European International Journal of Pedagogics (ISSN: 2751-OOOX)

Received: 27 January 2026 | Accepted: 22 February 2026 | Published: 15 March 2026

DOI: 10.55640/eijp-06-03-06

RESEARCH ARTICLE

Continuity of Lower- And Higher-Order Thinking Skills in Primary Education: The Example of Mother Tongue and Reading Literacy Lessons

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VOLUME: Vol.06 Issue03 2026

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Abstract

Primary education is the most important stage in building the foundational basis of a learner's literacy. It is precisely during this period that a child develops skills related to reading, understanding a text, expressing thoughts coherently, and applying rules and concepts in practice. However, the demands of modern education require that the teaching process in primary grades should not be limited only to "remembering knowledge" or "retelling" it. On the contrary, lessons should gradually make the learner's thinking activity more complex; that is, together with lower-order thinking skills, they should consistently foster higher-order thinking skills as well. This article highlights the scientific and methodological foundations for integrating lower-order thinking skills as a "foundation" and higher-order thinking skills as an "intellectual and creative peak," as well as the mechanisms for naturally moving toward the operations of analysis, evaluation, and creation through chains of questions and tasks in mother tongue and reading literacy lessons.

KEYWORDS

Lower-order thinking skills (LOTS), higher-order thinking skills (HOTS), higher-order thinking, lower-order thinking, reading literacy, mother tongue, analysis, evaluation, creation, competency-based approach, criterion-based assessment.

INTRODUCTION

If we observe lessons in primary school, in many cases the learner works within the sequence of "find–read–tell": first, they find the required information in the text, then read it aloud, and finally retell its content. It would not be correct to assess this situation negatively, because these very actions form the basic manifestation of the learner's lower-order thinking skills, that is, remembering, understanding, and simple application. The learner's ability to read and understand the text, distinguish the main facts, and grasp who and what the text is about constitutes the necessary foundation for all subsequent, more complex thinking processes.

However, practical experience shows that if the teacher stops the lesson only at this level, that is, at the stage of "finding–reading–telling," the learner gradually begins to perceive the text merely as information to be retold. In such a situation, the child is less likely to see the internal logic of the text, search for connections between events, or uncover cause-and-effect relationships. Most importantly, they do not sufficiently develop the habit of defending their opinion with evidence, evaluating a problem from different perspectives, or finding new solutions. As a result, the learner remembers information, but the skill of analyzing it deeply or adapting it to a new situation develops more weakly.

For this reason, in primary education, lower-order thinking skills (remembering, understanding, simple application) and higher-order thinking skills (analysis, evaluation, creation) should not be opposed to one another. On the contrary, they should be viewed as a mutually complementary and organically interconnected system. In other words, in each part of the lesson, the learner first strengthens foundational knowledge and concepts, and then, on the basis of that foundation, is guided to analyze the content, evaluate ideas, and, whenever possible, produce a creative conclusion or new solution. This approach naturally leads the learner's thinking from the simple to the complex and helps organize the lesson not merely at the level of retelling content, but at the level of actively working with content.

That is precisely why, in primary school lessons, it is an important methodological task for the teacher first to ensure that the learner understands the text, then to lead them into analysis through questions such as "why?", "how?", and "with what evidence?", to encourage evaluation through questions like "which one is more correct?" and "why do you think so?", and finally to stimulate creative activity through tasks such as "write a different ending," "find a new title," or "solve the problem in another way."

Lower-order thinking skills (LOTS) usually manifest themselves within the scope of "remembering–understanding–simple application." In other words, the learner first memorizes terms, rules, and concepts, explains the content of the text in a simple and coherent way, and, relying on a given model, completes an exercise or applies a rule in a familiar situation. In the lesson process, these skills constitute the stage of "receiving" and "stabilizing" knowledge. For this reason, LOTS can be called the "foundation" of thinking: if a learner cannot find the necessary information in a text, does not understand the content correctly, or struggles to apply rules and tasks in a simple situation, then requiring them to perform more complex mental operations such as analysis, evaluation, or creation becomes difficult from both pedagogical and psychological perspectives.

In other words, LOTS create a solid base of knowledge in the learner: they shape the initial culture of working with text, such as identifying the main idea, finding the necessary fact, and giving a brief explanation; they also build logical order, such as seeing sequence and approaching causality, along with the skill of simple application. Without this foundation, moving on to higher-order thinking skills (analysis, evaluation, creation) turns into a "jump," which may increase a learner's loss of interest, insecurity, or fear of making mistakes. Therefore, when designing a lesson, it is advisable to view LOTS not merely as an "initial stage," but as the necessary preparatory space that leads to higher-order thinking. This approach is explained by the idea of organizing cognitive activity step by step, from simple to complex. [1]

However, the true result of education is not limited only to the "foundation," that is, lower-level knowledge and skills. The real effectiveness of education is determined by raising the learner's thinking to a higher level, in other words, by forming higher-order thinking skills (HOTS). Today's modern literacy requirements show that it is important not only for a learner to read, understand, and retell a text, but also to comprehend its content more deeply, view it from different perspectives, and justify their opinion with evidence. These very aspects lie at the center of HOTS.

Higher-order thinking skills are characterized by the operations of "analysis–evaluation–creation." In this process, the learner does not simply list the ideas in the text, but breaks them down and analyzes them, sees the logical relationships between ideas and events, explains cause-and-effect links, tries to understand the underlying layer of the author's idea, and interprets it. At the next stage, the learner does not stop at a general statement such as "I think so," but evaluates their conclusion on the basis of evidence: they provide examples from the text, compare on the basis of criteria, and justify why their decision is correct or appropriate. Finally, as one of the most important indicators of HOTS, the learner begins to reinterpret the existing content in a new way and create a new outcome: they write a new ending, find a new title, propose another way of solving the problem, or transform the text into a new form, for example, turning a story into a dialogue or retelling it from the perspective of another character.

In this sense, a learner with developed HOTS does not remain merely an executor who "repeats what already exists." Gradually, they become an active subject who "works with content," that is, one who analyzes the text, evaluates it, justifies their attitude, and, most importantly, creates new ideas and solutions. Viewing HOTS precisely as "higher-order thinking" and identifying it as an important criterion of educational outcomes is also especially emphasized in updated interpretations of Bloom's taxonomy. [2]

At this point, the most important issue is how to organize the

transition from lower-order thinking skills (LOTS) to higher-order thinking skills (HOTS) in the lesson process in a way that is "natural," understandable, and interesting for the learner. Practical experience shows that if a learner is forced immediately into complex mental activities such as analysis, evaluation, or creation at a time when they are only beginning to master foundational knowledge, they perceive the task as "difficult," their confidence decreases, and they rush to find a quick answer rather than think it through. Therefore, the methodological approach should lead the learner step by step toward higher-order thinking without overburdening them.

In methodological practice, one of the most effective solutions for ensuring such consistency is the principle of "from foundation to peak." The essence of this principle is that any higher-order task such as analysis, evaluation, or creation must first be reinforced by the learner's foundational activity, namely tasks involving remembering, understanding, and simple application. In this process, the learner first finds answers to the questions "What do I know?" and "What have I understood?" and only after that becomes ready to move on to deeper questions such as "Why is it so?" or "How could it be different?" As a result, the internal logic of the lesson is preserved: the learner does not "jump" in the thinking process, but rises naturally step by step.

For example, in a reading literacy lesson, the learner first identifies the core elements of the text, such as the character, setting, time, and main events. This is a clear manifestation of lower-order thinking skills (LOTS), in which the learner performs the stage of "recognizing" and "organizing" the text. At the next stage, the teacher guides the learner to the first level of higher-order thinking skills (HOTS): the learner attempts to uncover the reasons behind the character's actions, searches for the relationships between events, and thus analyzes. After that, the learner expresses a personal attitude: they evaluate the character's decision by supporting it with evidence and explain, on the basis of criteria, which action is correct or appropriate. At the final stage, the highest form of HOTS emerges: the learner finds a new title based on the idea, creates an alternative ending, or adds a creative extension to the text.

As a result of this sequence, a "staircase of ascending thinking" appears in the lesson process: the learner gradually moves toward more complex thinking and perceives this not as strain or coercion, but as the natural and logical continuation of the lesson. Most importantly, the learner begins to feel the confidence that "I can do this," and this very confidence serves as strong internal motivation for further analytical and creative activity.

A second effective mechanism that ensures the transition from lower-order thinking skills (LOTS) to higher-order thinking skills (HOTS) is the chain of questions. The strong aspect of this approach is that it does not "throw" the learner straight into a complex task; instead, it organizes thinking step by step: the learner first identifies the fact, then searches for the cause, next justifies a personal opinion, and finally prepares to arrive at a creative conclusion. Thus, questions serve as a kind of "road map" that manages the internal logic of the lesson.

From a practical perspective, it is advisable to begin classroom questioning with fact-identifying forms such as "what?", "who?", and "when?". These questions help the learner determine the key reference points of the text or task: who is involved in the event, where and when it happened, what the main event is, and what idea is expressed in the text. It is precisely at this stage that the learner's lower-order thinking skills are activated, since they come into a state of "readiness" by finding information in the text and understanding it.

At the next step, the questions naturally shift into forms that require explanation and analysis, such as "why?", "how?", and "with what evidence?". This stage compels the learner to think: they no longer simply state information, but try to uncover its internal causes, recognize the connections in the text, and explain the cause-and-effect relationships between events. For example, questions like "Why did the character make such a decision?", "What consequence did this event lead to?", and "Which sentence from the text supports your opinion?" lead the learner into the analytical stage of HOTS.

After that, it is important to move the questions into the evaluative stage: questions such as "Which one is more appropriate?" and "On the basis of what criterion do you think so?" teach the learner to be responsible for their own opinion. Here, the learner does not stop at simply saying "I liked it" or "it is good"; rather, they explain their view on the basis of criteria, show the reason for their choice, and strengthen their conclusion by citing evidence from the text. It is precisely the evaluation stage that forms the first manifestations of critical thinking in the learner: they express an opinion, but they understand that this opinion must be supported by evidence.

The final and highest stage of the chain of questions is

connected with creative tasks: assignments such as "What if it were different?", "Write a new ending," and "Tell the story from another point of view" raise the learner from the level of working with "ready-made" content to the level of creating "new" content. At this stage, the learner not only understands or evaluates the text, but also processes it, transforms it, and independently develops a new idea or solution. As a result, the logical rhythm of the lesson is built correctly: the learner begins with knowing the facts, deepens through analysis and evaluation, and completes the process with a creative outcome.

Most importantly, the chain of questions habituates the learner not only to giving an answer, but also to showing the reason for that answer. Gradually, the learner becomes used to continuing the statement "I think so" with "because…," that is, to expressing thoughts in the sequence of "evidence–conclusion." This is an extremely important competence not only in reading literacy, but also in mother tongue lessons, for example, when explaining sentence structure, justifying word choice, or providing criteria in text editing. From the psychological point of view as well, thought and cognition develop in exactly such a sequence: first perception and comprehension, then analysis and generalization, followed by evaluation and creative activity, as described in textbooks and psychological sources. [3]

Mother tongue and reading literacy subjects are particularly suitable for integrating lower-order thinking skills and higher-order thinking skills. The reason is simple: in these subjects, the learner simultaneously reads a text, understands its content, identifies language units, expresses an opinion, provides evidence, and, if necessary, creates a creative text as well. In other words, the lesson itself is naturally "multi-layered," and it easily accommodates not only memorization or retelling, but also processes that deepen thinking. From this perspective, mother tongue and reading literacy lessons belong to the group of subjects with wide methodological possibilities for leading learners from LOTS to HOTS.

For example, in a reading literacy lesson, the learner first identifies the key elements of the text, such as the character, place of events, time, main events, important sentences, or keywords. At this stage, the learner's lower-order thinking skills are activated: they understand the text, select the facts, and organize the content. At the next stage, the teacher directs the learner toward higher-order thinking: the learner interprets the content, sees the relationships between events, and analyzes the text on the basis of questions such as "Why did this happen?", "What was the character's purpose?", and "What is the author trying to convey?" After that, the learner expresses a personal attitude toward the text: they evaluate the character's actions or the development of events, justify their opinion with evidence, and provide examples from the text. Finally, in the concluding part of the lesson, the learner "transforms" the text, that is, reworks it creatively: they write a continuation, create another ending, compose a monologue or a letter from the character's point of view, narrate the event from another perspective, or change the genre of the text. At this stage, the highest manifestation of higher-order thinking skills, namely the act of creation, comes into operation.

Such an approach fully corresponds to the modern interpretation of reading literacy. In contemporary understanding, reading literacy is not limited to simply "reading correctly" or "understanding" a text; above all, it also includes the skills of locating information in a text, critically analyzing and evaluating it, working purposefully with different types of texts, and applying the conclusions obtained to real-life situations. [4] Therefore, the integration of LOTS and HOTS in mother tongue and reading literacy lessons is not only methodologically convenient, but also necessary in light of modern literacy requirements.

Similarly, in mother tongue lessons, the process of studying language units should not be limited only to memorizing rules and "correctly completing" exercises. On the contrary, when grammatical topics are organized as a means of leading the learner to logical thinking, understanding the causes of language phenomena, and consciously applying them in speech, the effectiveness of the lesson increases. This is because language is not merely a set of rules, but a living tool for expressing thought, communicating, and achieving a purpose. Therefore, in mother tongue lessons, integrating lower-order thinking skills such as remembering, understanding, and simple application with higher-order thinking skills such as analysis, evaluation, and creation is especially natural and methodologically appropriate.

If we look at a practical example, the learner first acquires foundational skills by completing exercises such as identifying the main parts of a sentence, separating words into roots and affixes, determining parts of speech, and providing examples that fit a rule. At this stage, the learner recognizes information, recalls concepts, and applies a rule on the basis of a model; in other words, the foundation of thinking is strengthened.

Without such a foundation, moving on to more complex questions may become difficult for the learner.

At the next stage, the teacher moves the learner from the level of "found–identified" to the level of "understood–explained." For example, questions such as "Why is this word functioning as the subject?", "Why is the predicate expressed דווקא by a verb?", and "If the subject is omitted in this sentence, how does the meaning change?" encourage the learner not merely to identify a grammatical phenomenon, but to analyze its semantic function. Likewise, through questions such as "Which structure is more appropriate for strengthening the meaning of the sentence?" and "Which variant is clearer to the listener?", the learner begins to evaluate language means, that is, to choose which option better fits the communicative purpose on the basis of criteria. Here, the learner acquires not only the ability to "know the rule," but also the skill of "applying the rule consciously."

At the end of the lesson, the learner moves on to creative activity by using the language units that have been studied. For example, the learner creates a mini-text relevant to the topic, expresses one idea in different sentence structures, changes the structure of a sentence without altering its meaning, or produces an alternative version. It is precisely in this process that the "creation" component of higher-order thinking skills comes into operation: the learner does not repeat language units in a ready-made form, but reconstructs them in a new way according to the speech situation and searches for a clear and expressive way to convey their thought. As a result, grammatical knowledge does not remain a "dry rule," but is integrated into real speech activity and becomes part of the learner's communicative competence.

Thus, together with knowing what a rule is, the learner also understands the most important aspect, namely why the rule is needed. This serves the main goal of mother tongue education, that is, forming the learner as a literate individual capable of expressing thoughts logically and fluently. Another important factor that strengthens the harmony between lower-order thinking skills and higher-order thinking skills is the compatibility of the assessment system. It is not enough merely to encourage the learner in class to analyze, evaluate, and create; the learner must feel that this activity is "valued," meaning that their thinking, inquiry, and attempts to justify ideas should be visible in assessment. Otherwise, the learner may come to the conclusion that "the only thing that matters is whether the answer is correct." Such an approach restricts higher-order thinking because, in HOTS, not only the final answer matters, but also the path of thinking that leads to it.

If the teacher evaluates only the "correct–incorrect" result, then the learner's achievements in the processes of analysis, evaluation, and creation often remain "invisible." For example, a learner may have explained their opinion logically, cited evidence from the text, compared several alternatives, or proposed an original solution, yet may still receive a low mark because the final answer differs slightly from the "standard" answer. As a result, the learner becomes hesitant to express personal views freely and, instead of trying new approaches, focuses on "avoiding mistakes." This, in turn, slows down creative thinking rather than encouraging it.

For this reason, the assessment system should correspond to the nature of HOTS. In this case, the mark is given not only for the result, but also for the process: such criteria as the learner's ability to provide evidence, the logic of their thinking, the validity of their viewpoint, the coherence of expression, the originality of the solution, and the fluency of speech are all taken into account in assessment. In other words, alongside the question "What answer did the learner produce?", the teacher also considers the question "How did the learner arrive at this answer?" It is precisely this approach that helps the learner understand that the very act of thinking is valued, and it motivates them to engage more actively in inquiry.

The practical outcome of this system is that the learner gradually rises from the level of "finding an answer" to the level of "justifying an answer": when expressing an opinion, they become accustomed to providing evidence, comparing on the basis of criteria, and explaining their conclusions. At the next step, moving from a "justified idea" to creating an "original idea" becomes easier, because the learner already has experience in defending, logically constructing, and explaining their own ideas to others. Therefore, when the assessment system is chosen appropriately, it becomes not only a tool of control, but also an educational factor that fosters development.

From this perspective, the works of Uzbek scholars who have analyzed integration, innovation, and interdisciplinary connections in primary education also methodologically substantiate the necessity of harmonizing lesson content and teaching methods. In other words, when the goal, method, tasks, and assessment in a lesson all serve the same direction, the expected competencies in learners, including higher-order

thinking skills, are formed consistently. [5–6]

In conclusion, harmonizing lower-order thinking skills and higher-order thinking skills in primary education is a strategic methodological solution that ensures the learner's intellectual development. Lower-order thinking skills create a strong foundation in the learner's thinking: by finding information in a text, understanding its content, recognizing a rule, and applying it in a simple situation, the learner forms the main "skeleton" of knowledge. Higher-order thinking skills, in turn, raise the learner to deeper thinking on the basis of this foundation: the learner analyzes content, evaluates it on the basis of evidence and criteria, draws conclusions from different perspectives, and reaches the level of producing a creative outcome, that is, a new idea, a new solution, or a new text. Thus, this integration transforms the lesson not merely into a process of "delivering knowledge," but into a process of cultivating and developing the learner's thinking: the learner not only understands the text, but also interprets it, evaluates it, and becomes accustomed to creating new meaning.

In primary education, lower-order thinking skills such as remembering, understanding, and simple application form the necessary foundation of the learner's thinking, while higher-order thinking skills such as analysis, evaluation, and creation, relying on that foundation, lead the learner to argumentation, justification, and the production of creative solutions. In mother tongue and reading literacy lessons, the step-by-step deepening of thought through chains of questions, the organization of tasks according to the principle of increasing complexity, and the implementation of criterion-based assessment all help embed the integration of LOTS and HOTS into real classroom practice. As a result, the learner's functional literacy is strengthened, critical and creative thinking develops steadily, and, most importantly, the learner rises consistently from the level of "finding a ready-made answer" to the level of producing a "justified idea" and an "original result."

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