Tasks Oriented Towards the Use of Operational–Practical Methods in Textbooks for Environmental Studies

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The choice of textbook is important to the quality of the educational process as the textbook is the most frequently chosen teaching material in environmental studies. It should align with didactic recommendations encouraging an active role for students in the educational process, which is facilitated using operational–practical methods. The research aimed to examine the tasks in the textbooks for environmental studies and to identify those oriented towards operational–practical work. The research sample included textbooks from four publishing houses. The study used a descriptive non-experimental method of pedagogical research. We separately analysed the textbooks from each of the four publishers for each grade. The results show that the presence of tasks oriented towards operational–practical methods vary by grade and publisher. The largest number of tasks focusing on the use of operational–practical methods was found in the textbooks for third grade, followed by first and second grade.

DOI
https://doi.org/10.18690/um.pef.2.2024.13

ISBN
978-961-286-899-4

Keywords:
environmental studies, method, primary school, publisher, textbook

University of Maribor Press

DOI
https://doi.org/10.18690/um.pef.2.2024.13

ISBN
978-961-286-899-4

NALOGE, KI USMERJAJO K UPORABI OPERACIJSKO-PRAKTIČNIH UČNIH METOD V UČBENIKIH ZA PREDMET SPOZNAVANJE OKOLJA

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Ključne besede:
metoda,
osnovna šola,
spoznavanje okolja,
učbenik,
založba

Izbira učbenika je pomemba za kakovost vzgojno-izobraževalnega procesa, saj je učbenik najpogosteje izbrano učno gradivo pri predmetu spoznavanje okolja. Zaželeno je, da je usklajen z didaktičnimi priporočili in sodobnimi didaktičnimi smernicami, ki spodbujajo aktivno vlogo učencev v izobraževalnem procesu, kar omogoča predvsem uporaba operacijsko-praktičnih učnih metod. Z uporabo operacijsko-praktičnih metod pri pouku učenci dosežejo učne cilje skozi različne dejavnosti. Namen raziskave je bil preučiti naloge v učbenikih predmeta spoznavanje okolja in prepoznati tiste, ki usmerjajo k operacijsko-praktičnemu delu. V raziskovalni vzorec smo vključili učbenike štirih založb. Pri raziskavi smo uporabili deskriptivno-neeksperimentalno metodo pedagoškega raziskovanja. Pri vsaki izmed štirih založb smo analizirali učbenike za vsak razred posebej. Rezultati analize so pokazali, da se prisotnost nalog, ki usmerjajo k operacijsko-praktičnim učnim metodam, razlikuje glede na razred in založbo. Največ nalog, ki usmerjajo k uporabi operacijsko-praktičnih metod, vsebujejo učbeniki za 3. razred, sledi 1. razred in nato 2. razred.

Univerzitetna založba Univerze v Mariboru

1 Introduction

A textbook is a learning tool intended for use by both students and teachers (Remillard, 2005). It can be used in the function of the teacher's teaching or in the function of the student's learning activity or learning (Štefanc, 2005). The main characteristic of a textbook is that through didactic transformation of scientific content, it appropriately structures, restructures and simplifies it, and as a teaching tool and learning resource, it contributes to the effectiveness of instruction and self-directed learning (Kovač et al., 2005).

A good textbook is a student's most important source of knowledge, helping them to acquire knowledge and contributing to their personal development (Cigler, 1997). Teachers consider textbooks to play a fundamental role in the teaching process (Herlinda, 2014) and often closely follow them in the delivery of material, which also influences the choice of didactic strategies and learning content (Hadar, 2017).

As criteria for official quality standards for teaching materials in Slovenia, we can consider the guidelines set out in Article 3 of the 2015 Textbook Validation Regulations. According to this regulation (2015, Article 3), the competent professional council may approve a textbook that:

- is aligned with the current curriculum or knowledge catalogue in terms of objectives, knowledge standards and content,
- is in line with current knowledge in the subject discipline,
- is appropriate from a methodological–didactic point of view,
- complies with the norms and criteria for reducing the weight of school bags adopted by the Slovenian Institute of Education,
- is appropriate for the developmental level and age of the participants in the educational process, and
- is linguistically correct and appropriate, aesthetically and visually pleasing and technically adequate.

A good textbook also needs to look attractive and use language that is close to the learners (Cigler, 1997).

In relation to the quality of the textbook, didactic principles should also be taken into account, as they are the basic guidelines for teaching and, according to Strmčnik (2001), are an important theoretical basis for both teaching and education. This is the reason they also play an important role in the delivery of the learning content in the textbook. Referring to the didactic principles, Kovač et al. (2005) believed that a good textbook is one that meaningfully incorporates all the principles relevant to the textbook in its content and format. Thus, when assessing the quality of the content of a textbook, it is essential to consider the principles of illustrativeness, factual–logical correctness, and the structural and systematic nature of instruction. From the point of view of the relationship with the student, the most important principle is that of developmental proximity, individualisation and education. From the point of view of the student's activity, the principle of activity and problem-orientation must be observed; and from the point of view of the organisation of the learning process, the principle of economy and rationality.

Adhering to all these principles enables students to better understand the content, encourages them to actively participate and reflect and contributes to more effective teaching.

A quality educational process includes preparing and introducing students to new learning content, addressing new learning content, practicing activities, reviewing content for sustainable knowledge and testing knowledge. Therefore, as early as 1983, Poljak stressed that these phases must be considered and included in the didactic design of textbooks (Poljak, 1983).

A modern and high-quality textbook cannot be a mere 'mechanical,' didactic transformation of scientific content but must also promote active learning, a deeper understanding of the content and cross-curricular integration (Turk Škraba, 2006); stimulate students' curiosity and creativity; and allow students to individualise (Cigler, 1997). It is important that textbooks are designed to support students' learning of the material while complementing or extending other educational resources. Only if they are appropriately didactically designed will teachers be able to effectively use them at all stages of the learning process (Poljak, 1983).

Therefore, a quality textbook can support both students and teachers in learning and teaching (Swanepoel, 2010). This is the reason the choice of textbook is important to the quality of the educational process.

This is why we decided to analyse the tasks in the textbooks in more detail. We focused on the textbooks of environmental cognition and on those tasks that orient students towards operational–practical methods since the didactic recommendations for environmental cognition classes guide to active knowledge acquisition, which is facilitated, in particular, by operational–-practical methods.

2 Textbooks in environmental studies

The most important general objectives of environmental studies are to understand the environment and to develop cognitive skills. Both objectives can be pursued by having students actively learn about the environment. The knowledge they acquire can be applied to both the natural and the social environments. In the environmental studies subject, students should be given the opportunity to develop their abilities to compare, classify, organise, measure, record data, make predictions and inferences, experiment and communicate (Primary school programme environmental studies. Curriculum, 2011). Students actively acquire knowledge that influences their understanding (Ivanuš Grmek et al., 2009). Teachers are obviously more than encouraged by the curriculum of the subject to introduce operational–-practical methods into their teaching practices (Valenčič Zuljan & Kalin, 2020).

Valenčič Zuljan and Kalin (2020) included the following among the operational–-practical methods:

1. A method of research that focuses on the student's exploration. This can take the form of non-experimental exploration of objects, phenomena and processes in natural or stimulating circumstances or of experimental exploration.
2. A method of practical work, movement and other activities that involve students in hands-on activity, transforming objects and making products.
3. Written composition method, in which is combined with the teaching methods of explanation, discussion, demonstration and working with text, as well as other teaching methods classified as operational–practical. Note-

taking is an important skill that is crucial for successful learning in all subjects.

4. Drawing based method in which teachers and students express parts of the learning material through graphic activities—symbols, drawings, illustrations, diagrams, charts, maps, plans, etc.
5. A game-based method in which simulations and role play in the social studies contribute to critical thinking that, in turn, helps to reflect on social phenomena and problems. Simulations and role play games contribute to making sense of what has been learnt and to the applicability of knowledge to life.

Hus and Čagran (2008) studied the didactic characteristics of textbook sets in environmental studies by examining the representation of methods in a selected textbook set from three different publishers. Based on the results of the study, they concluded that the textbook sets preferentially emphasised traditional methods, such as explanation, discussion, demonstration and work within the textbook. In contrast, modern methods that follow constructivist principles of teaching were noticeably less present in these textbook sets. According to the teachers, project work and fieldwork methods were the least present in the textbook sets. According to other research conducted in Slovenia, project work and fieldwork rarely appear in pedagogical practice (Jančič Hegediš & Hus, 2019; Mithans et al., 2023).

Textbooks for the subject of environmental studies differ from one another in terms of promoting constructivist elements, which include guiding students towards more active forms of learning (Hus, 2013).

In a study exploring the content-didactic and professional aspects of textbooks for environmental studies, Čagran et al. (2018) found that all teachers rated environmental studies textbooks as accompanying professional examples with illustrations (100%). The majority also believed that textbooks use examples from everyday life (93%); address current scientific knowledge (83%); allow cross-curricular integration (80%); are appropriate to the developmental level of the students (73%); encourage active learning (73%); enrich vocabulary (67%); allow for integration (67%) and testing (64%) of students' prior knowledge; and encourage creative thinking (60%).

Given the pivotal role of textbooks in shaping the educational experience, understanding how these resources engage students in active learning practices is essential.

3 Methodology

The purpose of the research was to determine the tasks in textbooks for the subject of environmental studies that direct students towards operational–practical methods.

The following research questions guide the study:

1. What is the frequency and distribution of tasks that promote operational-practical methods in environmental studies textbooks across different grades and publishers?
2. What is the proportion of tasks oriented towards operational-practical methods in relation to each thematic section within the textbooks?
3. How are different types of operational-practical methods represented in the tasks across the textbooks?
4. What is the relationship between tasks that focus on operational-practical methods and the global objectives outlined in the environmental studies curriculum?

Descriptive non-experimental methods of pedagogical research were used.

Textbooks from the four largest publishers in Slovenia that the Slovenian Council has approved of Experts were selected for the research sample.

The research sample included the following textbook publishers (listed in random order):

- DZS: Skribe Dimec et al. (2012), Skribe Dimec et al. (2013), Umek et al. (2014)
- Mladinska knjiga: Hergan et al. (2014a), Hergan et al. (2014b), Hergan et al. (2015)

- Modrijan: Krnel et al. (2015), Krnel et al. (2016), Krnel et al. (2017), Krnel et al. (2018)
- Rokus Klett: Grošelj and Ribič (2013), Šefer and Kumše (2015), Grošelj and Ribič (2016)

The publishing houses were labelled A, B, C and D.

Tasks in the textbooks were analysed with the help of pre-prepared instrument. The instrument consisted of the criteria (such as task frequency, alignment with educational objectives and method diversity) used to analyse the pictorial material in the textbooks. Each textbook was evaluated separately, categorizing tasks according to their methodological focus and relevance to operational–practical method. The data obtained from the analyses were presented by indicating the absolute (f) and percentage frequencies (f%).

4 Results

The results are presented in subchapters according to research questions.

4.1 The results of the analysis of the number of tasks oriented towards operational–practical methods by grade and publishers

First, we checked to see how many of the tasks in the environmental studies textbooks promoted the use of operational–practical methods.

Table 1: Number of tasks focusing on operational–practical methods by grade and publishers

Criterion	Publishers	1st grade	2nd grade	3rd grade	Total by publishers
Number of tasks that focus on operational–practical methods	A	16 (20.25 %)	21 (26.58 %)	42 (53.16 %)	79 (100.00 %)
	B	3 (15.79 %)	14 (73.68 %)	2 (10.53 %)	19 (100.00 %)
	C	30 (31.58 %)	16 (16.84 %)	49 (51.58 %)	95 (100.00 %)
	D	70 (64.81 %)	9 (8.33 %)	29 (26.85 %)	108 (100.00 %)
Total by grade		119 (39.53 %)	60 (19.93 %)	122 (40.53 %)	301 (100.00 %)

Table 1 shows that the textbooks of the three grades are quite different in the number of tasks that focus on operational–practical methods. Overall, by grade, the highest proportion of such tasks appears in the textbooks for Grade 3 (40.53%), followed by Grade 1 (39.53%) and then Grade 2 (19.93%). By publisher, overall, the highest proportion of tasks focusing on operational–practical methods appears in the textbooks by Publisher D. This is followed by those by Publisher C, then by Publisher A, and the lowest proportion of such tasks appears in the textbooks by Publisher B. The highest proportion of tasks is found in the textbooks by Publisher D, followed by those by Publisher C, then by Publisher A, and the lowest proportion of such tasks is in the textbooks by Publisher B.

4.2 The results of the analysis of the ratio of tasks leading to operational–practical methods according to the thematic strands

In the curriculum, the objectives are written in the following didactic strands: Time, Space, Substances, Forces and Movements, Phenomena, Living beings, Human, Self, Communities, Relationships, Transport and Environmental education (Primary school programme environmental studies. Curriculum, 2011). In the research, we were interested in which thematic strands found in the tasks that focus on the use of operational–practical methods occur in greater numbers. The results are shown in Table 2.

Table 2: Number of tasks focusing on operational–practical methods by subject by grade and publisher

	1st grade				
Publisher / Thematic strand	A	B	C	D	Total by thematic strand
Time	2 (12.5 %)	0 (0.00 %)	4 (13.33%)	7 (10.00 %)	13 (10.92 %)
Space	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	5 (7.14 %)	5 (4.20 %)
Substances	2 (12.5 %)	0 (0.00 %)	7 (23.33 %)	13 (18.57 %)	22 (18.49 %)
Forces and movements	1 (6.25 %)	0 (0.00 %)	4 (13.33 %)	3 (4.29 %)	8 (6.72 %)
Phenomena	0 (0.00 %)	0 (0.00 %)	2 (6.67 %)	6 (8.57 %)	8 (6.72 %)
Living beings	2 (12.5 %)	1 (33.33 %)	5 (16.67 %)	6 (8.57 %)	14 (11.76 %)
Human	1 (6.25 %)	0 (0.00 %)	1 (3.33 %)	4 (5.71 %)	6 (5.04 %)
Me	4 (25.00 %)	0 (0.00 %)	3 (10.00 %)	9 (12.86 %)	16 (13.45 %)
Communities	2 (12.5 %)	2 (66.67 %)	3 (10.00 %)	6 (8.57 %)	13 (10.92 %)
Relationships	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	6 (8.57 %)	6 (5.04 %)

Transport	2 (12.5 %)	0 (0.00 %)	1 (3.33 %)	3 (4.29 %)	6 (5.04 %)
Environmental education	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	2 (2.86 %)	2 (1.68 %)
Total by publishers	16 (100.00 %)	3 (100.00 %)	30 (100.00 %)	70 (100.00 %)	119 (100.00 %)
	2nd grade				
Publisher / Thematic strand	**A**	**B**	**C**	**D**	**Total by thematic strand**
Time	10 (47.62 %)	2 (14.29 %)	2 (12.5 %)	1 (11.11 %)	15 (25.00 %)
Space	0 (0.00 %)	3 (21.43 %)	4 (25.00 %)	2 (22.22 %)	9 (15.00 %)
Substances	2 (9.52 %)	3 (21.43 %)	1 (6.25 %)	1 (11.11 %)	7 (11.67 %)
Forces and movements	1 (4.76 %)	1 (7.14 %)	1 (6.25 %)	0 (0.00 %)	3 (5.00 %)
Phenomena	0 (0.00 %)	1 (7.14 %)	1 (6.25 %)	0 (0.00 %)	2 (3.33 %)
Living beings	2 (9.52 %)	2 (14.29 %)	5 (31.25 %)	1 (11.11 %)	10 (16.67 %)
Human	0 (0.00 %)	0 (0.00 %)	1 (6.25 %)	0 (0.00 %)	1 (1.67 %)
Me	2 (9.52 %)	0 (0.00 %)	0 (0.00 %)	2 (22.22 %)	4 (6.67 %)
Communities	1 (4.76 %)	1 (7.14 %)	1 (6.25 %)	1 (11.11 %)	4 (6.67 %)
Relationships	0 (0.00 %)	1 (7.14 %)	0 (0.00 %)	0 (0.00 %)	1 (1.67 %)
Transport	3 (14.29 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	3 (5.00 %)
Environmental education	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	1 (11.11 %)	1 (1.67 %)
Total by publishers	21 (100.00 %)	14 (100.00 %)	16 (100.00 %)	9 (100.00 %)	60 (100.00 %)
	3rd grade				
Publisher / Thematic strand	**A**	**B**	**C**	**D**	**Total by thematic strand**
Time	4 (9.52 %)	0 (0.00 %)	3 (6.12 %)	2 (6.90 %)	9 (7.38 %)
Space	5 (11.90 %)	0 (0.00 %)	11 (22.45 %)	4 (13.79 %)	20 (16.39 %)
Substances	4 (9.52 %)	1 (50.00 %)	7 (14.29 %)	4 (13.79 %)	16 (13.11 %)
Forces and movements	4 (9.52 %)	0 (0.00 %)	2 (4.08 %)	0 (0.00 %)	6 (4.92 %)
Phenomena	6 (14.29 %)	0 (0.00 %)	2 (4.08 %)	5 (17.24 %)	13 (10.66 %)
Living beings	4 (9.52 %)	1 (50.00 %)	11 (22.45 %)	2 (6.90 %)	18 (14.75 %)
Human	3 (7.14 %)	0 (0.00 %)	4 (8.16 %)	3 (10.34 %)	10 (8.20 %)
Me	1 (2.38 %)	0 (0.00 %)	1 (2.04 %)	0 (0.00 %)	2 (1.64 %)
Communities	3 (7.14 %)	0 (0.00 %)	4 (8.16 %)	6 (20.69 %)	13 (10.66 %)
Relationships	4 (9.52 %)	0 (0.00 %)	1 (2.04 %)	2 (6.90 %)	7 (5.74 %)
Transport	1 (2.38 %)	0 (0.00 %)	3 (6.12 %)	0 (0.00 %)	4 (3.28 %)
Environmental education	3 (7.14 %)	0 (0.00 %)	0 (0.00 %)	1 (3.45 %)	4 (3.28 %)
Total by publishers	42 (100.00 %)	2 (100.00 %)	49 (100.00 %)	29 (100.00 %)	122 (100.00 %)

Table 2 shows that the number of tasks in each topic set varies by grade and by publisher. If all the publishers of Grade 1 are combined, the tasks found in the Substances topic (18.49%) stand out the most. An example of a task that guides students to use the operational–practical methods in the Substances topic is the task in which students make a paper hat. The students make a paper hat based on the pictorial procedure given (Krnel et al., 2015, p. 36).

In Grade 2, the largest number of such tasks is in the Time topic (25.00%). An example of a task that guides students to use operational–practical methods in the Time topic is a task in which students make a timeline. They bring photographs of themselves taken at different ages to school. They stick the photographs on a tape upon which the years are marked. They can also add text to the timeline. Next to the photos, they mark what was important to them at that time or year, for example, a toy or an event. They present the timeline to their classmates and display it. An example of a timeline is shown in the photo accompanying the task (Grošelj & Ribič, 2013, p. 31).

In Grade 3, the largest number of such tasks is in the thematic strand Space (16.39%). An example of a task that focuses on the use of operational–practical methods in the thematic strand Space is the task in which students visit a farm. The students visit a farm and investigate what people do on the farm, what animals are on the farm and for what purpose the animals are bred (Grošelj and Ribič, 2016, p. 20).

The largest number of such tasks in publisher A is found in the Self topic (25.00%) in Grade 1, the Time topic (47.62%) in Grade 2, and the Phenomena topic (14.29%) in Grade 3. For Publisher B, the largest number of such tasks occurs in the Communities topic (66.67%) in Grade 1, in the topics of Space (21.43%) and Substances (21.43%) in Grade 2, and in the topics of Substances (50.00%) and Living beings (50.00%) in Grade 3. For Publisher C, the largest number of such tasks occurs in the Substances topic (23.33%) in Grade 1, the Living beings topic (31.25%) in Grade 2, and in the topics of Space (22.45%) and Living beings (22.45%) in Grade 3. For Publisher D, the largest number of such tasks occurs in the Substances topic in Grade 1 (18.57%), in the topics of Space (22.22%) and Self in Grade 2 (22.22%), and in the Communities topic in Grade 3 (20.69%).

4.3 The results of the analysis of the representation of different types of operational–practical methods in assignments by grade and publisher

Table 3: Representation of different types of operational–practical methods in assignments by grade and publisher

	1st grade				
Publisher / Operational–practical method	A	B	C	D	Total by type of operational–practical methods
Method of research	6 (37.50 %)	1 (33.33 %)	13 (35.14 %)	16 (19.28 %)	36 (25.90 %)
Method of practical work, movement and other activities	8 (50.00 %)	1 (33.33 %)	9 (24.32 %)	27 (32.53 %)	45 (32.37 %)
Written composition method	0 (0.00 %)	0 (0.00 %)	2 (5.41 %)	6 (7.23 %)	8 (5.76 %)
Drawing based method	2 (12.50 %)	0 (0.00 %)	13 (35.14 %)	24 (28.92 %)	39 (28.06 %)
Game based method	0 (0.00 %)	1 (33.33 %)	0 (0.00 %)	10 (12.05 %)	11 (7.91 %)
Total by publishers	16 (100.00 %)	3 (100.00 %)	37 (100.00 %)	83 (100.00 %)	139 (100.00 %)
	2nd grade				
Publisher / Operational–practical method	A	B	C	D	Total by type of operational–practical methods
Method of research	9 (40,91 %)	9 (60,00 %)	11 (57,89 %)	7 (63,64 %)	36 (53,73 %)
Method of practical work, movement and other activities	8 (36.36 %)	4 (26.67 %)	3 (15.79 %)	1 (9.09 %)	16 (23.88 %)
Written composition method	2 (9.09 %)	0 (0.00 %)	2 (10.53 %)	2 (18.18 %)	6 (8.96 %)
Drawing based method	2 (9.09 %)	2 (13.33 %)	3 (15.79 %)	1 (9.09 %)	8 (11.94 %)
Game based method	1 (4.55 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	1 (1.49 %)
Total by publishers	22 (100.00 %)	15 (100.00 %)	19 (100.00 %)	11 (100.00 %)	67 (100.00 %)

	3rd grade				
Publisher / Opera-tional–practical method	A	B	C	D	Total by type of operational–practical methods
Method of research	29 (60.42 %)	1 (33.33 %)	38 (59.38 %)	15 (33.33 %)	83 (51.88 %)
Method of practical work, movement and other activities	10 (20.83 %)	1 (33.33 %)	3 (4.69 %)	1 (2.22 %)	15 (9.38 %)
Written composition method	4 (8.33 %)	1 (33.33 %)	17 (26.56 %)	17 (37.78 %)	39 (24.38 %)
Drawing based method	3 (6.25 %)	0 (0.00 %)	6 (9.38 %)	12 (26.67 %)	21 (13.13 %)
Game based method	2 (4.17 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	2 (1.25 %)
Total by publishers	48 (100.00 %)	3 (100.00 %)	64 (100.00 %)	45 (100.00 %)	160 (100.00 %)

The table shows that the representation of the different types of operational–practical methods in the tasks varies by grade and publisher. In Grade 1, for Publisher A, the tasks most often direct the students to use the method of practical work, movement and other activities (50.00%). For Publisher B, there is no method that stands out in Grade 1. For Publisher C, the methods that stand out the most in Grade 1 are method of research (35.14%) and the drawing based method (35.14%). For Publisher D, the method that stands out the most in Grade 1 is the method of practical work, movement and other activities method (32.53%). Combining all Publishing Houses for Grade 1, the following results show that the method of practical work, movement and other activities stands out the most. An example of a task that is conducive to the use of the method of practical work, movement and other activities is a task in which the students create a landscape. The students are divided into groups. In groups, they imagine a landscape according to their preferences. They then use clay to form hills, plains, lakes, etc. When the clay is dry, they paint the landscape. They can also add other objects to the landscape, for example, houses and churches. Finally, they answer the question: 'Could landscapes be made with other materials?' (Šefer & Kumše, 2015, p. 69).

In Grade 2, the method of research dominates (53.73%). An example of a task that guides students to use the method of research is one in which students show the changes between day and night. For this experiment, they need a globe and a pocket torch. One student holds a lamp that is pointed at the globe to represent the sun. A second student rotates the globe on its axis. In this way, they illustrate the change between day and night (Grošelj and Ribič, 2013, p. 39). Another example of a task that guides students to use the method of research is a task in which students look for danger signs. They look for danger signs on products and explain them (Hergan et al., 2015, p. 44). A third example of a task that guides the use of the method of research is a task in which students investigate a domestic fridge. They look at and evaluate the foods that are the most and least abundant in the fridge (Krnel et al., 2016, p. 10).

In Grade 3, the method of research is also predominant (51.88%). An example of a task that guides the use of the method of research is a task in which students carry out an experiment. They place a fresh apple and a plastic jar on a windowsill. They observe them for 14 days to see what happens (Grošelj and Ribič, 2016, p. 70).

In terms of publishers, the method of research stands out for Publisher A (60.42%) as well as for Publisher C (59.38%). For Publisher B, none of the operational–practical methods stand out in Grade 3. In Publishing House D, however, the written composition method stands out (37.78%).

4.4 The results of the analysis of the relationships between the tasks oriented towards operational–practical methods and the global objectives

The most prevalent tasks among those guided by operational–practical methods in the Grade 1 textbooks are tasks that help students to achieve two different global objectives in the Substances thematic strand. These global objectives are: 'know that solids and liquids exist' and 'know how to use different materials (substances), tools and processing procedures and relate the properties of materials and processing methods: transform, cut, join, glue' (Primary school programme environmental studies. Curriculum, 2011, pp. 8–9). Both global objectives are met in 6.62% of tasks.

The most prevalent tasks among those guided by operational–practical methods in the Grade 2 textbooks are tasks that help students achieve two different global objectives in the Time thematic strand. These global objectives are: 'investigate, identify and explain events and changes in different seasons' and 'learn about the calendar' (Kolar et al., 2011, p. 7). Both global objectives are met in 5.88% of the tasks.

The most prevalent tasks among those guided by operational–practical methods in the Grade 3 textbooks are tasks that help students to achieve the global objective of the Living beings thematic strand. This is the global objective 'distinguish and describe living things and the environments in which they live and how recurring changes affect them (night–day, seasons)' (Primary school programme environmental studies. Curriculum, 2011, p.11). The global objective is met in 6.15% of the tasks.

5 Discussion

The research aimed to determine the tasks in textbooks for the subject of environmental studies that direct students towards operational–practical methods. We chose to analyse textbooks because textbooks are the most frequently chosen teaching material by teachers in the subject of environmental cognition (Filipčič, 2016).

The operational–practical methods we have analysed in the textbooks allow students to play an active role in the learning process. This approach is emphasised by many authors (Letina, 2016; Tomić, 2003; Valenčič Zuljan & Kalin, 2020). It is necessary to allow students to learn about their environment through practical activities (e.g., dressing, preparing food and drawing shadows) that require students to carry out certain procedures—observation, determining properties by experiments, sorting, arranging and communicating, predicting and measuring (Ivanuš Grmek et al., 2009).

The results show that depending on the grade, most of these tasks appear in the textbooks for Grade 3, followed by Grade 1 and then Grade 2. Among the recommendations on the selection of textbooks, workbooks and other learning materials given by the Institute of the Republic of Slovenia for Education (2022) is that the teacher should select textbooks and sets of learning materials that encourage

the active role of students (learning by discovery, problem-based learning, etc.). The data obtained were therefore also interpreted according by the publishing house to obtain information on the representation of such tasks in each publishing house. Overall, the largest number of tasks focusing on operational–practical methods is found in textbooks by publisher D, followed by textbooks by publisher C and then A, with the smallest number of such tasks found in textbooks by publisher B.

The tasks that focus on operational–practical methods have been grouped according to themes. The number of tasks in a thematic strand varies both by grade and by publisher. If we combine all the publishers of Grade 1, the tasks found in the Substances thematic strand stand out the most. In Grade 2, the largest number of such tasks is found in Time and in Grade 3, the largest number of such tasks is found in Space. Our analysis also uncovers potential areas for enhancement within the textbook content. Specifically, underrepresenting operational-practical tasks in certain thematic strands or grades suggests room for improvement. For instance, integrating more of these tasks in the 'Time' and 'Space' thematic strands across all grades could provide more balanced, comprehensive experiential learning opportunities.

We also looked at the representation of different types of operational–practical methods in the tasks. We classify the operational–practical methods as the method of research, the method of practical work, movement and other activities, the written composition method, the drawing based method and the game based method (Valenčič Zuljan & Kalin, 2020). If we combine all the first grade publishers, the method that stands out the most clearly is method of practical work, movement and other activities. In Grades 2 and 3, the method of research predominates. The exploration-oriented tasks carried out in Grade 1 are guided and then they gradually increase the student's own activity in planning experiments and investigations (Primary school programme Environmental studies. Curriculum, 2011). As the student's own activity increases, the number of tasks that focus on exploration consequently increase.

The methods we choose depend the most on the objectives. Objective factors in the choice of methods include the influence of educational goals and the educational process (Blažič et al., 2003). To gain insight into the global goals that are most prevalent in the tasks, we also analysed the representation of global goals in tasks

that focus on operational–practical methods. In each grade, a different global objective dominates these tasks. For example, in Grade 1, the tasks oriented towards the operational–practical methods in the textbooks are most dominated by tasks in which students pursue two different global objectives from the Substances thematic strand. These two global objectives are: 'know that solids and liquids exist' and 'know how to use different materials (substances), tools and processes, and relate the properties of materials and processes: transform, cut, join, glue' (Primary school programme environmental studies. Curriculum, 2011, pp. 8–-9). In Year 2, the most prevalent tasks are those in which students pursue two different global objectives from the Time thematic strand. These global objectives are: 'investigate, identify and explain events and changes in different seasons over time' and 'learn about the calendar' (Primary school programme environmental studies. Curriculum, 2011, p. 7). In Grade 3, the most predominant tasks are those in which students meet a global objective from the Living beings thematic strand. This is the global objective to 'distinguish and describe living things from the environments in which they live and how recurring changes affect them (night–-day, seasons)' (Primary school programme environmental studies. Curriculum, 2011, p. 11). By acknowledging and addressing these specific deficiencies in the representation of educational goals, teachers can create a more equitable and comprehensive educational experience that equips students with diverse skills and knowledge.

6 Conclusion

In conclusion, our findings show that the representation of tasks oriented towards operational–practical methods in textbooks varies widely by grade and publisher. The representation of researched tasks in certain grades suggests a potential disparity in students' experiential learning opportunities, which could influence their engagement and comprehension in environmental studies. If third-grade textbooks are rich in such tasks while first and second-grade materials are not, is possible that we are missing opportunities to foster early engagement and foundational understanding in younger students. Our findings can be compared with the study by Hus and Čagran (2009), who found that textbook sets emphasize traditional methods, such as explanation, discussion, demonstration and textbook work, while providing much less coverage of modern teaching methods, which according to the authors, mainly cover experimental and laboratory work and projects.

Moreover, the apparent variability in task distribution among publishers may lead to unequal learning experiences. Educators making textbook selections may need to consider these disparities critically.

The study provides more detailed information on the tasks that lead to operational–practical methods in textbooks for subject environmental studies. Curriculum developers and publishers should strive for a more balanced inclusion of operational-practical methods across all grades. This ensures that students at every educational stage have ample opportunities for active engagement and hands-on learning.

We conclude that there is still room for improvement and to enhance environmental studies education. It would be wise to refine textbook content to integrate comprehensive, interdisciplinary operational-practical methods, ensuring alignment with current pedagogical insights and societal needs for nurturing well-informed and actively engaged students.

Future research should explore the longitudinal impact of incorporating operational-practical methods in environmental studies textbooks on student engagement and learning outcomes, while also examining the variability of these methods across different educational contexts and cultures.

Additionally, expanding this research to include a variety of school subjects could provide valuable insights into the prevalence and effectiveness of operational-practical methods, fostering a more holistic understanding of active learning strategies in diverse school subject.

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