

Improving the Methodology for Developing Specialized Professional Competencies of Prospective Teachers Through Digital Technologies

Milinatorov Khusniddin Khushmatovich

Shahrisabz State Pedagogical Institute, Assistant Professor, Department of "Pedagogy", Uzbekistan

Received: 12 February 2026; **Accepted:** 08 March 2026; **Published:** 31 March 2026

Abstract: Digital technologies create opportunities for teacher preparation, but their educational value depends on how they are incorporated into professional learning. This article develops a methodological framework for cultivating the specialized professional competencies of prospective teachers of Tarbiya, a school subject concerned with moral, civic, and personal development in Uzbekistan. The study uses conceptual analysis and a structured examination of methodological materials addressing grades 10 and 11. International frameworks of teacher knowledge and digital competence inform the interpretation of lesson designs, practical tasks, and instructional checklists. The analysis identifies a need to distinguish prospective teachers' professional capabilities from the intended competencies of school pupils. Its principal output is a competency-oriented design cycle linking diagnosis, pedagogical justification, resource development, microteaching, feedback, and revision. Five interconnected domains are proposed: pedagogical design, digital resource development, facilitation, assessment, and ethical-reflective judgement. A task alignment matrix and an analytic rubric translate these domains into observable professional performances. The framework treats accessible multimedia, interactive exercises, immersive resources, and moderated digital communication as alternative means of addressing specific pedagogical problems. It does not establish intervention effectiveness or report measured competency gains. Its contribution is a context-sensitive methodology and an explicit basis for subsequent empirical validation in teacher education.

Keywords: Prospective teachers; specialized professional competencies; digital pedagogy; Tarbiya; teacher education; instructional design; performance assessment.

Introduction: The availability of digital resources has expanded what prospective teachers can produce before entering a classroom. They can assemble presentations, construct interactive exercises, and distribute materials with relatively little technical support. These achievements nevertheless leave an important pedagogical question unresolved: can the prospective teacher explain why a particular resource is appropriate for a particular learning difficulty? A technically successful activity may demand little reasoning from pupils, exclude those with limited connectivity, or generate responses that the teacher cannot interpret. Improving teacher preparation

therefore requires attention to the professional decisions surrounding technology use, rather than treating the production of digital materials as sufficient evidence of competence.

This distinction is especially consequential in the preparation of teachers of Tarbiya. In the methodological materials examined here, the subject brings together questions of family responsibility, community life, tolerance, cultural heritage, media literacy, and personal conduct. Teaching such content involves more than conveying definitions. Prospective teachers must select credible representations of social experience, organize discussion without humiliating

participants, and support pupils in explaining their judgements. Digital resources can make contrasting perspectives available for examination, yet they can also present contested interpretations as unquestionable facts. The professional challenge is to preserve intellectual openness and educational responsibility while using the communicative possibilities of digital media.

The concept of specialized professional competence requires clarification in this setting. It refers here to an integrated capacity to design, conduct, assess, and revise digitally supported Tarbiya instruction through reasoned professional judgement. It is narrower than general digital literacy because it concerns specific teaching responsibilities. It is also distinct from the moral or civic qualities that school pupils are expected to develop. For example, a pupil's ability to recognize an unreliable message is a learning outcome; a prospective teacher's ability to design an activity that reveals how pupils evaluate that message is a professional competence. Conflating these levels obscures both the object of teacher preparation and the evidence needed to evaluate it.

An established theoretical basis for this distinction is the technological pedagogical content knowledge framework. Mishra and Koehler (2006) conceptualize technology integration through relationships among subject content, pedagogy, and technology. Applied to Tarbiya, this perspective directs attention to how a medium changes the representation and teachability of a concept. An infographic about responsible media use, for instance, becomes educationally meaningful when its structure helps learners examine sources or distinguish evidence from emotional persuasion. The choice of software alone does not provide that connection. The framework supports analysis of the teacher's reasoning, although a context-specific methodology is still required to translate its relationships into practical assignments and assessment criteria.

The European Framework for the Digital Competence of Educators broadens this perspective by addressing professional engagement, digital resources, teaching and learning, assessment, learner empowerment, and the development of learners' digital competence (Redecker, 2017). Its relevance to prospective teachers lies in locating digital competence within educational

practice. In the present study, it provides a reference for relating resource production to accessibility, learner participation, and evidence-informed teaching. The proposed framework does not reproduce DigCompEdu as a new instrument or claim equivalence between its proficiency levels and locally defined performance descriptors.

Research on preparing prospective teachers to integrate technology also directs attention to the organization of professional learning. Tondeur et al. (2012) synthesize qualitative evidence on this problem, offering an important basis for considering technology preparation as part of teacher education rather than an isolated technical requirement. For the present methodology, a practical implication is that a resource should be designed, tried in a teaching situation, and reconsidered in the light of feedback. A completed presentation can demonstrate production skills; a documented revision can additionally reveal whether its creator recognizes and responds to a pedagogical weakness.

A further concern is the relationship between visual appeal and cognitive purpose. Mayer's (2020) account of multimedia learning emphasizes evidence-based instructional design. This provides grounds for examining how words and images contribute to understanding instead of assuming that additional media necessarily enrich a lesson. In Tarbiya, emotionally striking images may attract attention while leaving the underlying concept poorly explained. Teacher preparation should therefore require candidates to justify which information is foregrounded, which details are omitted, and how the resource supports the intended reasoning task.

Access and educational appropriateness also limit the value of technological expansion. The 2023 Global Education Monitoring Report situates technology within wider questions of equity, quality, and the conditions of its use (UNESCO, 2023). In practical terms, a proposed activity must remain teachable when devices are shared, connectivity is interrupted, or a learner needs an alternative format. Such conditions belong within lesson design. They should not be treated as technical exceptions after a supposedly complete lesson has been prepared.

The methodological materials underlying this article

already contain a substantial repertoire of activities: infographics, interactive exercises, quizzes, virtual visits, and the analysis of social-media content. The problem addressed here is the relationship among these activities. Their presence does not by itself specify what professional capability each develops, how that capability becomes observable, or what would justify a judgement of improvement. This is a methodological gap within the examined instructional design, not a claim that the international literature has neglected digital teacher competence. The article addresses that gap through explicit alignment of competencies, professional tasks, and assessment evidence.

The aim is to develop a coherent methodology for cultivating specialized professional competencies through digitally supported Tarbiya lesson design. Three questions guide the analysis: Which professional competencies should organize the preparation process? How can existing digital tasks be connected within a sequence of practice and revision? What evidence would allow teacher educators to evaluate performance without confusing technical fluency, engagement, and pedagogical competence? The contribution is a proposed design and assessment framework. Its educational effectiveness remains a question for subsequent empirical investigation.

METHODS

Study design and documentary basis The study adopts a conceptual and methodological design based on structured documentary analysis. The principal material is an unpublished Uzbek-language dissertation chapter on the practical development of prospective teachers' specialized competencies through modern educational tools. Sections 2.1 and 2.2 contain topic lists for grades 10 and 11, lesson-planning examples, multimedia design requirements, interactive task descriptions, instructional checklists, and a pedagogical model. These materials form the documentary basis for reconstructing and refining the proposed methodology; they are not treated as a participant-level dataset.

The unit of analysis is an instructional task or design requirement where its pedagogical function can be identified. Particular attention is given to the media-safety infographic, the family-responsibility quiz,

interactive vocabulary exercises, the cultural-heritage virtual-visit scenario, and the social-media analysis lesson. The chapter refers to formative experimentation and positive outcomes, but it does not supply sample characteristics, matched measurements, or sufficient assessment records to establish the magnitude or attribution of change. Consequently, the present article reports design outputs rather than experimental effects. Images referenced through local computer paths cannot be inspected from the text and are not evaluated as completed student artifacts.

Analytical procedure

The analysis proceeds through three operations. First, the instructional examples are examined for their topic, digital medium, expected activity, and stated educational purpose. Second, each purpose is classified as either a prospective-teacher capability or an intended pupil outcome. This distinction prevents the transfer of pupil-oriented labels directly into a teacher assessment framework. Third, the examples are reconstructed as professional tasks by specifying a decision to be justified, an artifact or performance to be examined, and an opportunity for revision. The resulting matrix is a design synthesis rather than a frequency-based content analysis; no coding reliability coefficient or thematic saturation is claimed.

TPACK and DigCompEdu provide sensitizing concepts rather than predetermined scoring instruments. Relevant publications on multimedia learning, teacher preparation, and educational technology are used selectively to justify design decisions. This is a focused theoretical synthesis, not a systematic review: it makes no claim to exhaustive retrieval or formal screening of the literature. The distinction between documentary description, analytical interpretation, and newly proposed procedures is maintained throughout. The five-domain structure and the assessment descriptors below are methodological proposals developed through this synthesis, not instruments already validated with participants.

Criteria for methodological adequacy

The proposed design is examined for internal alignment, observability, feasibility, and ethical acceptability. Alignment concerns the connection between a target competence, the work required, and

the evidence assessed. Observability requires decisions and performances that can be inspected rather than inferred from attendance or enthusiasm. Feasibility includes preparation time, device access, and an alternative route when the preferred technology is unavailable. Ethical acceptability concerns privacy, respectful representation, attribution, and the protection of learners during potentially sensitive discussion. These are analytical criteria for the proposed methodology, not measured outcome variables.

RESULTS

A differentiated structure of professional competence

The analysis produces a five-domain structure that connects the practical activities in the chapter to identifiable professional responsibilities. Pedagogical design concerns translating a curricular topic into an

achievable learning objective and a reasoned instructional sequence. Digital resource development concerns the accuracy, clarity, accessibility, and technical usability of materials. Facilitation concerns organizing participation and discussion. Assessment concerns eliciting and interpreting evidence of learning. Ethical-reflective judgement concerns evaluating consequences and revising decisions. These domains overlap in practice, but separating them analytically prevents a polished digital product from standing in for the whole of professional competence.

Table 1 presents the proposed alignment. The tasks are adaptations of activity types described in the source chapter; the evidence requirements are specifications introduced in this article. Neither the table nor the accompanying discussion reports observed gains.

Table 1. Alignment of professional competencies and task evidence

Competence domain	Illustrative professional task	Evidence for assessment
Pedagogical design	Plan a Tarbiya activity on checking online information.	Learning objective, anticipated difficulty, and justified choice of medium.
Digital resource development	Prepare a media-safety infographic or explanatory presentation.	Accurate content, readable structure, attribution, and accessible alternative.
Facilitation	Lead a discussion of family responsibility or online conduct.	Participation strategy, probing questions, and response to disagreement.
Assessment	Create and interpret a scenario-based quiz.	Reasoned items, diagnostic distractors, and a teaching response to errors.
Ethical-reflective judgement	Review a digital lesson after microteaching.	Risk analysis, individual reflection, and documented revisions.

A cycle linking design with professional judgement

The proposed sequence begins with a short diagnostic task. A prospective teacher examines a digital resource and identifies what it could teach, where a learner might struggle, and what evidence would demonstrate understanding. This task separates familiarity with an interface from the ability to interpret its instructional use. It also avoids the unsupported assumption that all students already possess comparable multimedia skills. Technical support can then be adjusted to demonstrated need, while the professional learning objective remains shared.

During pedagogical justification, candidates define the pupil outcome before selecting the tool. They describe a plausible learning difficulty and explain the affordance needed to address it. For a lesson on misleading messages, this might be the ability to compare alternative representations of one event. Resource development follows this decision. Candidates produce the material with a brief design rationale, source information, and an alternative format. The rationale makes otherwise invisible decisions available for discussion and reduces the likelihood that a ready-made template determines the

lesson's intellectual structure.

Microteaching places the resource within a short instructional episode. The source chapter explicitly describes an activity in which university students take the roles of pupils; this provides a defensible basis for simulated practice, not evidence of effects on schoolchildren. In the proposed sequence, peers attend to what the teaching move asks learners to do, how misunderstanding becomes visible, and how the candidate responds. Feedback is tied to these observations. Revision then requires a changed artifact or teaching plan accompanied by an explanation of what was altered and why.

Each cycle should retain the original design, feedback, and revised version. Comparing these records allows teacher educators to examine responsiveness to evidence. A candidate who replaces an attractive but irrelevant video with a simpler comparative task may demonstrate stronger professional judgement even though the final product appears less technologically elaborate. This criterion makes pedagogical improvement visible without assigning value to novelty for its own sake.

Refinement of the digital task repertoire

The media-safety infographic can be developed into a task in which candidates transform a general warning into an actionable checking procedure. They select an example message, identify its source, distinguish its factual claims from emotional cues, and indicate what corroboration would be needed. The associated pupil activity should require application of the procedure to a different example. Assessment of the prospective teacher then concerns whether the resource supports transfer and makes the reasoning visible, rather than whether it contains an attractive collection of safety slogans.

The family-responsibility quiz offers a different design problem. Brief factual questions may be useful for checking concepts, while ethical dilemmas often require explanation and recognition of contextual differences. The proposed methodology therefore combines selected-response items with follow-up discussion. Candidates justify their answer keys and identify cases in which more than one response may be defensible. Wang and Tahir's (2020) review makes the learning effects of Kahoot! a relevant research

question, but the existence of that literature does not establish effectiveness for the present activities. Here, the quiz is a vehicle for learning to design and interpret assessment.

Interactive vocabulary exercises can help candidates organize terminology, yet recognition of a term should not be equated with the capacity to reason about a social situation. The proposed extension asks the candidate to connect each exercise to a subsequent explanation or case discussion. A crossword can introduce vocabulary concerning manipulative messages, for example, but a separate task is needed to reveal whether learners can identify manipulation in an unfamiliar message. This preserves a legitimate function for a simple exercise while limiting the inference drawn from successful completion.

Virtual visits and proposed VR or AR activities require similarly precise classification. Viewing an ordinary video is not evidence that immersive or augmented technology has been implemented. The candidate must describe the actual medium and its relevant interaction. A cultural-heritage activity should specify what learners inspect, compare, or interpret and how those actions support the learning objective. A non-immersive version should be available where it can achieve the same objective. The competence being developed is the ability to select and justify a representation, including the decision not to use a technically demanding format.

For social-media analysis, candidates select or construct age-appropriate examples without exposing pupils to identifiable personal conflicts or harmful material. They plan questions that distinguish claims, evidence, missing context, and persuasive techniques. Moderation rules should protect disagreement and prohibit personal attacks. Where a messaging service is proposed for communication, a candidate also needs an institutionally appropriate arrangement for access and supervision. Membership in a public platform should not become an unexamined condition of participation. These safeguards turn media literacy into a professional responsibility as well as a pupil learning objective.

An assessment rubric requiring subsequent validation

The proposed analytic rubric uses the five competence domains as separate criteria. Each domain is evaluated

through four provisional descriptors: reproduction, functional application, pedagogically justified application, and adaptive application. At the first level, the candidate follows a model but cannot explain its instructional rationale. At the second, the material functions and the intended activity is recognizable. At the third, decisions are justified in relation to content, learners, and evidence. At the fourth, the candidate adapts the design after examining feedback and can explain the consequences of that revision. These descriptors are developmental proposals, not established proficiency standards.

A portfolio should include an individually attributable rationale alongside any group product. This is necessary because the quality of a collective artifact does not establish the competence of every contributor. Evidence from microteaching, resource inspection, and reflection can be considered together, but a single aggregate score should not conceal a serious weakness in content accuracy or learner protection. Before research use, assessors would need to examine domain coverage, calibrate judgements using common examples, and investigate inter-rater agreement. No weighting scheme, cut-off score, or reliability estimate is asserted here.

DISCUSSION

The central methodological contribution is a change in what counts as successful preparation. In a tool-led assignment, success may be defined by completion of a presentation or quiz. In the proposed framework, the resource is accompanied by evidence of why it was selected, how it was used, and what the candidate learned from trying it. This makes professional judgement available for examination. The approach is consistent with the relational view of teacher knowledge in TPACK and with the breadth of educator competence recognized by DigCompEdu, while remaining a locally developed proposal rather than a validated extension of either framework (Mishra & Koehler, 2006; Redecker, 2017).

The Tarbiya context gives this distinction particular importance. Discussion of responsibility, tolerance, and media conduct can produce socially desirable answers without demonstrating understanding. A rapid quiz may reward recognition of the expected phrase while concealing uncertainty about its application.

Candidates therefore need to distinguish an answer that reproduces a norm from an explanation that considers reasons and consequences. They also need to avoid assessing pupils' worth or presumed moral character from isolated classroom responses. Teacher education should assess how candidates create conditions for thoughtful participation and interpret the evidence those conditions produce.

The sequence also addresses a tension between collaboration and individual accountability. Group design can expose candidates to alternative approaches and distribute technical work. At the same time, division of labour may allow one member to supply the pedagogical reasoning while another only operates the software. Individual rationales and short teaching performances help reveal these differences. Their purpose is developmental: the teacher educator can identify which aspect of the professional task each candidate still needs to practise. Participation records alone would not provide that information.

Current developments in artificial intelligence extend the importance of this reasoning. UNESCO's AI competency framework for teachers connects AI-related knowledge and practice with ethical and human-centred considerations (Miao & Cukurova, 2024). Although AI use is not evaluated in the present materials, the proposed requirement to verify content and justify instructional decisions can also apply to AI-assisted resources. A candidate should remain responsible for accuracy and suitability even when a system generates the initial material. This is a prospective extension of the framework, not a reported element of the original intervention.

Several limitations constrain the claims. The documentary basis is a single chapter whose activity descriptions were prepared within a particular educational context. It does not establish how consistently the activities were implemented or how candidates experienced them. The five-domain structure has not undergone independent expert review, and the rubric has not been tested for reliability or validity. The conceptual analysis cannot determine whether observed engagement, where described, was sustained or transferred to school teaching. These limits do not invalidate the design proposal, but they prevent claims about its causal effectiveness or generalizability.

A subsequent empirical study should evaluate individually attributable performances before and after the instructional sequence, using comparable tasks and clearly specified scoring procedures. Where feasible, a comparison group and assessment by raters unaware of measurement occasion would strengthen interpretation. Repeated observations during school placement would address transfer beyond simulation. If only a single-group pilot is possible, changes should be reported as preliminary within-group findings, with attention to practice effects, attrition, and implementation variation. Participant consent, institutional review requirements, and the handling of identifiable digital records must be settled before data collection.

CONCLUSION

Improving the methodology for developing prospective teachers' specialized professional competencies requires an explicit connection between digital activity and professional responsibility. The proposed framework establishes that connection through five competence domains and a cycle of diagnosis, justification, design, microteaching, feedback, and revision. Its practical value lies in making the reasoning behind a digital lesson observable and assessable. For Tarbiya teacher education, this means evaluating how candidates support understanding, participation, and responsible judgement rather than using technical novelty or product completion as proxies for competence. The framework supplies a basis for instructional planning and empirical testing; whether it produces sustained improvements in teaching remains to be established through appropriately designed research.

REFERENCES

1. Mayer, R. E. (2020). *Multimedia learning* (3rd ed.). Cambridge University Press. <https://doi.org/10.1017/9781316941355>.
2. Miao, F., & Cukurova, M. (2024). AI competency framework for teachers. UNESCO. <https://doi.org/10.54675/ZJTE2084>.
3. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467->

[9620.2006.00684.x](https://doi.org/10.1111/j.1467-9620.2006.00684.x).

4. Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu (Y. Punie, Ed.). Publications Office of the European Union. <https://doi.org/10.2760/159770>.
5. Tondeur, J., van Braak, J., Sang, G., Voogt, J., Fisser, P., & Ottenbreit-Leftwich, A. (2012). Preparing pre-service teachers to integrate technology in education: A synthesis of qualitative evidence. *Computers & Education*, 59(1), 134–144. <https://doi.org/10.1016/j.compedu.2011.10.009>.
6. UNESCO. (2023). Global education monitoring report 2023: Technology in education—A tool on whose terms? <https://www.unesco.org/gem-report/en/publication/technology>.
7. Wang, A. I., & Tahir, R. (2020). The effect of using Kahoot! for learning—A literature review. *Computers & Education*, 149, Article 103818. <https://doi.org/10.1016/j.compedu.2020.103818>