

Research-based teaching

Blueprint

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Introduction – why evidenced-based teaching matters?

The European approach to teaching with research is grounded in the principle that research should inform educational practice without replacing professional judgment (Kowalczyk-Wałędziak et al., 2026). Rather than advocating a rigid application of research findings, European education systems generally promote an evidence-informed or research-informed model in which teachers combine scientific evidence, classroom experience, and local contextual knowledge when making pedagogical decisions (Mayer, 2021). This perspective recognizes the complexity of teaching and acknowledges that effective classroom practice cannot be reduced to universal rules (Rogers, 2022). Countries such as Germany have explicitly adopted a reflective and pluralistic understanding of evidence use, while broader European policy discussions emphasize balancing research findings with teacher autonomy and professional expertise.

A second key characteristic of the European approach is the strong focus on developing teachers as research-literate professionals. Teacher education is seen as the main mechanism for strengthening the use of research in schools, with particular emphasis on building the capacity to interpret evidence, engage in inquiry, and apply research critically. Finland provides one of the most prominent examples, where research-based teacher education and the completion of a research thesis are integral components of teacher preparation. Across Europe, however, the successful implementation of research-informed teaching depends not only on individual teachers but also on supportive school cultures, leadership, collaboration, and professional development opportunities (Lipowski et al., 2011). As a result, the dominant European view is that high-quality teaching emerges when research literacy, professional judgment, and local school conditions are aligned within a collaborative educational environment (Topolovčan & Dubovicki, 2024).

Research-informed education is essential because it helps ensure that teaching practices, curriculum design, and educational policies are guided by the best available evidence rather than tradition, intuition, or isolated experience alone (Stark, 2017). In increasingly complex educational environments, educators are expected to respond to diverse learner needs, rapid technological change, and evolving societal demands. Research provides a systematic foundation for understanding what supports student learning, engagement, and success, enabling educators to make more informed decisions about pedagogy, assessment, and curriculum development (Wilkes & Stark, 2023). At the same time, the European approach emphasizes that evidence should not be applied mechanically; rather, research findings should be interpreted alongside professional judgment, disciplinary knowledge, and the specific context in which teaching and learning take place. Research-informed education therefore strengthens both the quality and credibility of educational practice while respecting the expertise and autonomy of educators (Ion et al., 2022).

Beyond improving classroom practice, research-informed education contributes to a culture of continuous improvement, innovation, and professional learning within educational institutions. Educators who are able to critically engage with research are better equipped to evaluate the effectiveness of their teaching, adapt to emerging challenges, and implement new approaches based on evidence rather than assumption. For students, exposure to research-informed teaching promotes critical thinking, inquiry skills, and the ability to evaluate evidence—competencies that are increasingly important in knowledge-based societies. At an institutional level, research-informed approaches support strategic decision-making, enhance educational quality assurance, and foster collaboration between teaching, research, and professional practice. As a result, research-informed education is not simply a method of improving teaching; it is a foundation for creating reflective, innovative, and evidence-aware learning communities capable of responding effectively to future educational challenges.

EU – policies and frameworks supporting research-informed education

At the European Union level, support for research-informed teaching is embedded in a set of complementary policy frameworks rather than in a single legislative instrument (Pellegrini & Vivanet, 2021). A central pillar is the European Commission's evidence-informed education agenda, which encourages the use of research, data, and evaluation evidence in educational policy and classroom practice (Flores & Moreira, 2023). This agenda promotes the principle that educational decisions should be guided by reliable evidence while remaining sensitive to local contexts and professional judgment. Closely linked to this approach are the Commission's teacher-quality priorities, which emphasize the development of teachers' professional knowledge and skills, continuous and well-resourced professional development, reflective practice, and the professionalization of teaching. Together, these priorities position teachers not merely as recipients of knowledge but as reflective practitioners capable of engaging critically with educational research and applying it in their daily work.

A second major policy framework is the European Education Area (EEA) initiative, which identifies teacher quality as a prerequisite for improving educational outcomes across Europe. Within the EEA agenda, the European Commission highlights the importance of strengthening teacher education, supporting lifelong professional learning, and fostering research-based professionalism. The EEA framework encourages Member States to develop teacher preparation systems that equip educators with the capacity to interpret and use evidence, engage in inquiry, and adapt teaching practices based on research findings. As a result, research literacy and reflective practice are increasingly viewed as core competencies for European

teachers, contributing to a culture of continuous improvement and innovation in education.

The Bologna Process and post-Bologna reforms in teacher education, together with the Erasmus+ programme, provide practical mechanisms for implementing research-informed teaching across Europe (Flores, 2020). Bologna-inspired reforms have strengthened the research dimension of initial teacher education, particularly through master's-level programmes that integrate educational theory, research methods, and teaching practice. This model reinforces the connection between academic inquiry and professional competence, encouraging future teachers to become consumers and producers of educational research. Meanwhile, Erasmus+ supports transnational collaboration, professional development projects, teacher mobility, peer observation, and the exchange of innovative pedagogical practices (Alonso De Castro & Garcia-Penalvo, 2021). Through these initiatives, teachers gain opportunities to engage with research, learn from evidence-based approaches used in other countries, and participate in professional learning communities. Taken together, the European Commission's evidence-informed agenda, the European Education Area, the Bologna Process, and Erasmus+ constitute a coherent EU policy framework that promotes research-informed teaching as a cornerstone of high-quality education.

The NAWA HERE experience: From research collaboration to research-informed teaching

The NAWA HERE project began as a research collaboration among international teams from several European countries. The initial focus was on conducting joint research, developing shared expertise, and producing scholarly publications. As the collaboration evolved, the consortium increasingly reflected on how the knowledge generated through research could be transferred into teaching. Teaching should draw directly on ongoing research, allowing students to engage with current questions, data, methodologies, and findings. This approach was guided by the principle that educators should teach not only what is already established in the field, but also what they actively investigate and contribute to through their own research.

To translate this principle into practice, the project partners developed ten research-based teaching sets derived directly from the topics and methods explored within the project. Although the materials addressed different audiences and learning objectives, they followed a common structure to ensure consistency and ease of use. Each teaching set included a pedagogical guide in PDF format with learning objectives, teaching recommendations, and suggested scenarios for classroom use, a PowerPoint presentation that could be adapted by instructors, and a supporting video resource. Most materials were designed for master's-level education, reflecting the close connection between advanced teaching and research activities. However, several resources were also developed for bachelor's students and doctoral candidates,

ensuring that research-informed learning could be integrated across different stages of higher education.

The teaching sets served multiple educational purposes. Some were designed to introduce students to specific research topics and findings, helping learners understand the relevance and practical implications of contemporary research. Others focused on the research process itself, demonstrating how different methodological approaches can be applied to complex research questions. In these cases, the emphasis was placed on understanding research design, data collection, analysis, and interpretation rather than on technical or mathematical details. Such materials proved particularly valuable in master's seminars and doctoral training, where developing methodological awareness and critical thinking is often as important as mastering substantive content. This diversity of purposes highlighted that research-informed teaching can support both subject knowledge and the development of research competencies.

An important component of the project was the systematic testing of the developed materials. Five pilot workshops involving approximately 75 participants were organized to evaluate their usability and effectiveness. The workshops were delivered by teaching teams representing different national and institutional contexts, including Poland, Slovakia, Portugal, Spain, and Germany. Typically, two instructors collaborated in each workshop, often combining face-to-face and online participation. This arrangement enabled experimentation with different delivery models, including synchronous, asynchronous, and blended-learning formats. The testing phase generated valuable insights into how research-based teaching materials can be adapted to diverse educational settings and student needs. In this blueprint, we draw on these experiences to provide practical recommendations for developing, implementing, and evaluating research-informed teaching materials, with particular attention to content design, format, length, delivery modes, and integration into higher education programmes.

Guiding principles

The vision of research-informed education is that teaching and learning are continuously enhanced through the systematic use of research, evidence, reflection, and professional inquiry. This vision recognizes that high-quality education emerges when educators engage critically with evidence while exercising professional judgment informed by experience, disciplinary expertise, and an understanding of learners' needs. Evidence should inform practice, but it should not be viewed as a set of universal rules that can be applied irrespective of context. Effective teaching is inherently context-sensitive, requiring educators to adapt research findings to local circumstances, institutional priorities, and the diverse backgrounds and aspirations of students. For this reason, research-informed education promotes reflective practice,

encouraging educators to continuously evaluate and refine their approaches in response to emerging evidence and changing educational environments.

Research-informed education also depends on a culture of continuous professional learning, collaboration, and ethical responsibility. Educators should be supported in developing their research literacy, engaging in professional inquiry, and sharing knowledge across disciplines and institutions. Collaboration strengthens the use of evidence by enabling the exchange of good practices, collective problem-solving, and the co-creation of innovative teaching approaches. At the centre of these efforts is a commitment to student-centred improvement: the ultimate purpose of using research is to enhance learning experiences, student engagement, and educational outcomes. At the same time, evidence must be used ethically, transparently, and critically, acknowledging both its strengths and limitations. Innovation should therefore be encouraged, but it should be grounded in robust research and systematic evaluation to ensure that new approaches contribute meaningfully to educational quality and student success.

Accumulated experience - perspectives

Audience level

The target audience has a significant impact on how research-based teaching materials should be designed and delivered. In the NAWA HERE testing workshops, the highest levels of engagement were observed among PhD students, who were generally comfortable discussing both research findings and methodological choices in depth. Master's students also responded very positively and demonstrated a clear interest in understanding how research is conducted and applied. Bachelor students were less engaged with research-oriented content when it was presented independently, largely because they had not yet accumulated sufficient disciplinary knowledge to place the research in a broader context. Consequently, bachelor's-level teaching was most effective when it relied on active teacher facilitation, regular discussion, and practical exercises. Presentations and guided activities worked well for this audience, whereas videos were less successful as a standalone learning tool.

*<<While watching the video at before [session] I had trouble concentrating. But I watched it second time after the workshop and it made much more sense. I like it, it was a nice recap>>
Bachelor-level student*

Educational purpose

Research-based teaching materials can serve several distinct purposes, and these purposes should be clearly articulated before development begins. Within the project, some teaching sets focused primarily on communicating research findings and helping

students understand a specific topic. Others used the research topic as a vehicle for demonstrating how different research methods can be applied in practice. The latter approach proved particularly valuable for master's and PhD students because it exposed them to methodological thinking without requiring an extensive mathematical or statistical background. Distinguishing between "learning from research" and "learning about research" helped instructors align the materials with the needs of specific courses and student groups.

<<I appreciated the method's explanation. I learnt when to use it and when to avoid it.>>
PhD-level student

Length and modularity

One of the most important lessons from the project was the value of modularity. Teaching materials performed best when they could be delivered as a standalone lecture or workshop rather than as a small component embedded within a much larger teaching sequence. Although the resources could be successfully integrated into master's seminars and broader courses, their effectiveness was generally higher when students could treat the topic as a coherent learning unit. This suggests that materials should be designed so that they can function independently while remaining flexible enough to be incorporated into longer programmes. Modular resources also make future adaptation and updating significantly easier.

<<The video was long, so it has to be showed in pieces. Otherwise it is difficult to follow>>
Bachelor-level student

Delivery format

The project tested synchronous, asynchronous, and blended-learning approaches across five international workshops. The most effective format was generally a blended approach that combined independent engagement with materials and live interaction with instructors. Fully asynchronous delivery often resulted in lower levels of participation and preparation. Conversely, synchronous sessions created opportunities for discussion, clarification, and reflection that significantly improved engagement with the research content. The findings suggest that research-based teaching materials should be designed to accommodate multiple modes of delivery, while ensuring that opportunities for interaction and discussion remain central to the learning experience.

<<I liked the form [video] but I still prefer to learn in class. It is nice to be able to ask the teacher to explain if I get lost>>
Bachelor-level student

Level of research complexity

Different educational levels require different degrees of research complexity. For bachelor's students, materials focusing primarily on research findings and their practical implications were the most effective. Master's students benefited from resources that combined research findings with an overview of the methods used to generate them. At doctoral level, students were able to engage with more detailed methodological discussions and critically reflect on research design choices. Notably, students at all levels tended to respond better to explanations of research logic and decision-making processes than to extensive technical or mathematical detail. The experience therefore suggests that effective research-informed teaching should focus on helping students understand how knowledge is generated rather than simply presenting complex analytical procedures.

<<I signed up because I liked the topic [AI in SLR]. But when we started at first, I wanted to leave, I thought it would be too complex. Yet, it turned out to be well delivered and now I am thinking on using this in my thesis >>

Master-level student

Degree of student engagement

Active participation was consistently associated with better learning outcomes and stronger student satisfaction. Workshop lengths varied, but sessions lasting between 90 and 120 minutes were particularly successful when they included multiple interactive elements. Students repeatedly highlighted the importance of variety, including discussion tasks, reflection activities, small-group work, and opportunities to apply concepts. The teaching guides therefore included suggested activities that instructors could insert at different points during a session. The specific activity mattered less than ensuring a regular change in learning mode. Based on the workshop experience, these formats were most effective in classes of up to 30 participants, where meaningful interaction and discussion could be maintained.

<<We practiced the method ourselves, it was nicely interactive >>

PhD-level student

Required prior knowledge

The project revealed a gap between expected and actual student preparation. Although some teaching sets were designed with the assumption that students would review materials in advance, this expectation was often not met. When videos were assigned as preparatory work, only around 30% of students reported watching them

beforehand, and many indicated that they had only skimmed the content immediately before the workshop. This experience suggests that reliance on voluntary preparation should be avoided where possible. If prior study is essential, it should be explicitly included within course requirements, assessment criteria, and grading structures. Without such incentives, instructors should assume a mixed level of preparedness and design sessions accordingly.

<<We have been asked to prepare [FDI forms] so I quickly went online at the beginning of the workshop>>

Resource format

Each teaching set consisted of three components: a teaching guide (PDF), a slide presentation (PPTX), and a video. The videos were typically approximately 15 minutes in length, which students generally considered appropriate for independent viewing. However, showing the entire video during a workshop was not particularly effective. When videos were used in class, it was preferable to divide them into shorter segments and introduce discussion points between sections. Interestingly, students often reported that videos were most useful after the workshop rather than before it. As preparatory material, engagement was relatively limited; as follow-up material, the videos encouraged further exploration of the topic and, in several cases, prompted students to contact instructors with additional questions. Videos were particularly effective when explaining research methods, largely because students appreciated the accompanying commentary and practical explanations. Voice quality also mattered. Students preferred a clear and moderately fast narration style, noting that slower delivery could make the content feel repetitive or drawn out. Although many initially expressed reservations about AI-generated voices, comparisons between human and AI narration frequently resulted in students preferring the AI version because of its clarity, consistency, and accessibility for non-native speakers. Particular care should nevertheless be taken with abbreviations and technical terminology, which AI narration systems may pronounce incorrectly.

<<I liked the AI voice better. But I think that we are just embarrassed to admit that we like anything by AI. It feels like we are expected to say that we never use AI and always say human-made is better>>
Master-level student

Overall, the NAWA HERE project experience produced the recommendations included in Table 1.

Table 1. Recommended design matrix by educational level

Characteristic	Bachelor's	Master's	PhD
Research Findings	High emphasis	High emphasis	High emphasis
Research Methods	Basic overview	Moderate emphasis	Advanced discussion
Research Design Critique	Limited	Moderate	Extensive
Teacher Facilitation	Essential	Important	Supportive
Independent Learning	Limited	Moderate	High
Discussion Activities	Structured	Structured/Open	Critical & Analytical
Technical Detail	Low	Medium	High
Preferred Learning Focus	Practical implications	Findings + methods	Findings + methodology + critical evaluation

Source: own elaboration based on NAWA HERE project experiences.

Lecturers' perspective on research-based teaching

The NAWA HERE project not only examined student experiences with research-informed teaching materials but also systematically collected feedback from the educators who designed, delivered, and tested these resources. Semi-structured discussions were conducted with 18 teachers from the three participating countries, all of whom were directly involved in either the development, implementation, or evaluation of the teaching materials.

A recurring theme across these conversations concerned the challenge of content design. Many teachers noted that creating research-based teaching materials differed substantially from preparing a conventional university lecture. Under normal circumstances, instructors typically work within an established syllabus and build teaching sessions around predefined learning objectives and curricular structures. In contrast, the project required participants to develop materials based on individual research outputs while ensuring that they remained pedagogically meaningful and accessible to students.

Teachers consistently emphasised that effective research-based teaching materials could not be created through a simple transfer of a journal article into a PowerPoint presentation or video format. Instead, the materials had to be designed from the ground up, with research findings embedded within a carefully structured learning experience. Most instructors therefore adopted a form of backward design, beginning with the intended student learning outcomes and then working backwards to determine which

elements of the research should be included and how they should be presented. This often involved selectively reorganising content from the original publication, simplifying some aspects, expanding others, and reshuffling the sequence of information. Interestingly, many teachers reported moving theoretical discussions towards the latter part of the session, introducing them only after students had engaged with practical implications, examples, or key findings.

One of the most widely discussed challenges concerned the presentation of research methods and study design. Teachers agreed that methodological information had to be sufficiently detailed for students to understand the assumptions, limitations, and credibility of the findings. At the same time, there was a risk that excessive emphasis on methods could overshadow the substantive results and reduce student engagement. Striking an appropriate balance therefore became a central design consideration during material development.

Paradoxically, while many instructors initially viewed the methodology section as potentially difficult for students, it frequently became the most engaging part of workshop discussions. Across multiple testing sessions, students showed considerable interest in understanding how the research had been conducted and why specific methodological choices had been made. This was particularly evident when the workshop facilitator was also the author of the research being presented. In such cases, discussions naturally evolved into critical reflections on research design, with students asking questions such as: "Why did you choose this method rather than another one?", *"What would you do differently if you repeated the study today?"*, *"Were there alternative approaches you considered?"*

The importance of researcher involvement also emerged as a significant finding. Workshops tended to be most effective when delivered by individuals who had conducted the study themselves. Students appeared to perceive these presenters as more authentic and authoritative sources of knowledge, while trainers felt more confident responding to detailed questions and discussing the rationale behind specific decisions. As a result, methodological discussions often strengthened students' trust in both the research process and the findings.

By contrast, workshops in which instructors presented research conducted by others generally achieved lower levels of engagement. Although participating teachers were thoroughly briefed by the original authors and had familiarised themselves with the relevant studies, students frequently displayed a greater degree of scepticism. They were more inclined to question the presenter's ability to explain or critically evaluate the research in depth. Teachers themselves also reported feeling less confident when discussing studies they had not personally conducted, particularly when responding to detailed methodological questions. While successful learning experiences were still possible in such cases, instructors noted that greater effort was required to establish credibility and communicate the relevance of the research to students.

Regarding the broader characteristics of the teaching materials, teacher feedback was remarkably consistent with student feedback collected during the testing phase.

Educators similarly identified the importance of modularity, interactive delivery formats, appropriate session length, and realistic assumptions about student preparation. They also echoed student concerns regarding limited engagement with pre-session materials and highlighted the value of blended-learning approaches that combine independent learning with opportunities for live discussion and reflection. Overall, the convergence between student and teacher perspectives strengthened confidence in the project's recommendations for the future development of research-based teaching resources.

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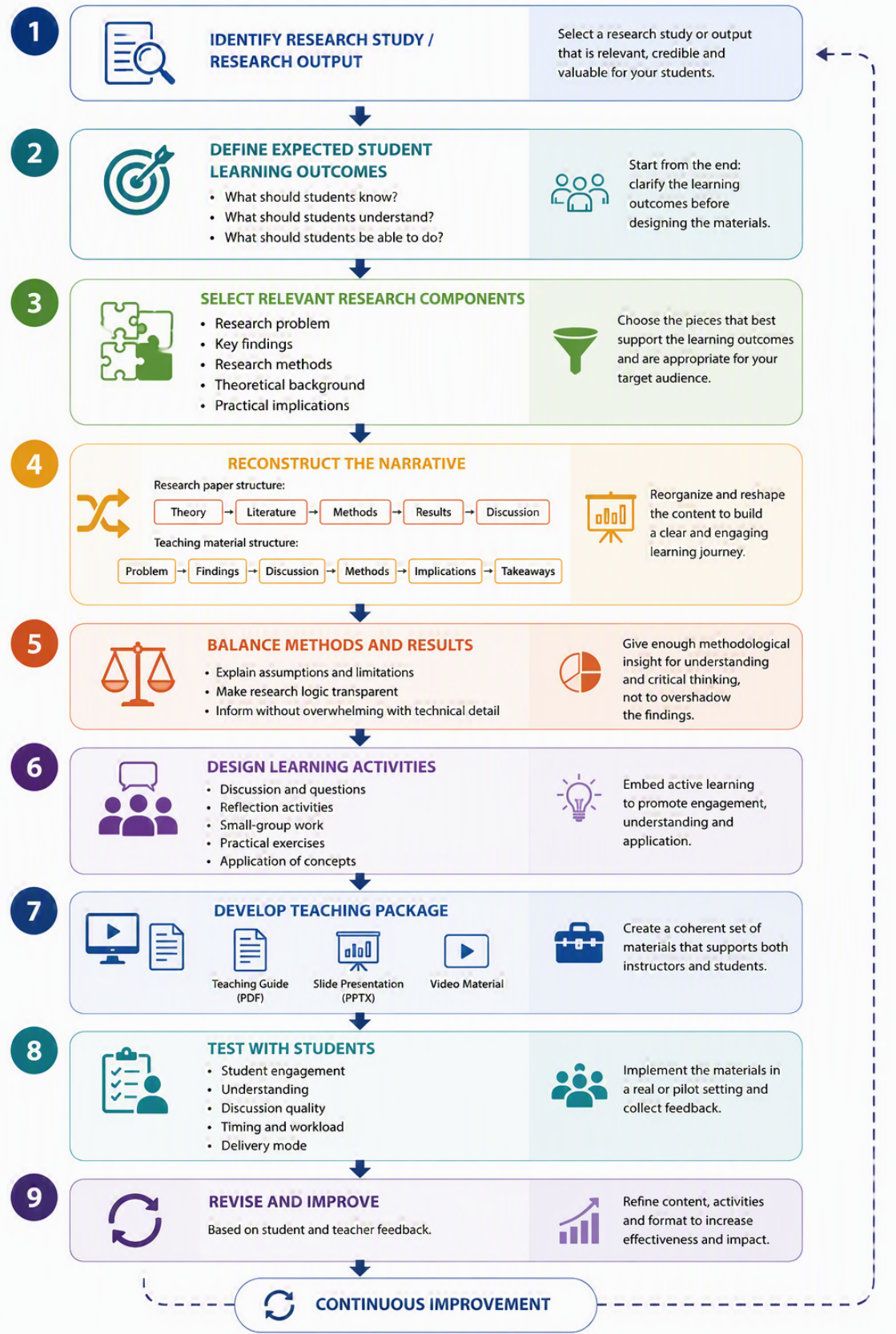
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Appendix. A - Business process-model for creating research-informed teaching materials



Source: own elaboration; graphic created with Microsoft Copilot (GPT-5-based AI system).