



PAPER

THEORETICAL FOUNDATIONS OF METACOMPETENCE AND ITS ROLE IN TEACHERS' PROFESSIONAL ACTIVITY

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Abstract

Contemporary education systems are experiencing profound transformations driven by digitalization, globalization, and the increasing complexity of professional activity. These processes significantly alter the requirements placed on teachers, who are now expected not only to possess subject-specific and pedagogical competencies but also to demonstrate the ability for continuous learning, self-regulation, and adaptive professional development. In this context, metacompetence is increasingly conceptualized as a higher-order integrative construct that governs the acquisition, coordination, and transformation of other competencies. The purpose of this study is to provide an extended theoretical analysis of metacompetence and to examine its structural and functional role in teachers' professional activity. The research is based on a systematic review and conceptual synthesis of international and regional scholarly literature within the frameworks of competency-based education, metacognitive psychology, activity theory, and lifelong learning.

The study substantiates metacompetence as a dynamic, supra-disciplinary personal quality occupying the highest level in the hierarchy of competencies. A four-component structural model of metacompetence is elaborated for the general educational context, while a three-component model is proposed specifically for teachers' professional practice. Special attention is given to the role of metacompetence in digital and cloud-based learning environments, professional identity development, and teacher resilience. The findings contribute to the theoretical advancement of competency-based pedagogy and provide a methodological foundation for teacher education and professional development systems oriented toward lifelong learning and digital transformation.

Key words: metacompetence, competency-based education, teachers' professional activity, metacognition, lifelong learning, digital pedagogy.

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Introduction

The competency-based approach has become a dominant paradigm in contemporary education, emphasizing learners' ability to apply knowledge and skills effectively in real-life and professional contexts. However, rapid technological change, digitalization of education, and increasing professional uncertainty have revealed significant limitations of traditional competency models. Competencies acquired during formal education often become obsolete within a short period, which makes adaptability and continuous learning crucial conditions for professional success [OECD, 2018]. These challenges are particularly relevant for teachers, whose professional roles are expanding and becoming increasingly complex.

Modern educators are expected to design learning environments, integrate digital technologies, support students' self-regulated learning, and continuously reflect on their own professional practice. Such requirements cannot be fully met through the accumulation of subject-specific or professional competencies alone.

In this context, metacompetence emerges as a higher-order construct that enables individuals to consciously regulate cognitive activity, coordinate learning strategies, and adapt to new professional demands. Despite growing academic interest, the role of metacompetence in teachers' professional activity remains insufficiently systematized within a unified theoretical framework. Therefore, the purpose of this study is to provide an extended theoretical analysis of metacompetence and to examine its structural and functional role in teachers' professional activity within the paradigm of lifelong learning and digital transformation.

Methods

This study adopts a qualitative theoretical research design based on systematic literature review and conceptual analysis. Scientific publications indexed in Scopus and Web of Science, as well as classical works in competency-based education, metacognitive psychology, and activity theory, served as the primary sources of analysis.

The methodological framework includes comparative analysis, theoretical synthesis, abstraction, and conceptual modeling. These

methods made it possible to identify dominant theoretical approaches to metacompetence, compare international and regional perspectives, and integrate them into a coherent conceptual model. As a theoretical paper, the study does not involve empirical data collection; instead, it aims to advance conceptual clarity and theoretical understanding of metacompetence in teachers' professional activity.

3. Results

The theoretical analysis conducted within this study confirms that metacompetence functions as a supra-structural and regulatory construct within the system of competencies. Unlike general or professional competencies, which are oriented toward specific domains of activity, metacompetence ensures the integration, coordination, and transformation of all other competencies throughout an individual's professional life. The results indicate that metacompetence occupies the highest hierarchical level in the competency system. It does not operate independently but rather manifests through the regulation of cognitive, motivational, and behavioral processes that underlie professional learning and performance. This position explains why metacompetence is particularly critical under conditions of uncertainty, rapid technological change, and continuous professional transformation.

Structural Characteristics of Metacompetence

The synthesis of international and regional theoretical approaches made it possible to substantiate a four-component structural model of metacompetence applicable to the general educational context.

First, the motivational-goal-oriented component reflects an individual's internal readiness for continuous learning and professional development. It includes intrinsic motivation toward cognitive activity, awareness of the personal and professional significance of learning, and the ability to set meaningful and achievable goals. The analysis shows that without this component, metacognitive knowledge and strategies remain inert and are rarely transferred to new contexts.

Second, the cognitive-content component encompasses metaknowledge, understood as

knowledge about knowledge and learning processes. This includes awareness of cognitive strategies, problem-solving methods, criteria for strategy selection, and knowledge about one's own cognitive strengths and limitations. The results demonstrate that this component provides the epistemic foundation for conscious learning regulation and strategic flexibility.

Third, the procedural–activity component represents the operational dimension of metacompetence. It includes the ability to plan learning activities, monitor progress, regulate effort, and adjust strategies in response to feedback. The analysis confirms that this component ensures the practical realization of metaknowledge in real learning and professional situations.

Finally, the reflective–evaluative component ensures the dynamic and developmental nature of metacompetence. It enables individuals to critically analyze their experience, evaluate learning outcomes, identify effective and ineffective strategies, and reconstruct future actions. Reflection functions as a feedback mechanism that maintains the adaptability and sustainability of professional competence.

Teachers' Professional Metacompetence

When the general structural model is applied to teachers' professional activity, significant contextual specificity emerges. Teaching is characterized by constant interaction with learners, rapidly changing educational requirements, and high levels of cognitive and emotional complexity. As a result, teachers' metacompetence demonstrates a compressed but functionally enriched three-component structure.

The value–motivational component reflects teachers' professional values, commitment to educational innovation, and orientation toward lifelong learning. The results indicate that teachers with a strong value-based orientation toward professional growth are more likely to engage in reflective practice, experiment with new pedagogical approaches, and integrate digital technologies meaningfully rather than superficially. The cognitive component includes metaknowledge related to pedagogical strategies, curriculum design, assessment methods, and digital learning environments. Importantly, this component also encompasses knowledge about metacognitive and

self-regulatory strategies that can be transferred to students. The analysis reveals that teachers' cognitive metacompetence directly influences their ability to design learning environments that foster students' autonomy and self-regulated learning.

The activity component integrates practical skills related to instructional design, organization of learning activities, use of digital and cloud-based technologies, and continuous professional reflection. This component reflects teachers' capacity to translate values and knowledge into effective pedagogical action. The results emphasize that reflective activity is not an isolated element but an inherent characteristic of teachers' professional practice.

Functional Role of Metacompetence in Teachers' Activity

The findings demonstrate that metacompetence performs several critical functions in teachers' professional activity. First, it acts as a mechanism of professional adaptability, enabling teachers to respond constructively to curricular reforms, technological innovations, and changing learner needs. Second, metacompetence supports professional self-regulation, allowing teachers to manage cognitive load, emotional demands, and time resources more effectively.

Third, metacompetence serves as a mediating factor between external professional requirements and internal professional development. Rather than passively responding to imposed changes, teachers with developed metacompetence actively reinterpret and integrate new demands into their professional identity. This function is particularly significant in digital and blended learning environments, where pedagogical decisions must be continuously adjusted.

4. Discussion

The expanded results provide strong theoretical support for conceptualizing metacompetence as a central construct in contemporary education and teacher professional development. The findings align with and extend key theoretical frameworks in educational psychology, pedagogy, and professional learning. From the perspective of metacognitive theory, the results corroborate Flavell's assertion that awareness and regulation of cognitive processes are critical determinants of effective learning

[Flavell, 1979]. However, the present study advances this position by demonstrating that metacognitive regulation alone is insufficient for sustained professional development. Metacompetence integrates metacognition with motivational and value-based dimensions, transforming cognitive awareness into a stable professional quality.

In relation to activity theory, the findings resonate with Davydov's and Elkonin's view of learning as a goal-oriented and reflective activity [Davydov, 1986]. The reflective–evaluative component of metacompetence reflects the internalization of activity structures and supports conscious transformation of professional practice. Teaching, as an activity system, inherently requires reflection, which explains why reflective regulation is embedded within the activity component of teachers' metacompetence rather than existing as a separate element.

Comparative analysis with international research reveals both convergence and divergence. Western models of metacompetence often emphasize functional adaptability and employability [Le Deist & Winterton, 2005], focusing primarily on cognitive and procedural aspects. In contrast, regional pedagogical traditions place greater emphasis on values, professional meaning, and personal development. The present conceptual model integrates these perspectives by positioning value orientation as a foundational component that activates and sustains cognitive and activity-based regulation.

The discussion also highlights the significance of metacompetence in the context of digital transformation in education. Existing studies indicate that digital competence alone does not guarantee effective technology integration [Dimitrova, 2020]. The findings of this study support this view by demonstrating that metacompetence mediates teachers' interaction with digital tools, enabling critical evaluation, pedagogical alignment, and continuous improvement of digital practices.

Furthermore, the results contribute to the growing discourse on teacher professional resilience. Teaching is increasingly associated with high levels of stress and burnout. Metacompetence supports resilience by fostering reflective distance, adaptive coping strategies, and a sense of professional

agency. Teachers with developed metacompetence are better equipped to manage uncertainty and maintain professional effectiveness under pressure.

Finally, the findings have important implications for teacher education and professional development systems. Traditional training models focused on knowledge transmission and skill acquisition may fail to prepare teachers for long-term professional challenges. Incorporating metacompetence development into teacher education requires pedagogical approaches that emphasize reflection, problem-based learning, collaborative inquiry, and self-regulated learning practices.

Conclusion

This theoretical study substantiates metacompetence as a key construct in contemporary education and, in particular, in teachers' professional activity under conditions of rapid social, technological, and epistemological change. The analysis confirms that metacompetence represents an integrative and dynamic personal quality that occupies the highest level in the hierarchy of competencies. It ensures the regulation, coordination, and continuous development of general, professional, and specialized competencies throughout the professional lifecycle.

The findings demonstrate that metacompetence goes beyond traditional understandings of competence as a static set of knowledge and skills. Instead, it functions as a supra-disciplinary mechanism that enables conscious organization of cognitive activity, reflective transformation of experience, and adaptive professional behavior. For teachers, metacompetence is particularly significant due to the inherently reflective, value-oriented, and socially responsible nature of pedagogical work.

The proposed conceptual models—comprising a four-component structure for the general educational context and a three-component structure for teachers' professional activity—provide a coherent theoretical framework that integrates cognitive, motivational, activity-based, and reflective dimensions. These models bridge international functional approaches to metacompetence with regional pedagogical traditions emphasizing values, professional

meaning, and personal development.

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