WILLINGNESS OF STUDENTS IN QUALIFICATION STUDIES TO APPLY THEORETICAL REQUIREMENTS ACQUIRED THROUGH EDUCATION IN THEIR PRACTICE

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Abstract: The paper presents the results of the analysis of the work students studying in qualification education at the field of didactics of vocational subjects. The question of a person's willingness to act in accordance with the declared theoretical requirements, e.g. in the field of their professional focus, is one of the important prerequisites of critical thinking and its application in their actions. It concerns every person in connection with their critical thinking and especially teachers, as they are required to teach their students to think critically. The results of the study point to a low willingness to consistently apply theoretical principles – only in 38% of cases – to their practical activities. A positive step could be greater support for the formulation of the teaching intention in the lesson, through its direct orientation to the content of the curriculum in relation to the consistent formulation of specific objectives.

Keywords: critical thinking, willingness, teaching intention, teaching objectives, teacher's test

Introduction

The need to develop critical thinking in students is highly relevant in today's age of information overload. It is one of the key competencies of a person, yet in our country, its low level has been consistently demonstrated in several international tests. In Slovak State Educational Programmes, critical thinking is mentioned specifically in connection with digital and technological competencies. However, it is generally applied in the functioning of individuals in their professional and private lives. One of the prerequisites for the use of critical thinking is a person's willingness to act in accordance with the theoretical requirements they have acquired or to step outside their routine way of dealing with situations.

The aim of this paper is to present the results of an analysis of selected ongoing assignments completed by students within the framework of qualifying education, specifically in supplementary pedagogical studies. The analysis focuses on determining how students demonstrate the use of acquired knowledge in subsequent practical application. This involves a willingness to consistently use specific teaching objectives when creating test questions to verify the knowledge acquired from a thematic unit in the form of test tasks, which are to be part of a task bank to illustrate the process of compiling a teacher's test. The results obtained are evaluated quantitatively using simple statistics, and problematic solutions are analyzed by description.

1 Defining contexts in educational activities aimed at verifying the results achieved during education

The educational process is a purposeful activity that develops a person intellectually, emotionally, volitionally, and physically (1, p. 43). We define the content of the curriculum for the educational process using didactic analysis of the curriculum. One of its results is the formulation of specific teaching objectives (2). The concept of teaching objectives has been mapped in the work of several authors by Ištvan (1, p. 22-39), who gives the most common definition of an objective as "an ideal idea of what is to be achieved through educational activities" (1, p. 22). The effectiveness of the educational process can be determined by verifying the degree to which the set teaching objectives for a lesson or teaching unit, i.e., specific teaching objectives, have been achieved.

The results of educational activities can be demonstrated in writing, orally, or practically. In formal education, this is defined by the methodological guidelines for the assessment and classification of secondary school students (3, p 3). These are natural methods of assessment that can also be used in informal education. In any case, it is a comparison of the achieved state with the ideal idea of what the final state should be after the education has been completed, or with what is expected from the education.

1.1 Lifelong learning

The lifelong learning system under the Adult Education Act (292/2024) consists of formal and non-formal education and informal learning by the learner. Formal education is education and training in a school that is part of the network of schools and educational institutions of the Slovak Republic. It also includes study in a study program at a university. Education in an accredited educational program is also formal education under the provisions of this Act (4).

Informal learning is an educational process that takes place according to planned activities, outside of those that fall under formal education, for the purpose of acquiring, supplementing, expanding, or deepening qualifications, key competencies, or basic, digital, or green skills. In both formal and informal education, it is necessary to demonstrate the results achieved through educational activities.

1.2 Education to obtain the qualifications required to perform the work of a teaching employee

The Act on Pedagogical Employees and Professional Employees (138/2019) addresses, among other things, the issue of professional development (§ 40). As part of this, it also deals with the acquisition of education to meet the qualification requirements of pedagogical and professional employees, one of which is qualification education (§ 42). Its aim is to acquire education through which a pedagogical employee and professional employee at the relevant level of required education will acquire the qualification requirement for performing work activities in the relevant category and subcategory (§ 43); we will focus on the category of teacher and the subcategory of secondary school teacher (upper secondary level) (5). Such qualification education is supplementary pedagogical studies (§ 44) (6). As part of qualification education, it is also necessary to demonstrate the achieved results of educational activities.

In the case of the performance of the work of a pedagogical employee, the evaluation of the performance of pupils is an integral part of his work. The subject of the evaluation is the level of knowledge and skills, according to the currently valid curricula and educational standards (7, § 9), that the pupil has achieved through education (3, p. 2). According to the professional standard of a beginning pedagogical employee, a secondary school teacher must have the competence to "evaluate the course and results of the educational process and a beginning pedagogical employee is capable of evaluating the fulfillment of the objectives of the educational process" (5).

1.3 Demonstrating the achievement of educational outcomes

A common element of the above-mentioned processes is, among other things, the verification of acquired knowledge. In both cases, these are educational processes; their task is to provide participants with the opportunity to acquire new knowledge, skills, and habits. For education to be effective, it is necessary to have appropriately set goals, which the teaching is geared towards achieving (8, p. 52). Verifying acquired knowledge is a way of checking whether specific goals have been achieved in the relevant teaching units.

However, it is also important in this case study that participants in qualifying education (supplementary pedagogical studies) will

in future be compulsory to verify the results of their educational activities in the course of their professional work, whether teaching pupils in formal education or lecturing adults in lifelong learning.

1.4 The position of critical thinking in contemporary education

Critical thinking is one of the key competencies. It is essential to develop it across all levels of education. Although critical thinking is not directly mentioned in the list of key competences within the European Reference Framework (9), it is specifically included in the key competences in State Educational Programmes of the Slovak Republic. The wording depends on the effective date of the Slovak State Educational Programme. In their versions valid from September 1, 2013, to August 31, 2022, it is mentioned in connection with the ability to interactively use knowledge, information and communication technologies, and communicate in the mother tongue and foreign languages (10, p. 56). In the amendments to the Slovak State Education Programs through addenda, valid from September 1, 2022, it is stated in connection with digital competences (12, p. 5). The innovated Slovak State Education Programs, valid from September 1, 2025, also mentions critical thinking with digital competences (12, p. 7). In this work, we use the example of a specific State Education Program for the field of study and training 26 Electrical Engineering, while in the Slovak State Education Programs of other fields, the issue of critical thinking is addressed analogously.

The application of critical thinking is linked to the willingness of those involved to take appropriate action. Willingness is a variable that influences a person's level of critical thinking (13, p. 290).

2 Examining the application of students' acquired knowledge in supplementary pedagogical studies

Among other things, supplementary pedagogical studies provide students with an opportunity to acquire knowledge and skills for effective lesson planning. Emphasis is placed on working with specific teaching objectives, understanding their significance, learning how to formulate them correctly, and using them in the process of verifying the effectiveness of the teaching process.

Upon completion of courses in general pedagogical and psychological subjects in the first year of supplementary pedagogical studies, students are expected to understand the role and functions of the hierarchy of educational goals in the education system, can correctly formulate specific objectives for a lesson/unit, understands the role and correctly applies the taxonomy of cognitive specific objectives.

2.1 Subject and methodology of study

The subject of the study, the results of which we present here, is the identification of formulation of specific objectives in the creation of tasks for testing acquired knowledge for a bank of tasks for a potential teacher test. We were interested in whether, and how consistently, specific objectives were formulated by students in this context. The study was conducted in October and November 2025. There was analysed the ongoing assignments of second-year students in a supplementary pedagogical study program. We analysed 45 solutions twice, which were the output of two phases of teaching in a subject in the field of subject didactics for vocational subjects with a technical and economic focus at secondary vocational schools. The students of the supplementary pedagogical study program are graduates – they are in their subsequent studies, and full-time second-degree students – they are in their concurrent studies, university studies of a technical or economic focus in accordance with the conditions of approved study programs of Supplementary Pedagogical Studies at the Technical University of Košice. The study program is two years long, and the students in this case study already have completed the first year, which provides a theoretical pedagogical-psychological-didactic foundation for application in the subject didactics of professional subjects, which is part of the second-year curriculum.

The requirement for the preparation of the interim student work in the first phase was, for the selected vocational field of study and within it for the selected subject at a secondary vocational school in their field of university study at the engineering level, select a thematic unit and create six test questions to verify the knowledge and skills acquired by pupils in this thematic unit. Students were to build on theoretical foundations, the practical application of which was discussed many times during their studies in connection with solving various model situations and completing part of their teaching practice. The task served during the following block of teaching to illustrate the application of rules for creating teacher tests in vocational subjects. The emphasis was placed on the task of verifying the degree to which specific objectives had been achieved and on the method of implementation in a teacher test (14, p. 19), focusing on a cognitive, non-standardized, monothematic test verifying the results of teaching (15, p. 111), including the function of a specification table in construction of the test (15, p. 113). Students then had the option, but not the obligation, to revise their interim student work in the second stage based on the completed instructions and submit it for assessment within 12 days. In the Moodle information system, which is used to upload electronic versions of student work, it was specified that the revision of the solution consisted of adding specific objectives. The revised student solutions served as data for the evaluation of our study.

2.2 Results of the study

The students prepared their interim student work in the first stage in such a way that one of the results was the formulation of the required six test tasks/questions to verify the knowledge and skills acquired by the pupils from the selected thematic unit. Without a clearly expressed requirement to formulate specific objectives, the achievement of which would be verified by the test questions, none of the 45 students dealt with specific objectives in connection with the process of formulating test questions. Thus, without direct requirement, no student was neither able nor willing to apply the theoretical knowledge about the role of specific goals in the process of verifying the results of the teaching process, which was taught during the first year of supplementary pedagogical studies.

A simplified view of the results of the second stage of the study is illustrated in the last column of Table 1. It shows that even after completing a block of the instructions in which the role of specific objectives in the construction of a teacher's test was demonstrated, and despite the exact requirements in the task description in Moodle, only slightly more than a third of students formulated the corresponding testable cognitive specific objectives in the correct form, using active (action) verbs, with classification into the required taxonomy, in this case Niemierko's taxonomy. Almost a third of the solutions still did not include the required specific objectives.

Table 1: Quantitative expression of the occurrence of the monitored phenomenon – formulation of specific objectives in the creation of test tasks

Specific objectives formulated	Number of students in study					
	graduates – subsequent		full time – concurrent		in total	
	number	%	number	%	number	%
correctly	10	36	7	41	17	38
missing	11	39	2	12	13	29
incorrect. / incomplet.	7	25	8	47	15	33
In total	28	100	17	100	45	100

Source: Own research

Table 1 in the other columns provides a more detailed overview. It divides the responses into two categories: participants in

continuing education, i.e., graduates of higher education, and participants in concurrent education, i.e., full-time students in higher education. Students in concurrent education showed a greater willingness (approximately 15%) to accept the requirement to work with specific objectives in relation to the creation of test tasks.

A detailed analysis of the students' ongoing work yielded the following key findings: one student did not submit a revised solution, and their first version did not include specific objectives for the test questions they had created, and the solution also contained other fundamental errors. The most common errors in incorrectly or incompletely formulated cognitive specific objectives were:

- active verbs are not used correctly or consistently; expressions such as "understands", "remembers", "knows the principles", "comprehends", "knows the designation", "understands the function", "comprehends the function";
- cumulating of several specific objectives in such a way that one is stated with a more complicated expression; although all specific objectives identified as separate in this combined whole are at the same level of taxonomy;
- cumulating several specific objectives into the formulation of one specific objective, while the individual ones are at different levels of taxonomy, e.g. "name and describe", "can justify... and give specific examples...", "identify and list", "define the concept... and recognize its basic attributes...", "define... and explain their use", "can use – can explain". The required classification of specific objectives within the taxonomy is missing;
- excessive focus on test questions rather than to acquired knowledge when formulating specific objectives; e.g., part of the formulation of specific objectives was in the form: "will remember and fill in the missing term in the definition... ", "the pupil will select the correct factors..." (from a selection in a multiple-choice test question – one correct answer), "the pupil will correctly assign...";
- a tendency to formulate specific objectives tailored to test questions, (rather than the other way around, i.e., to create appropriate test tasks based on specific objectives); this situation probably arose among those students who were only interested in fulfilling the requirement to complete the second stage of the specified solution, without accepting the broader necessary context. The questions are supplemented (during the revision of the solution in the second stage) with analyses that contain specific objectives, but are formulated in an excessively extensive and descriptive manner, which greatly reduces the clarity of their expression;
- an analysis of the questions has been created, including their classification in the taxonomy, but specific objectives are not directly formulated – the analysis is less precise, less clear, and more difficult to directly orientate oneself in the problem;
- test questions are classified in the taxonomy without indication of the specific objectives they test;
- replacement of a specific objective directly with a test question.

In the event of incorrect formulation of specific objectives, mainly by combining several into one objective, a proposal is usually made to assign a number of points from a range, without perceiving the connection between the weight of valuation and the cognitive difficulty of the specific objective being verified.

Conclusion

The article presents the results of research based on the analysis of ongoing student assignments on the topic of creating tasks to verify acquired knowledge for a task bank to illustrate the process of compiling a teacher's test. The findings indicate that despite the opportunity to correct solutions that did not originally include specific objectives, especially cognitive ones, as required for the correct and effective formulation of test tasks to verify the knowledge acquired from a given subject area, the resulting solutions in the second phase are correct only in the case of 38% of students, and 29% of students did not show a willingness to include specific objectives in the recommended form in their solutions. 33% of students were unable to apply the theoretical rules for formulating specific objectives correctly, despite having completed the relevant training.

Enhanced support for the formulation of lesson intentions at the lesson level may constitute a step towards achieving positive outcomes for teachers by mediating between a direct orientation towards curriculum content and the systematic formulation of specific objectives.

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