



COGNITIVE FLEXIBILITY PROCESSES THROUGH TEACHERS' EYES: A STUDY FROM KAZAKHSTAN

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Abstract. This study aims to examine the perceptions of primary school teachers working in the city of Turkistan, Kazakhstan, regarding cognition, metacognition, and cognitive flexibility by means of metaphors. In this context, how teachers internalize abstract cognitive concepts was analyzed through metaphors. In this study, which was designed within a qualitative research framework, 29 teachers selected through purposive sampling were asked to generate metaphors using the expression «... is like, because...» for each concept. This method was specifically preferred because it allows teachers to freely reveal their mindset and conceptual associations. The data were examined independently by three experts in the field, and categories were created through content analysis. During the analysis process, common connotations of metaphors were classified into thematic clusters to increase interpretability. The results indicate that teachers interpret these concepts not only as theoretical constructs but also as intellectual tools that gain practical meaning in their teaching practices. This situation is significant because it shows that teachers can make cognitive processes functional in their pedagogical approaches. The metaphors collected reflect the teachers' level of conceptual understanding and their cognitive orientations toward classroom applications. These statements provide rich data not only about teachers' conceptual knowledge but also their cognitive orientations. It is considered that these outcomes provide valuable insights into teacher training and professional growth programs. The findings indicate that teacher education should be redesigned to foster greater metacognitive awareness and flexibility.

Keywords: metaphor, cognition, metacognition, cognitive flexibility, teacher perspectives, primary education

Introduction

Cognition refers to the set of core mental functions that involve processing, interpreting, and generating appropriate responses to information received from the environment. Abilities

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such as learning, memory, attention, and problem-solving reflect an individual's cognitive capacity (Neisser, 1967). In the educational setting, cognition is considered the mental foundation that supports understanding academic tasks and retrieving information.

Metacognition is described as the person's ability to recognize, monitor, and manage their own thought processes. As Flavell (1979) states, metacognition means thinking about one's own thinking and guiding one's learning. Activities such as planning, setting strategies, monitoring progress, and self-evaluation are all components of metacognitive functioning. Especially in learning contexts, students' capacity to regulate their own learning heavily relies on metacognitive awareness (Schraw & Moshman, 1995).

Cognitive flexibility refers to a person's ability to shift their thinking, create alternative solutions, and move between various viewpoints when faced with novel, complex, or uncertain situations (Nakhostin-Khayyat et al., 2024; Spiro et al., 1988). This capacity requires not only the processing of information, but also an awareness of one's own mental activities and the ability to reorganize them according to changing demands. Recent empirical studies further confirm the pedagogical significance of this construct for the teaching profession, linking cognitive flexibility to prospective teachers' critical thinking disposition (Orakcı & Khalili, 2025) and to classroom-level outcomes such as students' creative problem-solving skills (Caliskan & Altun, 2025).

These three concepts are not just separate processes; they also work together as mental systems that strengthen and complete each other. Cognition shapes what we think about and how that thinking progresses, while metacognition helps a person stay aware of their thoughts, keep track of them, and adjust them when necessary. Cognitive flexibility, however, is required for selecting the appropriate cognitive strategy in different situations and for being able to switch strategies when needed. Thus, cognitive flexibility serves as a bridge between the operation of cognition and the guidance provided by metacognition.

For instance, when a teaching method used by a teacher fails in class, the teacher can recognize this (metacognitive awareness) and shift to another method (cognitive flexibility) only if their basic cognitive skills are well developed. In this sense, cognitive flexibility is not a simple one-way shift but involves the ability to move consciously between cognitive and metacognitive systems (Zelazo, 2015; Diamond, 2013).

This study aims to explore how teachers understand the cognitive concepts mentioned above through metaphors. The way teachers internalize these abstract structures is directly reflected in their classroom behaviors, teaching methods, and the learning process. Furthermore, metaphors make it possible to see how individuals mentally construct complex ideas (Torres-Martínez, 2022; Lakoff & Johnson, 2003). In this respect, metaphor analysis offers a strong tool for uncovering teachers' underlying cognitive frameworks (Larsson & Stolpe, 2024).

Studies on cognition, metacognition, and cognitive flexibility often center on theoretical descriptions; however, there is limited evidence on how these concepts are shaped in teachers' own thinking. Especially in education systems going through change, understanding how teachers interpret these ideas plays a key role in evaluating the quality of teaching. In the case of Kazakhstan, teachers' classroom approaches have also been shifting under the influence of rapid social and cultural changes. Yet, how their understanding of cognitive processes has evolved during this time is still not clearly known.

The main aim of this study is to explore how primary school teachers working in the city of Turkistan, Kazakhstan, mentally represent the concepts of cognition, metacognition, and cognitive flexibility through the use of metaphors. These metaphors are expected to offer indirect yet valuable clues about teachers' ways of thinking, their decision-making approaches, and how aware they are of their own cognitive processes. With this perspective, the study aims to support teacher education by putting forward more focused and needs-based suggestions drawn from the findings.

Methods

This study is based on a qualitative research design. Interpretive qualitative approaches in educational research are particularly suitable for exploring individuals' experiences, perceptions, values, and assumptions, as well as the ways in which they construct meaning in relation to complex phenomena (Maher, 2025; Lourie & McPhail, 2024). Accordingly, a qualitative approach was considered appropriate for examining how teachers conceptualize abstract cognitive concepts through metaphors.

Participants and Sampling

The study group consisted of 29 primary school teachers working in the city of Turkistan, Kazakhstan, during the spring semester of the 2024–2025 academic year. The demographic and professional characteristics of the participants are presented in Table 1.

Criterion sampling, one of the purposive sampling strategies, was used to select the participants. In qualitative research, purposive sampling enables the deliberate selection of participants who are closely aligned with the aims and research questions of the study and who are expected to provide information-rich data about the phenomenon under investigation. Clearly defining participant selection criteria also enhances the transparency and methodological rigor of the sampling process (Campbell et al., 2020; Moser & Korstjens, 2018).

Accordingly, the inclusion criteria were defined as follows: (a) actively working as a primary school teacher in a primary school in the city of Turkistan during the period in which the study was conducted, (b) having professional experience as a primary school teacher, (c) possessing sufficient language proficiency to understand the statements in the data collection instrument, and (d) agreeing to participate voluntarily in the study. Individuals who were not actively working as primary school teachers, did not provide voluntary consent to participate, or left the data collection form incomplete to an extent that prevented meaningful analysis were excluded from the study. The purpose of this sampling approach was not to achieve statistical representativeness, but to obtain context-sensitive and information-rich data from teachers who could interpret the cognitive concepts under investigation within the context of their professional experience.

Table 1. Demographic and professional characteristics of the participants

Characteristic	Category / Statistic	n	%
Gender	Female	29	100
	Male	-	-
Age	Mean	39.6	—
	Range	25–58	—
Teaching experience	Mean	15.2	—
	Range	2–34 yıl	—
Type of school	Public school	24	82.8
	Private school	5	17.2
Grade level taught	Grade 1	7	24.1
	Grade 2	8	27.6
	Grade 3	6	20.7
	Grade 4	8	27.6
Education level	Bachelor's degree	21	72.4
	Master's degree	8	27.6

Data Collection

The data were collected using the metaphor elicitation technique. In this technique, participants were asked to complete the following sentence for each concept:

- «Cognition is like ... because ...»
- «Metacognition is like ... because ...»
- «Cognitive flexibility is like ... because ...»

Metaphor production enables people to interpret abstract and complex ideas using more familiar and concrete imagery. Metaphors are not just decorative expressions; they also serve as cognitive tools that help organize and express thinking. In the field of education, metaphors are commonly used to explore how teachers view teaching, approach classroom thinking, and understand their professional roles (Zhu et al., 2022; Wegner, Burkhart & Nückles, 2021; Erickson & Pinnegar, 2017).

Data Analysis

The collected data were analyzed using content analysis (Graneheim, Lindgren & Lundman, 2017). The metaphors provided by the participants were independently examined by three experts in the field. Similar metaphors were grouped, and overarching themes were developed. During the analysis, meaning consistency and conceptual closeness were prioritized. After comparison between the researchers, the finalized theme structure was agreed upon (O'Connor & Joffe, 2020). In this way, the metaphor-based mental models of teachers were systematically organized.

During the research process, the principles of voluntary participation, informed consent, confidentiality, and participant privacy were observed. The participants were informed about the purpose of the study and the data collection process, and they were told that participation was entirely voluntary and that they could withdraw from the study at any time. Informed consent was obtained from all participants prior to data collection. No experimental intervention was implemented, and no personally identifiable information that could directly reveal the identity of the participants was collected. The data were analyzed anonymously, and the findings were reported at an aggregate and thematic level rather than at the level of individual participants.

Results and discussion

The findings are presented and discussed under three main sections corresponding to the three concepts examined in the study.

Cognition

Teachers' metaphors related to the concept of cognition were grouped into two main themes: (1) The process of receiving and handling information, and (2) The nature of mental activity. Across these themes, four subthemes were identified. Most participants described cognition in terms of gaining access to information and processing it mentally.

The Process of Receiving and Handling Information (n = 16): In this theme, teachers described cognition as the act of gathering knowledge, refining it, and processing it in the mind.

Tool for Accessing Information (n = 9)

«Cognition is a computer because when information is entered, it processes it and stores it in memory».

«Cognition is a filter because it passes the important information and filters out the other».

The Trigger of Learning (n = 7)

«Cognition is a key because it opens the door to learning».

«Cognition is like a window because we look through it to understand the world».

These expressions suggest that teachers perceive cognition as a structured and purposeful activity in which external information is mentally interpreted. Metaphors such as «filter» and «computer» emphasize the selective and organizational functions attributed to cognition.

The Nature of Thinking Activity (n = 13): In this theme, cognition is viewed as the source of intellectual creation and a key factor in guiding decision-making.

Reasoning Mechanism (n = 8)

«Cognition is a laboratory because experiments are constantly conducted in the mind».

«Cognition is a kitchen because thoughts mix and cook there».

Direction-Finding Ability (n = 5)

«Cognition is a compass because it shows us which way to go».

«Cognition is a map because it helps us plan where to get to».

These metaphors suggest that teachers do not conceptualize cognition solely as information processing but also associate it with ongoing thought and decision-making processes. Metaphors such as «compass» and «map» emphasize the guiding function attributed to cognition.

Overall, the findings suggest that teachers conceptualize cognition as an active, guiding, and organizing mental structure. The participants' metaphorical expressions indicate that cognition is perceived not as a passive repository of knowledge but as a central mechanism in the organization of learning.

Metacognition

Teachers' metaphors regarding the concept of metacognition were grouped under two main themes: (1) Thinking and monitoring thinking and (2) Strategic thinking and self-regulation. Participants defined metacognition as not only awareness of thinking but also the ability to regulate and direct thought processes.

Thinking and Monitoring Thinking (n = 17): In this main theme, teachers associated metacognition with the individual's awareness and monitoring of their own mental processes.

Mental Awareness Tool (n = 9)

«Metacognition is like a mirror because one sees one's own mind there».

«Metacognition is like a camera because it allows one to watch and evaluate thoughts from a distance».

Self-Awareness and Direction (n = 8)

«Metacognition is like a traffic light because it shows you whether you should stop or continue».

«Metacognition is like an inner voice because it tells you what you are thinking and why you are thinking that way».

These metaphors indicate that teachers perceive metacognition not only as thinking about thought but also as the capacity to consciously observe and regulate mental processes. Expressions such as «mirror» and «inner voice» emphasize the role of internal awareness.

Strategic Thinking and Self-Regulation (n = 12): In this theme, teachers associated metacognition with the ability to guide decision-making processes, structure thought, and plan learning activities.

Learning Guide (n = 7)

«Metacognition is like a map because it shows where you are going and how you are going to get there».

«Metacognition is like an agenda because it allows you to plan in advance what to do and when».

Thought Organizer (n = 5)

«Metacognition is an editor because it reviews and organizes thoughts».

«Metacognition is a guide because it allows you to make better decisions».

These metaphors indicate that teachers view metacognition not only as awareness of the thinking process but also as the capacity to regulate and organize it. Metaphors such as «agenda», «map», and «editor» reflect the structuring and organizing functions attributed to metacognition.

Overall, teachers' metaphors indicate that metacognition is conceptualized as a mechanism that provides internal guidance in pedagogical practice, planning, and the regulation of thought

processes. The findings further suggest that metacognition is perceived not only as individual awareness but also as the capacity to shape learning processes.

Cognitive Flexibility

Teachers' metaphors for the concept of cognitive flexibility were grouped under three main themes: (1) Adapting to the situation and showing variability, (2) Evaluating more than one perspective at the same time, and (3) Mental fluency and problem solving.

Taken together, these themes indicate that teachers conceptualize cognitive flexibility as the capacity to adapt to changing conditions and reorganize their thinking in response to situational demands.

Adjusting to the Moment (n = 13): This group of metaphors shows that teachers conceptualize cognitive flexibility as the capacity for rapid adaptation to changing classroom conditions.

Going with the Flow (n = 7)

«water — it takes the shape of whatever it's in».

«wind — always changing direction, but always moving».

Fitting the Environment (n = 6)

«a tree that bends in the wind — it stays rooted but moves».

«a chameleon. It shifts depending on what's around it».

These metaphors — water, wind, trees, and animals — reflect a non-rigid and adaptive mode of thinking that can be modified according to situational demands. They indicate that teachers associate cognitive flexibility with the ability to adjust their thinking when an initial approach is no longer effective.

Considering Multiple Perspectives at the Same Time (n = 9): In this theme, teachers associated cognitive flexibility with the ability to think about different options at the same time and evaluate alternative paths.

Multi-Directional View (n = 5)

«Cognitive flexibility is like a prism because it can reflect a single light in different colors».

«Cognitive flexibility is like a crossroads because it allows you to see many ways»

Generating Alternatives (n = 4)

«Cognitive flexibility is like a box of tools because it offers different solutions to the same problem».

«Cognitive flexibility is like a menu because it enables choosing between different options».

These metaphors indicate that teachers understand flexible thinking not only as adaptation but also as the ability to generate multiple perspectives and consider alternative courses of action. Metaphors such as «prism», «toolbox», and «menu» emphasize the capacity to consider multiple cognitive pathways simultaneously.

Mental Fluency and Problem Solving (n = 7): In this theme, teachers defined cognitive flexibility in terms of fluency, mental mobility, and solution-generating processes.

Flow and Speed (n = 4)

«Cognitive flexibility is like a river because it continues to flow by overcoming obstacles».

«Cognitive flexibility is like a bicycle because you have to move to stay balanced».

Solution Focus (n = 3)

«Cognitive flexibility is like a key because it produces solutions to problems».

«Cognitive flexibility is like a road map because it finds a new path when you are stuck».

These metaphors indicate that teachers view cognitive flexibility not only as the ability to change perspectives but also as a fluid and solution-oriented mental capacity. While the metaphors of «river» and «bicycle» emphasize continuity and balance, «key» and «road map» highlight problem-solving and the generation of alternative pathways.

Overall, teachers perceived cognitive flexibility as involving both internal mental balance and a dynamic mode of thinking that enables rapid adaptation to changing conditions. The findings

suggest that cognitive flexibility supports teachers' ability to generate solutions, evaluate alternatives, and restructure the learning environment during pedagogical decision-making processes.

In this study, teachers' perceptions of the concepts of cognition, metacognition and cognitive flexibility were examined through metaphorical expressions. The findings revealed that teachers structured these three basic concepts not only as theoretical knowledge but also as concrete thought systems inherent in their daily lives and professional practices.

Teachers generally associated cognition with the processes of accessing, processing, and initiating thought. Metaphors described cognition as both a tool that organizes input (e.g., filter, computer) and a mechanism that guides decision-making (e.g., compass, laboratory). These findings suggest that teachers conceptualize cognition as both a foundational and guiding mental structure.

Metacognition, on the other hand, was primarily associated with awareness, monitoring, and regulation processes. Metaphors such as «mirror», «camera», and «editor» reflect the importance teachers attach to observing, planning, and regulating their own thought processes. These findings are consistent with theoretical accounts emphasizing that metacognition functions as a mechanism for monitoring and regulating cognitive processes (Schraw & Moshman, 1995; Flavell, 1979).

Cognitive flexibility exhibited the greatest thematic diversity among the three concepts. Teachers associated this concept with adaptation to the environment, the evaluation of multiple perspectives, and fluent, solution-oriented thinking. Metaphors such as «water», «prism», and «road map» indicate that cognitive flexibility is perceived as both an internal mental dynamism and the capacity to adapt to external conditions. This interpretation is consistent with Spiro et al. (1988, p. 377), who described cognitive flexibility as the ability to find direction within ill-structured domains. This thematic diversity also resonates with recent findings showing that teachers' cognitive flexibility operates in close interaction with other affective and pedagogical constructs, such as teaching enjoyment, vitality, and reflective teaching practice (Qin, Nassaji & Derakhshan, 2026).

Overall, the findings suggest that teachers establish a coherent conceptual relationship among cognition, metacognition, and cognitive flexibility. Cognition is perceived as a foundational functioning mechanism, metacognition as a system that directs and organizes this mechanism, and cognitive flexibility as a dynamic capacity that enables adaptation to changing conditions. This pattern suggests that teachers conceptualize these mental processes as interrelated components of a broader cognitive system (Honra & Monterola, 2024; Nakhostin-Khayyat et al., 2024, pp. 6–7).

Conclusion

The metaphors teachers generated regarding the concept of cognition in the study demonstrate that this phenomenon is closely associated with the processes of acquiring, processing, and remembering information. Cognition was explained through metaphors such as “computer,” “filter,” “laboratory,” and “compass,” emphasizing the processing, organization, and guiding functions attributed to cognition. These metaphors reveal that teachers viewed cognition as a structure that enables the acquisition and analysis of new information and its connection to previous experiences. Furthermore, cognition was considered the foundation of all other mental activities, depicted as the basis for reasoning, decision-making, and problem-solving. Teachers' use of concrete and functional metaphors to express cognition indirectly demonstrates its indispensability in classroom instruction. Therefore, cognition should be considered not merely a theoretical concept but a dynamic process that guides pedagogical practices in teacher training programs.

Teacher metaphors related to metacognition, on the other hand, point to the capacity not only to recognize thought but also to monitor, organize, and direct it. Teachers, on the one

hand, defined metacognition with awareness tools such as “mirror” or “inner voice,” highlighting the observability of mental processes. On the other hand, they emphasized its functions of planning, organizing, and decision-making with metaphors such as “map,” “agenda,” and “editor.” This demonstrates that teachers understand metacognition not only as a means of individual awareness but also as a strategic structure that guides learning processes. Therefore, metacognition is considered a cognitive mechanism that enhances the quality of teaching by monitoring and directing thinking in pedagogical practices and plays a critical role in the development of preservice teachers.

Teacher metaphors related to cognitive flexibility reveal that thinking is understood as the capacity to adapt to changing circumstances, simultaneously evaluate different perspectives, and generate new solutions. Participants explained this process with metaphors such as “water,” “wind,” and “chameleon,” emphasizing the mind’s ability to quickly adapt to immediate situations. Similes such as “prism,” “toolbox,” and “menu” also demonstrate that teachers associate cognitive flexibility with the ability to develop multifaceted perspectives and evaluate different options. Metaphors such as “river,” “bicycle,” and “key” highlight the role flexible thinking plays in overcoming obstacles, demonstrating fluidity, and reaching solutions. These results suggest that cognitive flexibility is internalized not only as an adaptive capacity but also as a mental capacity that diversifies pedagogical decisions and enriches problem-solving processes. Therefore, placing a special emphasis on cognitive flexibility in teacher training programs will support teachers in becoming more creative, adaptable, and solution-oriented in their classroom practices.

As a result, metaphors should be considered as powerful cognitive tools that reflect not only how teachers express concepts, but also their pedagogical thought systems, decision-making styles, and professional identities. The use of such metaphor analyses in teacher education programs can contribute to teacher candidates’ awareness and development of their own thinking processes.

This study aimed to open a window into the world of teachers’ thoughts. The metaphors produced regarding cognition, metacognition, and cognitive flexibility reflect not only how the three concepts are perceived, but also the meaning attributed to teaching, decision-making processes, and in-class pedagogical reflexes. Each metaphor is a unique map of teachers’ mental functioning. Reading these maps may be the key to understanding and supporting them better. For this reason, it is thought that qualitative data sources aimed at understanding teachers’ ways of thinking should be included more in teacher education programs.

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Conflict of interest

The authors confirm that there are no potential or actual conflicts of interest related to this study.

Contribution of the authors

Pilten G. – was responsible for the concept of the research work.

Pilten P. – developed a detailed plan for data collection, selection of analysis methods, data collection and processing.

Kuralbayeva A. – organized and conducted the main experiment as part of the study, described the research methods, a significant contribution to the concept or design of the work.

Nurunbetova S. – conducted a literature review, participated in data collection, and contributed to manuscript preparation and editing.

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Мұғалімдердің көзімен когнитивтік икемділік үдерістері: Қазақстаннан алынған зерттеу

Аңдатпа. Бұл зерттеудің мақсаты – Қазақстанның Түркістан қаласында жұмыс істейтін бастауыш сынып мұғалімдерінің когнитивтілік, метакогнитивтілік және когнитивтік икемділік ұғымдарына қатысты түсініктерін метафоралар арқылы зерттеу. Осы тұрғыда мұғалімдердің абстрактілі когнитивтік ұғымдарды қалай қабылдайтынын анықтау үшін метафораларға талдау жүргізілді. Сапалық зерттеу әдіснамасы негізінде құрылымдалған бұл жұмыста мақсатты іріктеу әдісі арқылы таңдалған 29 мұғалімнен әр ұғымға қатысты «... сияқты, өйткені...» құрылымында метафоралар құру сұралды. Бұл әдіс мұғалімдердің ойлау жүйесін және ұғымдық байланыстарын еркін білдіруіне мүмкіндік беретіндіктен арнайы таңдалды. Жиналған деректер үш салалық сарапшы тарапынан тәуелсіз түрде талданып, мазмұндық талдау арқылы категорияларға бөлінді. Талдау барысында метафоралардың ортақ мағыналық астарлары тақырыптық топтарға жіктеліп, интерпретацияның нақтылығы арттырылды. Зерттеу нәтижелері мұғалімдердің бұл ұғымдарды тек теориялық құрылымдар ретінде емес, сонымен қатар олардың оқыту тәжірибесінде нақты мағынаға ие болатын

интеллектуалдық құралдар ретінде қабылдайтынын көрсетеді. Бұл жағдай мұғалімдердің когнитивтік үдерістерді педагогикалық тұрғыда тиімді қолдана алатынын дәлелдейді. Жиналған метафоралар мұғалімдердің ұғымдық түсіну деңгейін және олардың сынып ішіндегі когнитивтік бағдарын көрсетеді. Бұл мәлімдемелер тек ұғымдық білім ғана емес, сонымен қатар мұғалімдердің ойлау бағыты туралы да құнды деректер береді. Алынған нәтижелер мұғалімдерді даярлау мен олардың кәсіби дамуын жоспарлауда маңызды ұсыныстар береді. Зерттеу нәтижелері мұғалімдерді даярлау бағдарламалары метакогнитивтік сана мен икемділікті дамытуға бағытталуы тиіс екенін көрсетеді. Мұндай тәсіл мұғалімдердің ішкі танымдық үдерістерін жан-жақты түсінуге мүмкіндік береді. Сонымен қатар метафоралар арқылы алынған деректер оқытудағы шешім қабылдау стилін, кәсіби бейімділікті және педагогикалық икемділікті зерттеуге жол ашады. Бұл зерттеу танымдық құрылымдарды мұғалім тәжірибесімен ұштастыра отырып, білім беру сапасын арттыруға бағытталған маңызды ұсыныстарды негіздейді.

Түйін сөздер: метафора, когниция, метакогниция, когнитивтік икемділік, мұғалім көзқарасы, бастауыш білім.

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Процессы когнитивной гибкости глазами учителей: исследование из Казахстана

Аннотация. Цель данного исследования - изучить восприятие учителями начальных классов, работающими в городе Туркестан (Казахстан), понятий «когнитивность», «метакогнитивность» и «когнитивная гибкость» с помощью метафор. В этом контексте был проведен метафорический анализ с целью изучения того, как учителя воспринимают абстрактные когнитивные концепции. Исследование было спланировано в рамках качественного подхода. В нём приняли участие 29 учителей, отобранных целенаправленным способом. Учителям было предложено составить метафоры для каждого понятия, используя конструкцию «... это как ..., потому что...». Этот метод был выбран, поскольку он позволяет участникам свободно выражать свои ментальные установки и концептуальные ассоциации. Полученные данные были независимо проанализированы тремя экспертами в соответствующей области, а категории были сформированы с использованием контент-анализа. В процессе анализа общие значения метафор были классифицированы по тематическим кластерам с целью повышения интерпретируемости. Результаты показывают, что учителя воспринимают эти понятия не только как теоретические конструкции, но и как интеллектуальные инструменты, приобретающие практическое значение в педагогической деятельности. Это важно, поскольку свидетельствует о способности учителей делать когнитивные процессы функциональными в рамках их педагогического подхода. Собранные метафоры отражают уровень концептуального понимания учителями, а также их когнитивную направленность в контексте школьной практики. Эти высказывания предоставляют богатый материал не только о концептуальных знаниях педагогов, но и об их когнитивной ориентации. Полученные результаты дают ценные рекомендации для программ подготовки и профессионального роста учителей. Выводы исследования указывают на необходимость пересмотра программ подготовки учителей с целью развития их метакогнитивной осознанности и гибкости.

Ключевые слова: метафора, когнитивность, метакогнитивность, когнитивная гибкость, взгляды учителей, начальное образование.

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