

TASKS IN NATURAL SCIENCE TEXTBOOKS

Olga Vránová

Abstract

This article contains results of the task evaluation in natural science textbooks. There were analysed ten textbooks of the Alter, Fortuna, Nová škola, Prodos and SPN publishing companies. The attention was paid to number, difficulty and diversity of tasks in each textbook. The difficulty of tasks was classified according to Tollingerová. The results showed – the difficulty of tasks were similar in all evaluated textbooks. The most frequent were tasks of simple cognitive level. Differences were obtained in number and diversity of tasks.

Key words

Natural science textbooks, task evaluation, task difficulty, task diversity

Abstrakt

Článek soustřeďuje výsledky rozboru úkolů v učebnicích přírodovědy. Předmětem hodnocení bylo deset učebnic přírodovědy nakladatelství Alter, Fortuna, Nová škola, Prodos a SPN. Hlavní pozornost byla věnovaná počtu, náročnosti a pestrosti úloh. Obtížnost úkolů byla klasifikována podle taxonomie Tollingerové. Bylo zjištěno, že náročnost úloh je podobná ve všech hodnocených učebnicích. Nejčastěji se vyskytovaly úkoly vyžadující k řešení pouze jednoduché myšlenkové operace. Studované učebnice se lišily počtem a rozmanitostí úkolů.

Klíčová slova

Učebnice přírodovědy, hodnocení úkolů, náročnost úkolů, rozmanitost úkolů

Introduction

The term task is very often used in psychological and pedagogical literature. It is very common used to mark different questions, instructions, examples, exercises, that serve to achieve the educational aim (Holoušová 1997, Průcha-Walterová-Mareš 1995, Mazáčová 2004). Educational tasks take an important part of a lesson and have different functions in it (for example revision and practising, fixing of obtained knowledge). Learning tasks are the most important

tools for a teacher to realize a feedback (Trna–Trnová 1998). Teachers obtain a value of knowledge and a level of acquire by pupils. According to a pedagogical practice is clear, that learning tasks should take part of all phases of educational process. They should form a spectrum of tasks to mobilize different parts of a pupil thinking, but our researchers show that it is not so very often (Čtrnáctová 1997, 2002, Mazáčová 2004, Ušáková 1994).

Material and methods

Actually, there are five publishing companies (Alter, Fortuna, Nová škola, Prodos, SPN) in the Czech Republic, producing textbooks for natural science teaching. I realized the task analysis in textbooks for fourth and fifth grade. Totally were examined five textbooks for fourth grade and five for fifth grades (the textbook of Alter publishing company has three volumes). The task analysis was concerned on their number, difficulty and diversity.

There are classifications according to Mareš (1980), Ušáková (1994) and Tollingerová (in Kalhous – Obst 2002). I used classification according to Tollingerová, because it is the most detailed. It contains 27 types of tasks, given in 5 groups according to their increased difficulty level. The easiest tasks belong to the first group, the most difficult ones take part of fifth group. Particular types of tasks are signed by means of decimal classification. Different kinds of tasks in each textbook were calculated in percentige. Results are written in graphs 1 and 2.

Results

The task analysis in textbooks for fourth grade

According to the task analysis in textbooks of five publishing companies were obtained these results. Tasks and questions were located in the text of subject matter. Only in the textbook of Prodos publishing company tasks were situated at the beginning of chapters or theme units.

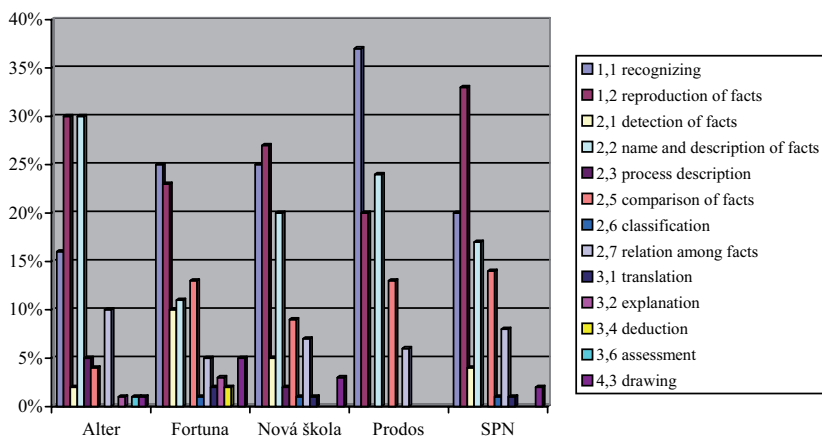
Number of tasks was different in different textbooks. A little tasks (117) were in the textbook of Prodos publishing company and the most tasks (630) were found in the textbook of Fortuna publishing company. So high count as in a textbook of Fortuna publishing company is characteristic for textbooks from sixth to ninth grades.

The easiest tasks were more frequent than difficult tasks in natural science textbooks for fourth grade. Different types of easy tasks were given into a group of tasks for memory (first group of tasks) and into a group required easy thought

operations with knowledge (second group of tasks). These tasks represented (depending on textbook) 88–100 % of all tasks (see graph 1). Difficult types of tasks were very rare, for example tasks for derivation, deduction or reason and creative thinking. Some difficult types of tasks (for example tasks for translation, explanation, deduction and assessment) were found in textbooks of Alter, Fortuna, Nová škola and SPN publishing companies. Their number was not higher than 3–12 % of all in a textbook (see graph 1).

There were found a differences between the diversity of tasks in different textbooks. The textbook of Fortuna publishing company had the greatest diversity of tasks. There were found 11 types of tasks. A textbook of Prodos publishing company had minimal types of tasks (5). According to the types of tasks, some of them had a high frequency of occurrence. They were tasks for recognizing (type 1,1), reproduction of facts and terms (type 1,2), name and description of facts (2,2), comparison of facts (type 2,5), relation among facts (type 2,7).

Graph 1 Task proportion in different types of tasks (natural science textbooks for 4th grade)



The task analysis in textbooks for fifth grade

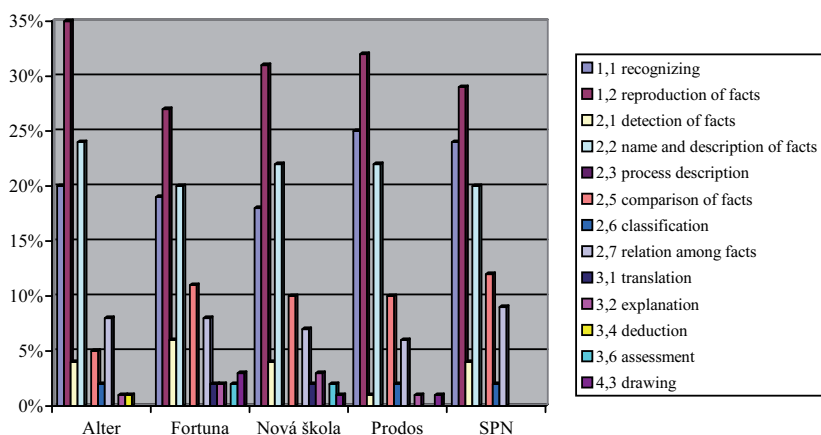
Similar results like in textbooks for fourth grade were obtained. Tasks and questions were located in the text of subject matter. Only in the textbook of Alter publishing company tasks were situated at the end of chapter or theme units.

Number of tasks was different in different textbooks. A little tasks (205) were in SPN publishing company and the most tasks (508) were found in the textbook of Fortuna publishing company.

The easiest tasks were more frequent than difficult tasks in natural science textbooks for fifth grade. Different types of easy tasks were given into a group of tasks for memory (first group of tasks) and into a group required easy thought operations with knowledge (second group of tasks). These tasks represented (depending on textbook) 91–100 % of all tasks (see graph 2). Difficult types of tasks were again very rare. Some difficult types of tasks (for example tasks for translation, explanation, deduction and assessment) were found in textbooks of Alter, Fortuna, Nová škola and Prodos publishing companies. Their number was not higher than 2–9 % of all in a textbook (see graph 2).

There were found a differences between the diversity of tasks in different textbooks. The textbooks of Fortuna and Nová škola publishing companies have the most diversity of tasks. There were found 10 types of tasks. A textbook of SPN publishing company had minimal types of tasks (7). According to the types of tasks, some of them had a high frequency of occurrence. They were the same tasks as in textbooks for fourth grade (tasks for recognizing, reproduction of facts and terms, name and description of facts, comparison of facts and relation among facts).

Graph 2 Task proportion in different type of tasks (natural science textbooks for 5th grade)



Conclusion

According to analysis of tasks it is possible to mention that the task difficulty is similar in all evaluated natural science textbooks. The most frequent tasks are for recognizing, reproduction of facts, name and description of facts and comparison of facts. In contrast, tasks for translation, explanation, deduction or reason and assessment are very rare. Task diversity is suitable for pupils of fourth and fifth grade of primary education.

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RNDr. Olga Vránová, Ph.D.
Department of biology,
Faculty of Education,
Palacký University, Olomouc
Purkrabská 2
771 40 Olomouc