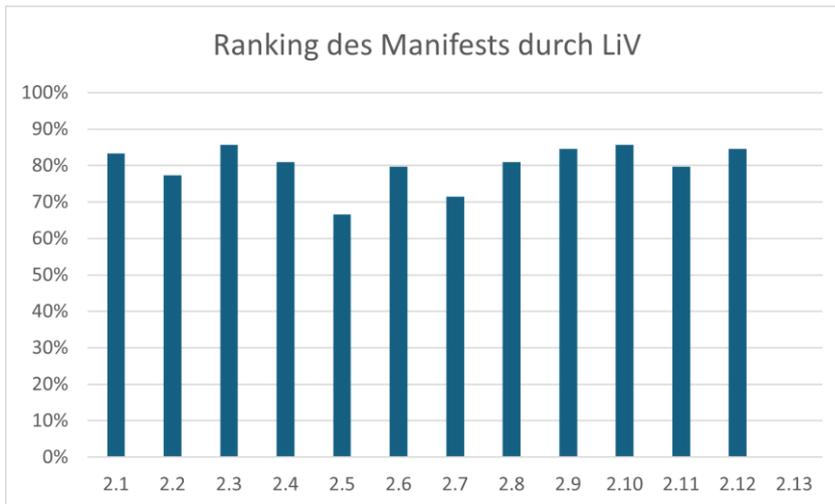
In addition to teacher educators, trainee teachers (LiV) were surveyed on the theses of the manifesto in the same way. Unfortunately, the results for thesis 2.13 are no longer accessible.

Here, too, the high level of agreement regarding the relevance of the manifesto theses for the context of teacher education in Hesse is striking. However, the greatest relevance is attributed to theses 2.3 (AI literacy) and 2.10 (inclusion), followed by 2.12 (engaging with new phenomena) and 2.9 (continuous change and uncertainty). Once again, thesis 2.5 (synergy between teachers and (Gen)AI) received the lowest relevance rating. Thus, while there is broad agreement between teacher educators and trainee teachers regarding the overall importance of the manifesto, there are clear differences in the relative ranking and ordering of individual theses.

3.2 Discussion and Comments on the Practical Relevance of the Manifesto

Based on the ranked and thus selected theses, all teacher educators were asked at the general assembly to focus on one of the six selected theses. They were first asked to reflect on their own experiences related to the thesis and then to derive perspectives for future training work. These individual results were subsequently shared, discussed, and summarized in working groups in the form of a one-minute statement. These statements were videotaped and subsequently transcribed. The figure illustrates the task for this step of contextualization.

Teacher Education Regenerated (TE_REG)

Auftrag:

Entscheide Dich für eine These, zu der Du heute weiter arbeiten willst.

Erinnere Deine Erfahrungen, die Du in Deiner Ausbildungstätigkeit bereits mit der ausgewählten These gemacht hast.

Entwickle Perspektiven, die aus dieser These für unsere zukünftige Ausbildungstätigkeit folgen könnten.

Triff Dich mit den Kolleginnen und Kollegen, die zur gleichen These gearbeitet haben, an dem entsprechenden Textaushang.

Stellt Euch gegenseitig Eure Überlegungen vor.

Einigt Euch auf ein one-minute-statetment zu dieser These, welches anschließend jemand aus der Gruppe im Plenum vorträgt.
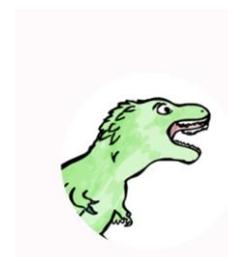
The central statements regarding the six selected theses are summarized below:

- **On 2.2 – that teacher educators in teacher education retain responsibility for the educational process:**
  - Teacher educators manage a cyclical alternation between outsourcing tasks to AI (e.g., lesson plan drafts) and reintegrating these AI-generated results into discursive, deeply human reflection sessions

- **On 2.3 – a warm, human environment:**
  - AI cannot replace a truly warm, empathetic human counterpart; teacher educators must act as imperfect, empathetic reference persons who open reflective spaces in which conflicts and asymmetries are addressed, enabling trainee teachers to adopt this dual attitude in their interactions with students.

- **On 2.4 – supports teachers in developing (Gen)AI literacy:**
  - Supporting teachers in developing AI literacy is a complex and difficult field that requires basic political competencies—for example, understanding who develops AI and what data and interests lie behind it, how digital assessment works, and what role digital capitalism and changing public discourses play in democratic processes. These topics must be integrated into initial and continuing teacher education as well as into classroom teaching.

- **On 2.5 – promotes learning through the synergy of teachers and (Gen)AI:**
  - So far, few positive experiences with the synergy of teachers and (Gen)AI have been identified. Often, AI tools take over work, but trainee teachers lose responsibility and agency. The central challenge is to support trainee teachers in maintaining responsibility and agency despite AI support.

- **On 2.7 – strengthens collaborative work by adding an additional dimension through human–machine interaction:**
  - Human–machine interaction adds an additional dimension to collaborative work, bringing both opportunities and risks. Currently, the quality and authenticity of AI-generated outputs (e.g., lesson plans, image generation) are often insufficient and can produce stereotypical or unrealistic models for learners; at the same time, AI may continue to improve and deliver very high-quality designs in the future.

- **On 2.13 – exemplarily implements the practices it calls for (double mediation practice):**
  - The "clinical double-decker" is a seminar-didactic principle that combines analog and digital methods to practically experience, reflect upon, and critically assess potentials. AI can be used as a coaching and planning tool; its use should be evaluated for added value using the SMR reflection model. The aim is to use AI for deeper conceptual understanding (not merely for material

production) and, on this basis, to make informed decisions for or against analog or digital approaches.

In summary, the intensive engagement with the manifesto at the Marburg Teacher Training College led to the following conclusions:

Teacher education must combine responsibility, humanity, political education, and critical reflection. Teacher educators retain control over the educational process and orchestrate a cyclical use of AI. AI does not replace an empathetic, imperfect human counterpart; instead, reflective spaces must be created in which conflicts and asymmetries can be addressed. AI literacy requires basic political competencies and must be embedded in initial and continuing teacher education as well as classroom instruction. Synergies between teachers and generative AI are so far weakly evidenced; the central task is to secure teachers' agency in work processes so that they retain responsibility despite AI support. Human–machine interaction expands collaborative work by offering opportunities and combining analog and digital methods, using AI as a coaching and planning tool for deeper understanding and supporting informed decisions about the use of digital versus analog approaches.

3.3 Development of Concrete Perspectives from the Manifesto for Pilot Projects

To facilitate the transition toward the changes required in teacher education due to the GenAI era, two-day voluntary AI focus days (FFKI) were conducted at the end of the contextualization phase. The aim was to summarize the developments achieved so far and, together with external contributors, develop concrete perspectives for training activities in the upcoming semester. These FFKI were structured in three phases:

1. Workshops on concrete AI applications (AI and feedback, working with the chatbot *Telli* to develop dialog partners and learning environments)
2. A keynote by Mr. Hauke Pölert on *"How Does AI Change Learning?"* followed by discussion
3. A keynote and discussion on image-generating chatbots by Mr. Nils Pooker

These activities were conducted with the involvement of trainee teachers, who are also intended to be included in the development of further initiatives in the pilot phase.

3.4 Results and Perspectives for Further Work

For the further work in the pilot phase of the TE_REG project, the following perspectives emerge at the Marburg Teacher Training College:

- In the area of counseling, the support of human-to-human counseling through AI assistants will be explored. Empirical studies show very high efficiency of AI chatbots in counseling situations. The potential of this form of support will be examined and, if appropriate, utilized.
- In the training practice of the DFB module (a module that focuses on how to assess, support and advise students), a concept will be developed on how providing feedback to students with AI can be integrated into the training curricula.
- In subject-specific training, the use of AI for text analysis will be developed as an example in the subject of German and integrated into the training curriculum.
- In subject-specific training in mathematics, the support of lesson planning through the continuous development of AI assistants will be tested in parallel with subject-didactic deepening over the course of the training module and adapted as closely as possible to the respective learner group.
- In the subject of art, a joint project by teacher educators and trainee teachers on image generation with AI will be developed.

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