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Research article

Investigative study focused on identifying and analyzing teachers' training needs in the metacognitive field

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Abstract

In terms of professional development, teachers need to adopt a reflective, critical and constructive attitude, the image of a responsible person, aware of the need for continuous training and continuous updating of professional skills. Metacognition has a significant role in professional development, helping to monitor one's own progress and adjust lifelong learning strategies. This can lead to seeking professional development opportunities related to time management or setting goals and creating an action plan to improve professional skills. This article presents the results of an investigative study on the identification and analysis of teachers' training needs in the metacognitive field. The research was motivated by the increasingly recognized importance of metacognitive skills in the educational process for both students and teachers. The main instruments used were a structured questionnaire and a focus group designed to capture teachers' awareness, application and interest in metacognitive strategies. The sample was composed of teachers in pre-university and university education from diverse educational backgrounds. Data analysis was conducted through quantitative and qualitative methods, using descriptive statistics (frequencies, percentages, means) to identify general trends and content analysis for open-ended responses, in order to capture the nuances and motivations behind the options expressed. The results indicate significant gaps in initial and in-service metacognitive training, but also an increased willingness to participate in dedicated training programs. The findings highlight the need to develop coherent educational interventions tailored to the context and the real needs of teachers.

Keywords:
metacognition; teacher training; professional development; questionnaire-based research; data analysis; reflective practice

1. Introduction

In the current educational context, the development of metacognitive skills has become an essential direction for optimizing the teaching-learning process and the development of the teaching career. Metacognition—understood as the set of processes through which individuals monitor, regulate, and control their own thinking—is considered a key component of deep and autonomous learning. However, although the benefits of using metacognitive strategies in teaching are recognized in theory, their practical application in teaching and professional development often remains limited.

Teachers play a central role in developing these skills in students, but in order to facilitate metacognition, teachers themselves must be familiar with the concepts, strategies, and their applicability in different contexts. Specialized studies indicate that initial teacher training pays little attention to the metacognitive dimension, and continuing education programs do not systematically cover this area.

This detailed analysis explores the relevance of metacognition in the current work of teachers in primary and preschool education, identifies their training needs in this area, examines the impact on career development (including professional autonomy, planning, and adaptability), provides examples of good practices in continuing education, and proposes recommendations for educational interventions tailored to this professional segment.

Based on these premises, this study aims to systematically investigate the training needs of teachers in the metacognitive field, using a questionnaire and a focus group designed specifically for this purpose. By analyzing the collected data, the research aims to identify the current level of awareness and application of metacognition among teachers, as well as their willingness to participate in professional development programs focused on this area.

2. Theoretical foundation

2.1. The role and impact of metacognition on teaching career development

Metacognition, defined as the knowledge and self-regulation of one's own thought processes (Flavell, 1979; Schraw & Dennison, 1994), has become an essential concept for teacher training, as teachers not only shape student learning but are also responsible for their own professional development. The literature emphasizes that teachers' metacognition positively influences classroom performance (Zohar, 2006), and strong metacognitive skills encourage professional autonomy and teaching effectiveness (Veenman et al., 2006). Teachers with a high level of metacognitive awareness observe, regulate, and control their thinking both during teaching and during active participation in continuing education courses to achieve their professional ideals (Wilson & Conyers, 2016).

In the context of early childhood education and primary education, the relevance of metacognition is twofold: on the one hand, the reflective teacher continuously adapts their teaching methods, planning and intervening consciously (Whitebread et al., 2009); on the other hand, they teach children the process of "thinking about their own thinking," cultivating self-regulation skills in preschoolers and young schoolchildren from an early age.

Teachers with metacognitive skills become specialists who monitor their own strengths and weaknesses and constantly seek new ways to develop (Pintrich, 2002; Schraw, 1998). In fact, research shows that metacognition is a basic skill necessary to become a successful teacher, and teachers with strong metacognitive awareness represent quality in education (Beijaard et al., 2004).

In terms of professional development, teachers must adopt a reflective attitude, the image of a responsible person, aware of the need for continuous training and constant updating of professional skills. Therefore, in order to adapt to the ever-changing requirements of the education system, as well as to the particularities of future generations of students/preschoolers, teachers assume the role of professionals who constantly reflect critically and constructively on their own professional development activities.

Metacognition plays a significant role in professional development. By being aware of our own thinking processes and learning strategies, we can identify areas where we need to improve and develop new skills. Metacognition also helps us monitor our own progress and adjust our learning strategies accordingly. This may involve seeking professional development opportunities related to time management or setting goals and creating an action plan to improve skills and knowledge.

By contributing to the development of professional autonomy (Veenman et al., 2006), supporting strategic planning, and increasing teachers' adaptability to curricular or institutional changes (Hughes, 2017), metacognition has been shown to have beneficial effects on teaching career development. Furthermore, the capacity for self-reflection supports the formation of professional identity and conscious career orientation (Beijaard et al., 2004).

Recent research has highlighted the link between metacognitive skills and teachers' professional identity: their level of metacognitive awareness, along with early childhood education teacher competencies/primary education teacher competencies, predicts the degree of maturity and assumption of teaching identity throughout the development of a successful career (Laos Mbato & Triprihatmini, 2022).

Overall, integrating metacognition into a teacher's skill set has a strong and positive impact on their professional trajectory. It strengthens autonomy through self-directed professional learning, optimizes planning through clear goals and continuous monitoring, and increases resilience and adaptability through openness to change and continuous learning. Thus, metacognition becomes a driver of teaching career development, ensuring the constant evolution of the quality of education provided by teachers in early childhood and primary education.

2.2. Continuing education needs in the field of metacognition for identified teachers

Continuing education for teachers in the field of metacognition has become a frequent concern for specialists in recent years, both in terms of the use of metacognitive strategies in the teaching-learning process and in their professional development programs. Metacognition is approached both as a means of personal development and as an investment in improving the quality of education.

Zohar and Barzilai (2013) believe that in order to have a solid understanding of metacognition, teachers need:

a) to have general theoretical knowledge about metacognition, in particular to know and understand

the definitions of the concept of "metacognition" and its various components;

b) to possess the personal ability to practice metacognitive thinking about their own professional development activities, which can then be transferred to classroom activities.

In order to develop a training program design for this purpose, a training needs analysis is required from two perspectives: on the one hand, a diagnostic analysis focused on identifying the set of metacognitive skills and competencies that teachers possess in the field of teaching career management, accumulated through previous programs and projects; on the other hand, a predictive analysis, which focuses on the development needs, interests, and recommendations of teachers, trainers, and education experts regarding the training program to be developed.

Studies show that many teachers in preschool and primary education are unfamiliar with or insufficiently apply metacognitive concepts (Brown, 1987; Schraw, 1998). Laos Mbato & Triprihatmini (2022) identified a low level of metacognitive awareness among novice teachers, which affects their ability to self-regulate their teaching process. Therefore, continuous training focused on the development of planning, self-reflection, and teaching self-assessment is necessary (Pintrich, 2002).

Recent analyses highlight a gap between teachers' level of metacognitive awareness and their ability to effectively apply metacognitive strategies in their teaching practice (Schraw, 1998; Hughes, 2017). Many teachers do not fully understand the concept of metacognition or how to use it in their work (Laos Mbato & Triprihatmini, 2022). Studies show that only 37.5% of teachers with up to 10 years of experience were familiar with the concept of metacognition, and they focused more on knowing their own thinking process than on consciously regulating it.

Such results indicate a pressing need for continuing education focused on developing teachers' metacognitive skills. In practice, this involves:

- Participation in training programs and workshops that explicitly introduce the concepts of "thinking about thinking," metacognitive planning (setting goals and strategies), and self-regulation (by monitoring and adjusting one's own training needs) (Pintrich, 2002; Hughes, 2017).
- Raising awareness: research recommends that teachers be familiar with the principles of metacognition, both during their initial training and throughout their professional development (Schraw, 1998; Pintrich, 2002).
- Practical empowerment: many studies show that although teachers may have a "good" level of knowledge about metacognition, their metacognitive skills are limited (Veenman et al., 2006; Hughes, 2017). This indicates that education should go beyond the theoretical sphere and provide opportunities for reflective practice.

In conclusion, the main need for training lies in transforming metacognitive awareness into skill and routine. Both novice and experienced teachers need to be supported in becoming reflective practitioners, capable of planning, monitoring, and adapting their own professional trajectory and entire educational activity through metacognitive strategies (Laos Mbato & Triprihatmini, 2022; Hughes, 2017).

3. Research methodology

In this study, we adopted a quantitative and qualitative research approach aimed at exploring and describing teachers' individual perspectives on the implications of metacognitive skills in career management and their progress over time. It focused on analyzing the need to develop metacognitive skills, the ability to self-assess specific career management and professional development competencies, based on the unique experiences and abilities of primary and preschool teachers, with an emphasis on seniority in teaching and professional environments. At the same time, this approach allowed for an exploration of personal experiences and perceptions regarding the application of metacognitive skills in professional development that are not easily quantifiable.

3.1. Objectives:

a) to study the opinions and perceptions of subjects regarding teaching career management and the development of metacognitive skills;

b) to analyze the training needs of teachers in the target group in the metacognitive field;

c) to systematize relevant, operationalizable results that can be used in the development of the training program.

3.2. Research questions

In order to achieve the proposed objectives, four fundamental questions were formulated regarding the impact study:

a) What is the level of awareness regarding the importance of metacognitive skills in professional development?

b) To what extent do teachers use self-assessment in relation to each of the performance criteria relating to specific career management and personal development skills?

c) How effectively do teachers use planning, monitoring, and control strategies in the professional development process?

d) What types of perceptions and opinions can be operationalized and capitalized on in further research, consisting of the subsequent design of a continuing education program?

3.3. Participants and sampling

The study used random sampling to select participants from different locations in the counties of Dolj, Gorj, and Mehedinți, ensuring a diverse range of experience and training levels. This strategy strengthened the external validity of the study, allowing the results to be generalized to a larger population of teachers. At the same time, this aspect also increased the statistical validity of the study results.

Table 1

Distribution of subjects

subjects/variables		Frequency	Percentage
	Teaching position		
Teachers	Preschool teacher	168	46,6
	Primary school teacher	178	53,4
	Residential environment		
	rural	152	35,6
	urban	194	64,4
	Teaching degree		
	Permanent	70	20,5
	Grade .II	124	37,0
	Grade .I	152	42,5
Mentors/Methodology teachers/trainers		40	
Experts in the field		10	
	Total	396	

The sample for pretesting the instruments included 396 subjects, structured in terms of independent variables as follows:

a) 346 primary and preschool teachers grouped according to the variable of teacher specialization, the variable of the educational environment of the schools (urban/rural), and the variable of teaching degree (permanent, teaching degree II, and teaching degree I);

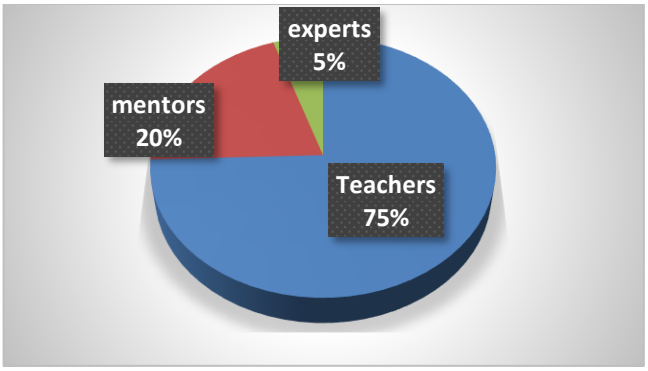
b) 40 mentors/methodology teachers from the Gorj, Dolj, and Mehedinți County School Inspectorates;

c) 10 experts in the field, professors at the University of Craiova.

The study population represented a non-randomized, non-probability convenience sample, resulting from voluntary responses obtained from preschool and primary school teachers, methodologists and experts, and university professors in the field of social sciences.

Figure 1

Sample structure diagram



3.4. Research tools

3.4.1. Questionnaire

The opinion questionnaire is the main investigative method used in the research. The categories of items in the questionnaire also constitute the independent variables of the research:

a) perceptions, opinions, and conceptions of the subjects regarding the need to focus training programs on the development of metacognition in teachers (items 5-7);

b) the impact of training programs on teachers' self-assessment abilities in relation to career management performance standards (items 8-10);

c) types of activities in which the usefulness and applicability of metacognitive skills in professional development are highlighted: planning (references to the professional development project); monitoring and control (monitoring methods); evaluation and adjustment (evaluation methods) (item 11).

d) educational and training needs related to the development and affirmation of teachers' metacognitive skills (items 12-15);

3.4.2. Focus groups

The data collected from the opinion questionnaire was reinforced by that obtained through focus group meetings with representatives from each category of subjects. The analysis of the relevant responses from the focus groups highlighted the subjects' arguments, perceptions, and various representations in the metacognitive field, personal reflections, problematic situations in teaching, and the teacher training system/process.

4. Results

The data collected through two questionnaires and focus groups addressed to teachers, methodologists, and specialists, was distributed according to the same item structure, depending on the teachers' place of residence, teaching position, and teaching degree, as well as for the purpose of comparative analysis of the responses of the three categories of subjects.

4.1. Questionnaire on the development of metacognitive skills in the teaching career

A. Opinion items on the need to develop metacognition in teachers (items 5-7)

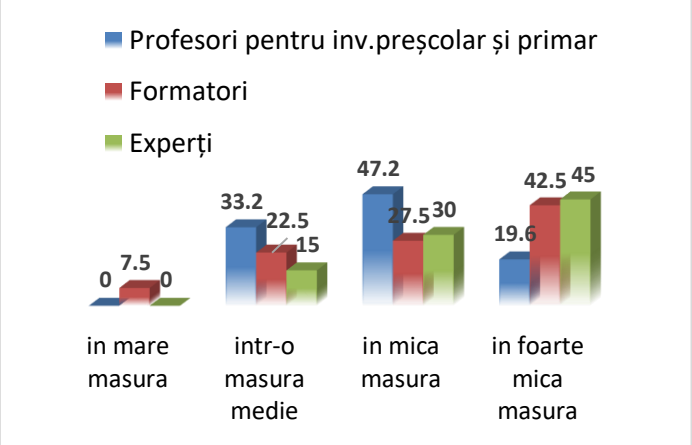
In the opinion of teachers, the metacognitive dimension of the teacher's competence profile should represent, to a moderate extent (284 teachers – 82.2%) an essential factor in professional development, while 87%-95% of teacher trainers and experts in the field consider metacognition to be very useful in the proper management of the professional path.

The essential sources from which teachers acquired knowledge about metacognitive skills are methodological guides and conferences, symposiums, and webinars in which they participated online (62% of the subjects). To a lesser extent, the subjects indicated current pedagogical literature and training programs as sources, which reveals an inconsistency in the approach to metacognition, or the failure to update the specific curriculum during initial and continuing training. Trainers and experts indicated postgraduate training programs and conferences as basic sources. With regard to teaching career management, all categories of subjects believe that they can acquire knowledge, skills, and experience from both pedagogical literature and initial and continuing training programs, through conferences and participation in thematic activities at the school or inspectorate level.

To a small and very small extent, teachers say that continuing education programs consistently focus on metacognition in the field of teaching career management.

Figure 2

Graph showing the distribution of numerical values quantifying subjects' assessments of the approach to metacognition in training programs



Translation:

- Teachers for Preschool and Primary Education (Profesori pentru inv. preșcolar și primar)
- Mentors (Formatori)
- Experts (Experți)
- A large extent (în mare măsură); a medium extent (într-o măsură medie); a small extent (într-o mica măsură); a very small extent (într-o foarte mica măsură)

A preliminary analysis of continuing education programs organized by authorized institutions (Teacher Training Centers, School Inspectorates, NGOs in Gorj, Dolj, and Mehedinți counties) reveals a balance between cognitive and methodological skills on the one hand and transversal skills on the other. Noteworthy are the programs on classroom management, educational leadership, effective communication, and emotion management. However, the training offer poorly represents the metacognitive dimension in the professional development of teachers.

B. Self-assessment based on career management performance standards was analyzed comparatively according to the teachers' place of residence, teaching position, and teaching degree (items 8-10).

The systematization and analysis of relevant data for each item with specific criteria reveal the following perceptions, opinions, and conceptions of the subjects:

- The criteria relating to the assessment of the level of development of specific skills in the field of career management and personal development, were analyzed by assigning a value rank from 1 to

5, with 1 being the lowest, depending on the need for their development.

Within this item, aspects related to career path planning and flexibility in adjusting it are poorly addressed: 74% of teachers say they relate to these aspects to a small extent. After obtaining their first teaching degree, most participate in courses only to accumulate the 90 credits required by the methodology of November 6, 2020, without developing a real career development plan.

Conducting a self-reflective analysis of the level and stage of one's own professional training in relation to the requirements for a teaching career (1) and participating in specific training programs and activities (3) are specific skills developed to a large and very large extent by most teachers, between 50.7% and 74% of teachers.

By applying the T-test and the Anova test, according to Table 2 (Appendixes), we observe statistically significant differences between the averages obtained for participation in specific training programs and activities for the variable of place of residence, with values of P<.05, p=. 000, at a value of t=4.390, which means that teachers in rural areas show greater interest in participating in training courses than teachers in urban areas. The results change in the case of the other three dimensions of the item, which do not show statistically significant differences on the independent variables, with P values >.05, these being greater than .133.

- The assessment, through self-evaluation, of the level of development of the following professional capacities, skills, and attitudes in teaching career management and professional development is analyzed by calculating the average for each variable individually and for the entire item, based on the frequency of responses. The measurement scale was reversed from the previous item, ranging from 1 - capacities developed to a very large extent to 6 - capacities that are not developed at all.

Thus, through self-assessment, 97.3% of teachers consider that they have developed to a large and very large extent the capacities and skills to identify and capitalize on opportunities for professional development in formal, non-formal, and informal contexts (1), but it was observed that the level of capacities for adaptation, development, and contextualization of strategies and methods for teaching career development (2) has decreased. The least developed are the metacognitive strategies for planning, developing, implementing, and evaluating activities specific to the professional development process (3), which 275 out of 346 teachers do not use in teaching career management (79.5% - to a small extent). Low values were also obtained in the case of specific capacities and skills related to the management of the professional development curriculum (50.7% - to a small extent), and in terms of the values and attitudes that guide and activate professional behavior in their own personal development and teaching career (50.7% - 175 teachers - to a moderate extent).

In Table 2 (Appendixes), item 10, significant statistical differences were reported between the averages obtained by teachers in rural and urban areas, p<0.05, with values between .000 and .037. They make greater use of their ability to adapt, develop, and contextualize strategies and methods for developing their teaching career, metacognitive strategies for planning, developing, implementation, and evaluation of activities specific to the professional development process, and they relate to a greater extent to values and attitudes that guide and activate professional behavior in their own personal development and teaching career, unlike teachers in urban areas, the explanation being found in the continuous reduction of positions in rural areas. Instead, they do not focus on identifying and capitalising on opportunities for professional development in formal, non-formal and informal contexts, which are more prevalent in urban areas.

- Self-assessment reported on performance criteria related to specific career management and personal development skills, which corresponds to one's own level of development, by assigning a value rank (1 - the lowest value).

Studying the numerical data and percentage expressions, the results obtained on this item fluctuate between low values (M=1.8) and high values (M=4.57), but not maximum; the item refers both to the training and continuous development project, as well as to professional self-assessment capacities and to the openness of teachers to continuous training following the self-analysis of needs. For the variables analyzed, regarding the periodic review of the training and continuous development project (M=2.38) and the continuous updating of the professional training and personal development path (M=2.57), low averages are obtained, between 8.2% and 12.3% of teachers carrying out this type of activities, because teachers do not establish a teaching career development plan, unless they intend to participate in the competition to

obtain merit grades or to obtain a management position at the level of educational units/school inspectorates. The identification of personal and professional development needs, as well as the concern for continuous professional and personal development, is achieved to a medium-high extent; trainers and education experts are of the opinion that reflective analysis of their own training needs is carried out to a small extent among teachers, which leads to inadequate involvement in formal and informal professional learning activities, to improve teaching activity and to address new challenges and orientations in the professional plan.

The values of the Anova test and the T test in table no. 2 (Appendixes) for item 11, indicate significant statistical differences in relation to teaching degrees and to the environment of residence, established at the significance threshold P= 0.05. For the variables: self-evaluation of professional behavior, taking into account the analyses and recommendations received, periodic participation in various types of continuing education, learning from one's own experience and the experience of others, with effects in the permanent optimization of professional behavior and openness to lifelong learning, the significance threshold is lower than .05, oscillating between .002 and .021, which means that teachers with degree 1 value them to some extent, except for the criterion that aims at learning from one's own experience and the experience of others, teachers with a degree obtaining a higher average.

Analyzing from the perspective of the teachers' residence environment, the significance threshold falls between .000 and .003, indicating that teachers from rural areas take into account the analyses and recommendations received, placing greater emphasis on self-evaluation of professional behavior based on them, which helps them identify personal and professional development needs and they have a greater openness to learning from their own experience and the experience of others, with effects on the permanent optimization of professional behavior.

C. Application of metacognitive skills in professional development:

- *planning (references to the professional development project)*
- *monitoring and control (monitoring methods);*
- *evaluation and regulation (evaluation methods).*

- Investigating the level of involvement of teachers, systematically, in personal and professional development activities, by reporting on the types of activities that highlight teachers' metacognitive skills, generated the following results:

With a cumulative frequency of 61.6%, they establish and apply ways of self-evaluation of professional performance in relation to professional standards, personal/student expectations to a high and very high extent; and within the types of activities aimed at developing a professional development project, the frequency of their use was between 76.7% and 82.2% to a low-medium extent. Due to the fact that there are few teachers who prepare professional development projects, most of them do not define strategic objectives of professional (self)training, do not resort to proposing types of training programs and activities or to selecting strategies to streamline the implementation of the project (managerial strategies, metacognitive strategies, professional learning situations). Implicitly, teachers monitor the professional development process and the results obtained to an average extent, 65.8% of teachers, compared to 19.2% do not monitor their professional development. However, there is a percentage of 43.8% of teachers who, to a large extent, self-evaluate their professional performance and skills in order to make decisions regarding the management of their teaching career.

Regarding the comparative analyses carried out between the groups of respondents, significant differences were identified for all variables. This is a good premise for comparing the responses of teachers in the design of the training program. The perceptions of the groups of respondents differ significantly on all three variables, the significance threshold having values lower than .05, being between .000 and .045 (table no. 3 - Appendixes).

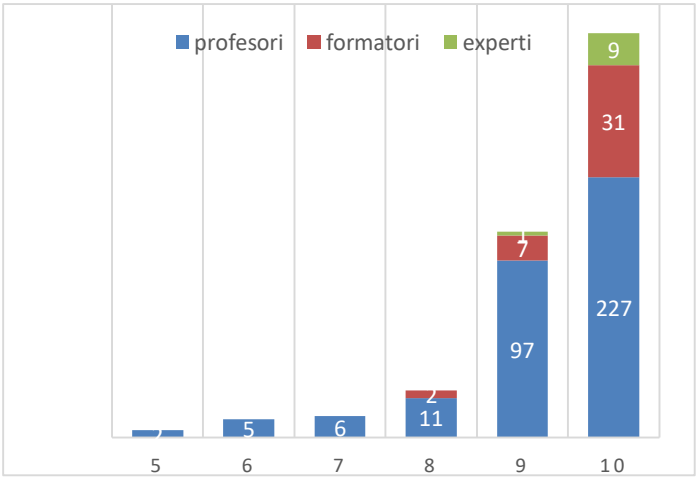
The analysis of the data from the perspective of trainers and education experts reveals significant differences: they believe that in professional development, teachers are involved to a small extent (M=4.16 on a scale from 1 to 6, 1 being the highest value) in activities that highlight metacognitive skills, process activities for planning, monitoring and evaluating the evolution of the teaching career. These activities would need to be applied in their own continuous training, for teachers to observe themselves, their professional performances and the way they present themselves in the educational environment in which they operate.

D. *Training* needs and curricular preferences in the metacognitive field

- The scale of appreciation of the value level by which the development of the teacher's metacognitive skills should be a strategic objective of the continuous training process indicates the perceptions of the three categories of subjects: 65.6% of teachers, 77.5% of trainers and 90% of education experts value the metacognition approach in training programs at the highest level.

Figure 3

Graph of the value of metacognition in training programs by subject categories



Translation:

- Teachers (Profesori)
- Mentors (Formatori)
- Experts (Experți)

- We collected and processed the teachers' options regarding the most important effects of affirming metacognitive skills, depending on the level of their manifestation, by centralizing the relevant responses:
  - Developing critical thinking – 53.7%;
  - Developing the self-regulated learning process - 57.4%;
  - Promoting reflective approaches, through which teachers continuously review their own work, individually and collectively – 59.3%;
  - Facilitating the development of professional development projects – 44.4%;
  - Making the self-management of the professional development project more efficient – 44.4%;
  - Strengthening teachers' teaching skills – 44.4%;
  - Improving teaching techniques through the meta-perspectives they offer on the training process – 61.1%.
- The quantitative analysis of the degree of appreciation of the training modalities useful in developing teachers' metacognitive skills highlighted the orientation of teachers to develop metacognition by deepening the issue in the specialized literature (90.4% - to a large and very large extent) and the development and implementation of professional development projects, under the guidance of a mentor/professional counselor. In addition to these, there are continuing education programs in the field of teaching career management, master's programs in the field of educational sciences, the benefit of counseling services in professional development and the exchange of experiences in professional development, within projects and mobility internships.

The analysis of opinions according to the independent variables reveals the following statistically significant differences: teachers with a permanent degree prefer continuing education programs to a greater extent, unlike those with a teaching degree II and a teaching degree I who attach importance to participation in projects, conferences, webinars on personal and professional development and participation in educational partnership projects, the significance threshold being between .001 and .015 (according to table no. 4 - Appendixes, item 15).

On the other hand, analyzing by reference to the residence environment and teaching function, teachers from rural areas, unlike those from urban areas, believe that metacognitive skills can be developed to a greater extent by benefiting from professional development counseling services (.014), deepening the issue in the specialized literature (.000) and developing and implementing professional development projects, under the guidance of a mentor/professional counselor (.004)

Primary education teachers prefer master's programs in the field of educational sciences (.027), benefiting from professional development counseling services (.039) and deepening the issue in the specialized literature (.000), compared to preschool education teachers.

From the point of view of education experts, the development of metacognitive skills can be achieved by introducing and deepening the issue in the specialized literature within the teaching career management courses of master's programs in the field of educational sciences, by developing and implementing professional development projects, under the guidance of a mentor/professional counselor, as well as through continuing education programs in the field of teaching career management.

- As suggestions for ways that should be utilized in order to make a training program more efficient in terms of developing metacognitive skills, centralized following the selected responses, teachers consider that most of the proposed ways can be utilized to a large and very large extent within the training program, with average scores being obtained in terms of processing, transforming, and processing the material to be learned, 42.2% of them believe that it is not as important as establishing a personal goal for participating in the training program (49.3%) and demonstrating flexibility, mobility, and adaptability in achieving the objectives (52.1%).

For the 10 specific ways that should be utilized in order to make a training program more efficient in terms of developing metacognitive skills, multiple statistically significant differences were reported. Depending on the teaching degree, the modalities: achieving active, deep, systematic learning where p= .021, perseverance in learning p=.017, the existence of a motivational optimum and an affective balance with p=.027 are better appreciated by teachers with a final degree, generally due to the fact that they are still at the beginning of their career and actively participate in more exams. On the variable of the residence environment, there are also significant differences for the modalities: establishing a personal goal of participating in the training program p=.000, processing, transforming, processing the material to be learned p=.010, optimism, responsibility p=.000, independence in the learning activity p=.035. Teachers from rural areas appreciate these modalities more unlike those from urban areas. In relation to the teaching function, primary school teachers are more concerned with establishing their own purpose for participating in the training program (p=.027) in which to demonstrate independence in the learning activity (p=.028).

Education experts emphasize more self-control and self-evaluation, on establishing their own purpose for participating in the training program and on achieving active, deep and systematic learning, by using methods and techniques appropriate to the learning style.

4.2. Analysis of data obtained from the focus group

The data obtained from the synthesis and processing of the questionnaire responses were supplemented with information obtained from the focus groups. This method allowed for the survey of opinions, attitudes, interests, beliefs, aspirations, values regarding the management of the teaching career.

The systematized responses following the focus group activity highlighted, in the case of most subjects:

- awareness of the need to develop the metacognitive dimension of the professional competence profile;
- the existence of inconsistencies between the self-assessment of the level of metacognitive development and the subjects' specific knowledge, capacities and abilities, in the metacognitive field, in the sense of overestimation;
- training needs in the metacognitive field: in-depth knowledge regarding the management of the teaching career, metacognitive strategies specific to professional and personal development;
- development of metacognitive skills, affirmed by:

  - valorization of continuing education programs, activities for the elaboration and implementation of professional development projects as useful ways of developing teachers' metacognitive skills;

  - methodological options and opinions for flexible application, within the continuing education program, for the following training variables: interactive strategies, metacognitive strategies, non-formal teaching-learning methods, experiential collaborative learning, workshops, in interdisciplinary teams, strategies for planning activities specific to the personal and professional development project, managerial strategies for streamlining the implementation of professional development projects/programs;

  - curricular preferences for the contents of the training program focused on metaknowledge, procedural knowledge regarding teaching career

management, applications for acquiring metacognitive skills and experiences.

- integration of metacognitive processes in teaching career management can lead to more structured and efficient professional development, ensuring both teaching performance and professional satisfaction.

5. Discussions

The statistical significance and qualitative analysis of the results regarding the training needs of teachers in the target group, self-assessment and awareness of metacognition in the professional competence profile imply a series of conclusive statements, which constitute premises in the elaboration and development of a relevant and scientifically consistent and curricular training program. Also, the instruments built and applied based on the methodological principle of triangulation facilitated the systematization and detailing of the meanings of the results grouped by objectives and by item categories.

The statistical analysis of the items regarding the perceptions and opinions of the subjects regarding the need to focus training programs on the development of metacognition in teachers reveals the valorization of the metacognitive dimension in professional training and development and the need to restructure the curricular offer of training programs, from this perspective.

The development of metacognitive skills, as a fundamental objective of the professional development process, is appreciated by all categories of subjects; Even if primary and preschool teachers appreciate this variable to an average extent (the results from the questionnaire correlate with the results obtained in the previous study where we investigated the level of metacognition awareness in teachers by applying tools adapted from Balcikanli (2011) and Scraw & Dennison(1994), compared to experts (who have a high level of scientific culture in the field), the results constitute a basis for supporting the motivation and arguments regarding the development and implementation of the training program, focused on the development of teachers' metacognitive skills.

Regarding training programs, the metacognitive component of the curriculum is inconsistent, being addressed to a small extent within the programs in the thematic area of teaching career management. Consequently, we appreciate the adherence of teachers from the target group to the theme and general objectives of the proposed program, reinforced by the opinions of experts and research in the field of metacognition and teaching career management.

The statistical and qualitative analysis of the results regarding self-assessment by reference to performance standards in career management and the application of metacognitive skills involved the systematization of assessments on the subjects' level of awareness, self-assessment capacities in the field and on training needs. Thus, we selected and analyzed several variables with an impact on supporting the necessity and opportunity of the training program: capacities and skills for identifying and capitalizing on professional development opportunities, in formal, non-formal and informal contexts; a low level of adaptation, development and contextualization capacities of strategies and methods for developing the teaching career; the need to focus the training program curriculum on the development of metacognitive strategies for planning, developing, implementing and evaluating activities specific to the professional development process, where we found low scores in the statistical analysis.

Also, the management of the professional development curriculum is an area where teachers in the target group do not have the desirable skills; from the analysis of the teachers' responses, we found a low level of skills in developing the professional development project, with evidence in the low manifestation of strategic thinking on personal and professional development, the definition of general objectives and specific strategies for managing the curriculum of one's own training process. All of this indicates that existing training programs in the field of career management, even if they are focused on capitalizing on experiential learning, do not consistently target the metacognitive dimension.

6. Conclusions

The results of the study show that teachers are receptive to metacognitive development and want training that provides them with meaning, applicability and autonomy. In-service training programs must become authentic contexts of professional and personal transformation, aligned with the real needs of teachers in the contemporary educational system.

The multi-criteria analysis of training needs in the metacognitive field and of the subjects' preferences facilitated the development of curricular variables and the outline of several premises in the design of the training program. Thus, the variables selected to be capitalized in the design of the training program

focused on the development of metacognitive skills are the following:

a) the development of programs and thematic areas that ensure continuity with the initial, psychopedagogical training programs;

b) training strategies that facilitate the development of metacognitive skills: constructivist strategies, experiential collaborative learning, metacognitive strategies, interactive strategies, virtual learning environments, managerial strategies specific to the development, monitoring and implementation of one's own professional development project;

c) procedural curricular contents and those that are focused on metacognition and teaching career management.

The outlined premises and variables will be operationalized and contextualized within the structural and procedural elements of the training program, in order to ensure its relevance, consistency and operationality.

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References

Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, 20(2), 107–128. https://doi.org/10.1016/j.tate.2003.07.001

Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. E. Weinert & R. H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65–116). Lawrence Erlbaum Associates.

Balcikanli, C. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9 (25), 1309–1332.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, 34(10), 906–911. https://doi.org/10.1037/0003-066X.34.10.906

Hughes, G. (2017). Developing teachers' metacognitive knowledge and skills: A professional development programme. *Journal of Education for Teaching*, 43(3), 287–299. https://doi.org/10.1080/02607476.2017.1321673

Laos Mbato, C., & Triprihatmini, M. (2022). Enhancing pre-service teachers' metacognitive awareness through guided reflection. *Journal of Teacher Education*. https://doi.org/10.1177/00224871221082142

Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*, 41(4), 219–225. https://doi.org/10.1207/s15430421tip4104_3

Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science*, 26(1–2), 113–125. https://doi.org/10.1023/A:1003044231033

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19(4), 460–475. https://doi.org/10.1006/ceps.1994.1033

Veenman, M. V. J., Van Hout-Wolters, B., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and Learning*, 1(1), 3–14. https://doi.org/10.1007/s11409-006-6893-0

Whitebread, D., Coltman, P., Pasternak, D. P., Sangster, C., Grau, V., Bingham, S., & Demetriou, D. (2009). The development of two observational tools for assessing metacognition and self-regulated learning in young children. *Metacognition and Learning*, 4(1), 63–85. https://doi.org/10.1007/s11409-008-9033-1

Wilson, D., & Conyers, M. (2016). *Teaching students to drive their brains: Metacognitive strategies, activities, and lesson ideas.* ASCD.

Zohar, A. (2006). The nature and development of teachers' metacognitive knowledge in the context of teaching higher order thinking. *Journal of the Learning Sciences*, 15(3), 271–305. https://doi.org/10.1207/s15327809jls1503_1

Zohar, A., & Barzilai, S. (2013). A Review of Research on Metacognition in *Science Education: Current and Future Directions. Studies in Science Education*, 49, 121-169. https://doi.org/10.1080/03057267.2013.847261

Appendixes

Table 2: Statistically significant differences between the independent variables resulting from the application of T-test and Anova for items 9-11

Item 9. Criteria for assessing the level of development of specific skills in the field of career management and personal development

	Grad didactic	Number of subjects	Media	Sig.	Medium rez.	Nr sub.	Media	Sig.	Function did.	Media	Nr.sub.	Sig.
item9.c3	final grade	70	4,27	,817	rural	152	4,62	**,000**	Preschool	168	4,41	,133
	grade II	124	4,33		urban	194	4,17		Primary	178	4,26	
	grade I	152	4,35									
	Total						346					

Item 10. Appreciation, through self-assessment, of the level of development of the following professional capacities, skills and attitudes, in the management of the teaching career and professional development

item10.1	final grade	70	1,40	,911	rural	152	1,58	**,023**	Preschool	168	1,41	,588
	grade II	124	1,44		urban	194	1,36		Primary	178	1,46	
	grade I	152	1,45									
	Total						346					
item10.2	final grade	70	2,73	,980	rural	152	2,42	**,000**	Preschool	168	2,59	,075
	grade II	124	2,59		urban	194	2,81		Primary	178	2,74	
	grade I	152	2,71									
	Total						346					
item10.3	final grade	70	4,33	,060	rural	152	4,12	**,037**	Preschool	168	4,29	,058
	grade II	124	4,11		urban	194	4,28		Primary	178	4,15	
	grade I	152	4,26									
	Total						346					
item10.5	final grade	70	3,80	,657	rural	152	3,46	**,009**	Preschool	168	3,91	**,001**
	grade II	124	3,67		urban	194	3,81		Primary	178	3,49	
	grade I	152	3,65									
	Total						346					

Item 11. Self-assessment related to the performance criteria related to the specific skills of career management and personal development, which corresponds to one's own level of development

Item11.1	final grade	70	3,87	**,021**	rural	152	4,38	**.003**	Preschool	168	4,18	,838
	grade II	124	4,22		urban	194	4,04		Primary	178	4,15	
	grade I	152	4,26									
	Total						346					
item11.2	final grade	70	4,00	,158	rural	152	4,15	**.000**	Preschool	168	3,82	,694
	grade II	124	3,70		urban	194	3,68		Primary	178	3,87	
	grade I	152	3,90									
	Total			346								
item11.5	final grade	70	3,93	**,002**	rural	152	4,12	.123	Preschool	168	4,24	,765
	grade II	124	4,41		urban	194	4,28		Primary	178	4,21	
	grade I	152	4,19									
	Total						346					
item11.6	final grade	70	4,47	**,002**	rural	152	4,46	**.003**	Preschool	168	4,21	,326
	grade II	124	4,04		urban	194	4,15		Primary	178	4,31	
	grade I	152	4,35									
	Total						346					
item11.9	final grade	70	4,53	**,013**	rural	152	4,58	,072	Preschool	168	4,65	,565
	grade II	124	4,81		urban	194	4,72		Primary	178	4,69	
	grade I	152	4,61									
	Total	346										

Table 3: Statistically significant differences between the independent variables resulting from the application of T-test and Anova for item 12

Types of activities that highlight teachers' metacognitive abilities

	Grad didactic	Number of subjects	Media	Sig.	Medium rez.	Nr sub.	Media	Sig.	Function did.	Media	Nr.sub.	Sig.
Item12.1	final grade	70	2,60	**,013**	rural	152	2,00	**.005**	Preschool	168	2,50	**,000**
	grade II	124	2,07		urban	194	2,38		Primary	178	2.03	
	grade I	152	2,23									

	Total						346					
item12.2.a.	final grade	70	3,73	**,015**	rural	152	2,96	**.000**	Preschool	168	3,59	**,010**
	grade II	124	3,19		urban	194	3,64		Primary	178	3,23	
	grade I	152	3,42									
	Total			346								
item12.2.b.	final grade	70	3,00	**,007**	rural	152	2,85	**.009**	Preschool	168	3,24	**,014**
	grade II	124	2,85		urban	194	3,19		Primary	178	2,92	
	grade I	152	3,29									
	Total						346					
item12.2.c.	final grade	70	3,73	**,034**	rural	152	3,23	**.045**	Preschool	168	3,65	**,001**
	grade II	124	3,26		urban	194	3,51		Primary	178	3,21	
	grade I	152	3,39									
	Total						346					
item12.3	final grade	70	4,27	**,000**	rural	152	3,12	**,000**	Preschool	168	3,79	**,013**
	grade II	124	3,30		urban	194	3,83		Primary	178	3,38	
	grade I	152	3,48									
	Total						346					
item12.4	final grade	70	2,60	**,013**	rural	152	2,00	**.005**	Preschool	168	2,50	**,000**
	grade II	124	2,07		urban	194	2,38		Primary	178	2,03	
	grade I	152	2,23									
	Total						346					

Table 4: Statistically significant differences between the independent variables resulting from the application of T-test and Anova for items 15-16

Item 15. Useful training modalities in the development of teachers' metacognitive skills

	Grad didactic	Number of subjects	Media	Sig.	Medium rez.	Nr sub.	Media	Sig.	Function did.	Media	Nr.sub.	Sig.
Item15.1	final grade	70	2,27	,155	rural	152	1,88	.092	Preschool	168	2,18	**,027**
	grade II	124	1,96		urban	194	2,11		Primary	178	1,90	
	grade I	152	1,97									
	Total						346					
item15.2.	final grade	70	1,67	**,013**	rural	152	1,38	.835	Preschool	168	1,47	,072
	grade II	124	1,26		urban	194	1,36		Primary	178	1,28	
	grade I	152	1,32									
	Total			346								
item15.3.	final grade	70	2,00	**,001**	rural	152	2,46	.475	Preschool	168	2,38	,060
	grade II	124	2,59		urban	194	2,57		Primary	178	2,67	
	grade I	152	2,74									
	Total						346					
item15.4	final grade	70	1,80	,384	rural	152	1,69	**.014**	Preschool	168	2,21	**,039**
	grade II	124	2,15		urban	194	2,17		Primary	178	1,82	
	grade I	152	1,97									
	Total						346					
item15.5	final grade	70	2,67	**,015**	rural	152	3,50	**,000**	Preschool	168	3,09	,183
	grade II	124	2,78		urban	194	2,66		Primary	178	2,85	
	grade I	152	3,26									
	Total						346					
item15.7	final grade	70	1,60	,535	rural	152	1,23	**,000**	Preschool	168	1,85	**,000**
	grade II	124	1,44		urban	194	1,70		Primary	178	1,26	
	grade I	152	1,58									
	Total						346					
item15.8	final grade	70	1,33	,624	rural	152	1,15	**.004**	Preschool	168	1,35	,207
	grade II	124	1,33		urban	194	1,38		Primary	178	1,26	
	grade I	152	1,26									
	Total						346					

Item 16. Assign a value rank (1-lowest value) for each of the following modalities that should be leveraged in order to streamline a training program on the development of metacognitive skills

Item16.1	final grade	70	4,13	,081	rural	152	4,69	**.000**	Preschool	168	4,15	**,027**
	grade II	124	4,52		urban	194	4,11		Primary	178	4,46	
	grade I	152	4,23									
	Total						346					

item16.3	final grade	70	4,60	**,021**	rural	152	4,42	**.045**	Preschool	168	4,12	,066
	grade II	124	4,19		urban	194	4,15		Primary	178	4,36	
	grade I	152	4,13									
	Total						346					
item16.5	final grade	70	4,73	**,017**	rural	152	4,58	**,009**	Preschool	168	4,15	,067
	grade II	124	4,15		urban	194	4,15		Primary	178	4,44	
	grade I	152	4,23									
	Total						346					
item16.6	final grade	70	4,20	**,027**	rural	152	4,00	.312	Preschool	168	3,91	,919
	grade II	124	3,96		urban	194	3,85		Primary	178	3,90	
	grade I	152	3,71									
	Total						346					
item16.7	final grade	70	3,33	,658	rural	152	3,46	**.010**	Preschool	168	3,09	,139
	grade II	124	3,15		urban	194	3,06		Primary	178	3,31	
	grade I	152	3,19									
	Total						346					
item16.9	final grade	70	4,07	,341	rural	152	4,54	**,000**	Preschool	168	4,03	**,028**
	grade II	124	4,30		urban	194	3,98		Primary	178	4,31	
	grade I	152	4,13									
	Total						346					
item16.10	final grade	70	4,13	,136	rural	152	4,46	**,035**	Preschool	168	4,26	,897
	grade II	124	4,44		urban	194	4,17		Primary	178	4,28	
	grade I	152	4,19									
	Total						346					