



The Distribution of Active Verbs in Task Instructions in Primary Education Textbooks

Ružena Čiliaková¹, Marián Trnka², Monika Brozmanová³

¹Matej Bel University in Banská Bystrica, Slovak Republic

²Matej Bel University in Banská Bystrica, Slovak Republic

³Matej Bel University in Banská Bystrica, Slovak Republic

Abstract

Proficiency in the language of instruction is one of the fundamental prerequisites for the cognitive and academic development of students with a different mother tongue. Understanding instructional verbs used in learning tasks is a key condition for students' success in solving these tasks correctly. Empirical findings suggest that students who do not sufficiently comprehend task instructions are at a higher risk of academic underachievement [1], [2]. This study focuses on the analysis of active verbs in instructional tasks found in textbooks for the first and second grades of primary school. Specifically, it examines the frequency and variation of active verbs in task instructions across three educational domains: language, mathematics, and science. The analysed sample comprised over 1,600 tasks, from which more than 13,500 sentences containing active verbs were extracted and examined as individual analytical units. The research employed a quantitative methodology, complemented by qualitative procedures. The quantitative component enabled the mapping of verb distribution with an emphasis on frequency. The qualitative component, using the method of constant comparison, facilitated the identification of unique verbs and their categorization within instructional discourse. The results show that students are exposed to more than 1,000 grammatical forms and over 600 unique active verbs during the first two years of schooling. The analysis also revealed significant inconsistencies in the use of instructional verbs, particularly reflective-abstract commands, which can hinder task comprehension. The findings highlight the need for greater linguistic consistency in instructional task design and underscore the importance of targeted language support for students with a different mother tongue, focused on the systematic acquisition of the school's instructional language.

Keywords: instructional discourse; active verbs; textbook language; early primary education; task comprehension

1. Introduction

The language of textbooks functions as a core pedagogical medium that mediates not only curricular content but also the cognitive and social practices into which students are gradually introduced. Instructional discourse, particularly in the initial years of primary education, plays a decisive role in structuring students' approaches to knowledge, guiding their engagement with tasks, and shaping their understanding of epistemic norms. According to Bernstein [3], school discourse should not be understood merely as the transmission of information but as a regulative system that frames access to knowledge and supports characteristic modes of reasoning along students' developmental trajectories. Within this framework, task instructions acquire particular significance, as they both direct students' activity and embed cultural as well as epistemic expectations that are gradually internalised through classroom interaction.

A key linguistic device through which this regulation is enacted is the verb. Active verbs in task instructions determine the actions expected from students and specify modes of engagement with curricular content. From the perspective of language-mediated learning, as well as Critical Discourse Analysis (CDA, [4], [5], [6]), verbs are not only lexical markers of instruction but also cognitive tools that organize attention, sequence operations and stabilize procedures. The imperative form, frequently employed in instructional discourse, illustrates the intersection of grammatical structure and institutional control: it simultaneously commands, regulates, and scaffolds students within structured cognitive practices.

Proficiency in the language of instruction is a fundamental prerequisite for cognitive and academic development, especially among students whose first language is different. Understanding instructional



verbs is essential for successful task achievement. Empirical evidence suggests that a poor understanding of task instructions significantly increases the chance of academic underachievement [1], [2]. Therefore, linguistic clarity and consistency in instructional discourse are essential, as they can either support or hinder equitable access to learning opportunities.

In the context of globalization and increasing migration, schools across Europe, including those in Slovakia, are becoming more culturally and linguistically diverse. Students from migrant and ethnic communities, particularly Roma students in Slovakia, often start primary school without a sufficient grasp of the language used for teaching, which puts them at a disadvantage relative to their peers. Inclusive educational measures, such as didactic differentiation, visual supports, and connecting learning to students' everyday experiences, are crucial to mitigate these barriers and facilitate equitable learning [7].

Systematic research and analyses of the distribution and variation of active verbs in textbooks for lower grades of elementary schools are still limited, especially in Central and Eastern Europe. During first years of schooling, students encounter thousands of grammatical verb forms and hundreds of unique verbs that shape their earliest learning experiences. Inconsistencies in the use of instructional verbs, especially those expressing reflexive or abstract commands, can hinder comprehension and disproportionately disadvantage students with insufficient knowledge of the instructional language. This underscores the need for greater linguistic consistency in textbook development and targeted support that facilitates the systematic acquisition of the instructional register of the educational language. The present study addresses this research gap by examining the distribution of active verbs in task instructions in textbooks for the first and second grades of primary education. Its objectives are: (a) to identify the repertoire of verbs used in instructional tasks across textbooks for mathematics, Slovak language, and science (prvouka); (b) to construct functional categories of verbs through qualitative analysis; and (c) to determine the frequency and distribution of these verbs across subjects and grades. Methodologically, the study combines qualitative procedures of constant comparison and analytical induction with quantitative frequency analysis, capturing both the structural repertoire and the statistical distribution of verbs.

Based on the assumptions of CDA [4], [5] and Bernstein's [3] theory of pedagogical discourse, verbs are examined not only as grammatical units, but also as carriers of epistemic and regulatory functions. This approach allows for the interpretation of instructional discourse as a medium that places students in the position of social actors within school knowledge practices and reflects broader educational ideologies. The findings of this study thus contribute to discursive-analytical research on education and expand our understanding of how the micro-linguistic features of task instructions shape the epistemic culture of early primary education.

2. Methods

The present study aimed to identify active verbs used in instructional task prompts in textbooks for the first and second grades of primary education and to determine their frequency of occurrence. Understanding the use of active verbs is critical, as they direct students' actions and regulate their engagement with learning tasks. The analysis focused exclusively on the instructional components of task prompts, defined as any textual fragment explicitly inviting students to perform a specific activity. The study did not consider the entire task text but concentrated solely on the language used to guide students' activity. The analytical units were active verbs, understood as verbs addressed to the student, which initiate, regulate, or structure their learning actions.

The sample comprised textbooks for mathematics ([8], [9], [10], [11], [12]), Slovak language ([13], [14], [15], [16], [17], [18]) and science (prvouka) ([19], [20]) for the first and second grades of primary school.

A total of over 1,600 tasks were analysed, from which approximately 13,500 sentences containing active verbs were extracted and examined as individual analytical units.

The analysis was conducted in two main phases: (1) qualitative categorization of verbs and (2) quantitative assessment of verb distribution across categories.

In the first phase, a list of unique active verbs was compiled using the method of constant comparison. Functional categories of verbs were then proposed through analytical induction. This step aimed to identify which verbs frame students' actions and to capture recurring patterns within the instructional discourse. The resulting repertoire of verbs served as a foundation for subsequent analysis of inter-discursive patterns and the social significance of instructional language.



The second phase involved the quantitative assessment of verb frequency and distribution across the established categories. This enabled the identification of patterns of repetition and prevalence, providing a statistical basis for understanding how instructional verbs shape students' engagement and learning behaviour.

The study was grounded on two analytical premises. The first premise is rooted in Critical Discourse Analysis [4], [5], [6], which posits that language is not a neutral communicative medium but actively mediates and shapes social relations, knowledge, and ideologies. CDA examines language on three levels: the textual level (lexical and grammatical resources), discursive practices (the production and reception of texts), and social practices (the broader societal and cultural context). The second analytical premise, following Bernstein [3], understands school language and communication as a regulative pedagogical discourse that structures access to knowledge and shapes characteristic modes of thinking. Instructional task prompts cannot be reduced to mere linguistic instructions; they function as discursive units that guide students through learning processes while simultaneously conveying culturally and epistemically grounded patterns of reasoning.

The analytical procedure consisted of three interrelated steps.

The first step was lexical analysis, in which unique active verbs were identified and examined in terms of their grammatical and semantic properties. Particular attention was given to the imperative and infinitive forms, as these are the most frequently used in instructional prompts. This analysis enabled the compilation of a comprehensive verb repertoire, forming the basis for subsequent interpretative steps. The second step focused on discursive practices. Here, the repetition and combination of verbs across different textbooks was analysed to reveal stabilised patterns within instructional discourse. This resulted in the construction of an intra-discursive schema capturing typical sequences of learning activities and demonstrating how verbs frame students' engagement with curricular content.

The third step addressed social practices, interpreting verbs as instruments that position students as active participants in knowledge-building processes. Within this framework, four inter-discursive roles were identified. The first of these, "presentation", involves students conveying their findings to others, thereby participating in the social dissemination of knowledge. The second role, 'explication', involves clarifying and concretizing knowledge to ensure comprehension by peers or instructors. The third role, argumentation, encompasses defending or challenging knowledge claims through interaction and discussion with others. The fourth role, "factualization", involves transforming shared content into forms that carry collective validity by integrating individual contributions into the broader epistemic framework of the classroom.

3. Analysis and Results

Within the Critical Discourse Analysis (CDA) framework, this study examines the language of textbook task instructions, focusing on lexical selection and recurrent patterns. The aim is to establish how verbal item structure student activity and mediate the relationship between the textbook text and the student. The analysis proceeded in three stages aligned with the CDA methodological model [4], [5].

Step 1 – Lexical choices

At the textual level of CDA, attention is given to the lexical choices of words in instructional sentences. A summary of the lexical inventory is provided in Table 1.

Table 1. Active Verbs – Identified Lexical Choices (Grammatical-Lexical Aspect of Language)

Total number of analytical units	Number of lexically unique grammatical units	Number of unique root lexemes
9693 words	638 words	337 words

Table 2. Active Verbs — Identified Lexical Choices (Lexical Aspect — Morphological Realisation)

Word root (count)	Prefix (total)	na-	za-	do-	vy-	pre-	v-	od-	pri-	roz-	po-	ob-	o-	odo-	(ne-)
5853	3840	1075	474	334	764	559	18	60	73	23	410	5	36	6	3



Of the analysed task prompts, 9,693 verb tokens satisfied the operational criteria of an active verb. These realised 638 distinct inflected forms, corresponding to 337 semantically distinct root lemmas (see Table 1). Thus, the token–type ratio for inflected forms equals 0.066 (638/9,693) and the mean number of inflected forms per root is 1.89, indicating a relatively broad but moderately inflected instructional repertoire. From a morphological perspective, we also examined derivational structure along the root–prefix axis. Of the 9,693 active verb tokens, 3,840 (39.6%) were prefixed derivatives. These lexemes arise via the modification of verbal roots by derivational prefixes, and their distribution is summarised in Table 2. The most frequent prefixes were “*na-*” ($n = 1,075$), “*vy-*” ($n = 764$), “*pre-*” ($n = 559$), “*za-*” ($n = 474$), “*po-*” ($n = 410$), and “*do-*” ($n = 334$). All other prefixes occurred fewer than one hundred times (“*pri-*”, $n = 73$; “*od-*”, $n = 60$; “*v-*”, $n = 18$; “*roz-*”, $n = 23$, “*o-*”, $n = 36$, “*ob-*”, $n = 5$, and “*odo-*”, $n = 6$). Negative formation via the prefix *ne-* was rare in the corpus, with only three instances identified ($n = 3$).

Step 2 — Discursive practices

At the level of discursive practices, we examined how active verbs recur and co-occur within and across textbooks and how such combinations stabilize into patterned instructional routines. This perspective assumes that instructional language not only frames required actions but simultaneously mediates a structured mode of engaging with knowledge [4].

The distribution of active verbs in task instructions can be described along two functionally distinct planes – epistemic and didactic. The epistemic plane treats active verbs as representations of scientific praxis, i.e., procedures through which knowledge is produced. The primary reference frame is the verb’s position within the student’s activity sequence while solving a task. The didactic plane interprets active verbs from the perspective of the assignment as a determinant of the learning context, highlighting ways in which student activity is elicited and performance is steered. In this sense, instructions carry two interlinked “languages” – an epistemic performance language and a didactic contextual language – each characterised by its own discourse realised through specific categories of active verbs.

On the epistemic plane, four distinct verb categories were identified.

The first, a dissemination category, comprises verbs whose action potential targets practices of sharing information. This frame of active verbs initiates activities in which informationally relevant content is transformed into epistemic units through written or spoken production; such content can subsequently be recognized through reading or listening and processed further. Beyond writing and speaking, the frame also encompasses visual representation and the practical creation of artefacts, which constitute important forms of scientific communication. Typical items include write, speak/say, draw, draft, create, assemble, produce, including their prefixed derivatives.

The second, a registration category, comprises verbs indexing the uptake of shared information. This frame is associated with the epistemic apparatus through which teacher-mediated content becomes the object of perceptual registration and mental representation by students, without invoking higher-order cognitive operations such as evaluation, analysis, or transformation of meaning. In the analysed texts, this apparatus manifested in three domains: registration of verbal language, registration of sensory stimuli, and registration mediated by the imagination of linguistic or sensory content. Typical items include read, observe, browse/look through, notice, follow, search, watch, listen, touch, try out, depict, imagine, show. Several also occur in prefixed forms, most notably read, try (out), listen, and search.

The third category comprises verbs referring to the interpretation of registered content. These verbs are linked to operations of locating, comparing, and evaluating, which presuppose reference norms enabling the classification or appraisal of phenomena within a disciplinary context. In the analysed set of instructions, this category was represented by verbs such as find, determine, search, evaluate, check, verify, correct, equal, differ. Prefixed derivatives were most frequent with search, evaluate, check, equal, and differ.

The fourth category comprises verbs associated with the abstraction of information. These operations constitute means of generating new knowledge, especially when interpretive procedures are insufficient and content must be restructured or conceptually redefined. Space constraints preclude exhaustive enumeration; the most frequent items included mark/denote, circle, strike through,



number, connect, order/arrange, classify, divide, create, solve, measure, think. Most appeared in prefixed rather than bare root forms. Verbs with a modifying function—such as replace, enlarge—reduce, and adjust—were also assigned to this category.

On the didactic plane, two classes were identified.

The first, specification, concretizes the nature of student performance along four frames: material–manipulative (use, do, work, give, add, bring/fetch), locative–kinetic (move through, stand up, go), temporal (finish, continue, begin, end), and facilitative–orientational (help yourself, rely on).

The second, regulatory, steers performance through modal–motivational or generalizing–recapitulative force (try, attempt, may/can; do not forget, take note) and also includes cognitive stimulation during problem solving (think, consider). Bare root forms occur only rarely; prefixed derivatives predominate (devise/invent, think through, consider, reflect). This two-layered discursive structure indicates that active verbs simultaneously carry epistemic operations and didactic regulations, and that their combinations constitute stabilized scenarios of textbook task-setting.

Figure 1. Active Verbs – Frequency of Discourses

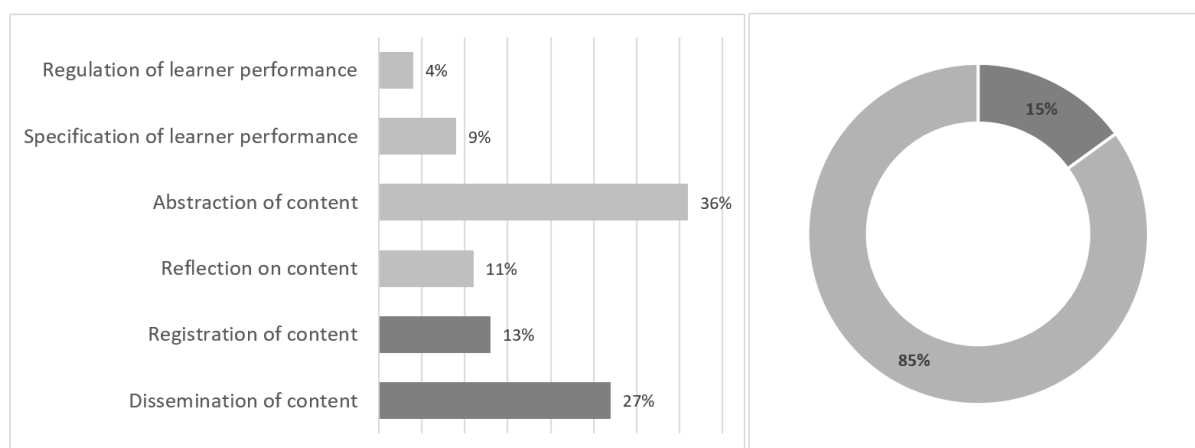


Figure 1 shows the results of a quantitative content analysis of task instructions, mapping the use of active verbs in textbooks according to their association with the identified discursive practices. The left-hand panel of Figure 1 shows the proportion of each discourse in the total number of active verb instances, as well as the distribution of verbs across the epistemic and didactic planes. The instructional language is dominated by epistemic discourse (85% of all instances), with the discursive category of “abstraction of content” emerging as the most frequent (36% of occurrences).

Step 3 – Social Practices

At the level of social practices, active verbs were interpreted as means by which the student is positioned as a social actor within scientific communication. School instructions thereby not only regulate individual activity but also guide students to express, justify, and share knowledge in interaction with others. Building on the discursive categories established in Step 2, a filter of existing social interactions was applied to the instructional verbs. Verbs were dichotomized into those whose meanings explicitly reference interpersonal interaction and those whose frames do not require social contact. The interaction-laden verbs were then confronted, through qualitative analytic induction, with the previously identified discursive categories to determine their position within the construct and to assign appropriate labels. This procedure yielded four interpersonal positions of student practice that represent the social dimension of the discourse of science in knowledge construction.

The first position, explication of scientific knowledge (explanatory competences), is located between the dissemination and registration categories and encompasses practices of clarifying, concretizing, and exemplifying knowledge for comprehensibility to a communicative partner; representative verbs include *explain*, *show*, and *depict*.

The second position, scientific argumentation (argumentative–persuasive competences), lies between registration and interpretation and is represented by verbs such as *object*, *justify*, and *prove*.



The third position, scientific objectivization (factual–consensual competences), is situated between interpretation and abstraction and concerns reflection on existing knowledge in the process of formulating new theories; verbs such as *converse* and *discuss* fall into this position.

The fourth position, scientific presentation (presentational–performance competences), lies between abstraction and dissemination and centres on the semio-cognitive transformation of information into schematic form with attention to audience; in the analysed material, only the verb *visualize/depict* was assigned to this position, and no additional items proximate to this category were identified.

4. Discussion and Conclusions

The findings revealed a diverse yet heterogeneous range of instructional verbs in textbooks for Grades 1–2, with almost a third of instances represented by prefixed derivatives. This morphological variability places greater demands on the comprehension and real-time processing of instructions, particularly when task prompts accumulate synonymous variation for the same actions (e.g. “označ/vyznač” mark/highlight, “zdôvodni/odôvodni” justify). In the context of early reading and text comprehension, this constitutes a significant load that may indirectly affect task performance, even when subject knowledge or procedures have been adequately mastered (see [1], [2]).

The discursive distribution confirmed the predominance of the epistemic discourse, within which abstraction prevails, complemented by dissemination, registration, and reflection. This configuration supports operations typical of disciplinary cognition, yet it presupposes stable command of the instructional lexicon and its derivational relations. Within the theoretical frames of pedagogical and critical discourse [3], [4], [5], [6], the language of the prompt not only mediates knowledge but also regulates access to it: the choice of verbs and their combinations implicitly defines what counts as an appropriate mode of cognitive work. The relatively low representation of didactic classes (specification and regulation of performance) indicates a possible misalignment between high epistemic demand and the level of scaffolding provided in the text of the prompt. In practice, this may result in analysis or abstraction being required without sufficient specification of product, process, or timeframe.

The interpretation of social practices adds four interpersonal positions of student activity – explication, argumentation, objectivization, and presentation. Identifying these positions confirms that textbook prompts frame the student not only as a performer of procedures but also as an actor in scientific communication. At the same time, explicitly presentational, audience-oriented verbs appear limited in the early grades (in the analysed material, practically represented by the single verb “znázorniť”, meaning depict/visualize). This may constrain the development of discursive competences associated with addressing an audience and transferring knowledge across representational forms (verbal, visual, schematic). Strengthening this dimension aligns with the objective of inducing students into the practices of scientific communication already at the beginning of primary education.

Implications for practice and textbook design emerge along three lines: (a) linguistic consistency – reducing synonymic variability and establishing a controlled core of high-frequency verbs for Grades 1–2; for prefixed derivatives, standardizing collocational frames and model sentences to reduce interpretive ambiguity; (b) explicit instruction in the instructional register – mini lessons on the meaning and use of key verbs, visual supports, and sentence frames for explication and argumentation, as well as systematic work with prefixes in contrastive tables; and (c) equity of access – formative checks of prompt comprehension and an explicit “task comprehension” component in assessment to distinguish misunderstanding of instructions from gaps in subject competence. These measures are particularly important for students with a different mother tongue, for whom the instructional register constitutes a specific target of acquisition (cf. [7]).

These results should be interpreted in light of limitations: the analysis covered three subjects and only the instructional segments of tasks in Grades 1–2; no direct link was modelled between linguistic characteristics of prompts and pupil performance. Future research should extend the corpus across grades and subjects, combine corpus methods with experimental testing of comprehension (especially for reflective abstract commands), and track longitudinal acquisition of the core instructional verbs. Cross-linguistic comparative studies would help distinguish universal and language-specific features of instructional discourse.

The results support the thesis that task design forms part of the regulative plane of school discourse and significantly shapes access to cognitive activity. Enhancing linguistic consistency, explicitly teaching the instructional register, and implementing targeted formative checks of comprehension have the potential to reduce the cognitive load of prompts and to promote fairer access to learning in early education, particularly for students with a different mother tongue.



Acknowledgments

The paper is the output of the research task within Project Programme of Linguistic Development for children with a different mother tongue in Slovak - creation and verification. This work was supported by the Slovak Research and Development Agency under the Contract no. APVV-22-0450.

REFERENCES

- [1] Souzandehfar M., Ibrahim K. A. A., "Task-supported language instruction in an EFL context: impacts on academic buoyancy, self-esteem, creativity, and language achievement," *Asian. J. Second. Foreign. Lang. Educ.*, vol. 8, article 43, 2023, doi: 10.1186/s40862-023-00218-0.
- [2] Hudson R., "Towards a pedagogical linguistics," *Pedagogical Linguistics*, vol. 1, no. 1, pp. 8–33, Feb. 2020, doi: 10.1075/pl.19011.hud.
- [3] Bernstein B., *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique*, 2nd ed., Lanham, MD: Rowman & Littlefield, 2000.
- [4] Fairclough N., *Discourse and Social Change*, Cambridge: Polity Press, 1992.
- [5] Wodak R., Meyer M. (eds.), *Methods of Critical Discourse Analysis*, London: SAGE, 2001.
- [6] Van Dijk T. A., *Discourse and Power*, New York: Palgrave Macmillan, 2008.
- [7] National Institute for Education and Youth (NIVaM), "Guidance on inclusive education for pupils with insufficient command of the language of instruction," Bratislava: NIVaM, 2023.
- [8] Belic M., Striežovská J., *Matematika pre prvákov – 1. časť*, Bratislava: Aitec, s.r.o., 2019.
- [9] Belic M., Striežovská J., *Matematika pre prvákov – 2. časť*, Bratislava: Aitec, s.r.o., 2019.
- [10] Belic M., Striežovská J., *Matematika pre druhákov – učebnica*, Bratislava: Aitec, s.r.o., 2020.
- [11] Belic M., Striežovská J., *Matematika pre druhákov – pracovný zošit 1. časť*, Bratislava: Aitec, s.r.o., 2020.
- [12] Belic M., Striežovská J., *Matematika pre druhákov – pracovný zošit 2. časť*, Bratislava: Aitec, s.r.o., 2020.
- [13] Striežovská J., a kol., *Šlabikár LIPKA® pre 1. ročník základných škôl, 1. časť*, Bratislava: AITEC, 2022.
- [14] Striežovská J., a kol., *Šlabikár LIPKA® pre 1. ročník základných škôl, 2. časť*, Bratislava: AITEC, 2022.
- [15] Striežovská J., a kol., *Čítanka k Šlabikáru LIPKA® pre 1. ročník základných škôl*, Bratislava: AITEC, 2019.
- [16] Dienerová E., Nosáľová M., Hirschnerová Z., *Slovenský jazyk pre 2. ročník ZŠ – učebnica*, Bratislava: Aitec, s.r.o., 2020.
- [17] Nosáľová M., Hirková A., Dienerová E., *Čítanka pre 2. ročník ZŠ – učebnica*, Bratislava: Aitec, s.r.o., 2018.
- [18] Lacková Z., Agalarevová P., *Pracovný zošit k učebnici Čítanka pre 2. ročník ZŠ*, Bratislava: Aitec, s.r.o., 2013.
- [19] Dobišová R. A., Kováčiková O., *Prvouka pre 1. ročník základnej školy*, Bratislava: Aitec, s.r.o., 2015.
- [20] Dobišová R. A., Kováčiková O., *Prvouka pre druhákov*, Bratislava: Aitec, s.r.o., 2020.