

Student evaluation of teachers' work in project-based teaching in higher vocational education

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Abstract— In higher vocational education, teachers must regularly engage in critical self-reflection regarding their teaching practices. While self-assessment is important, relying solely on it can limit growth. Actively involving students in this evaluative process is not only beneficial but, in today's educational context, increasingly necessary. Students are in a unique position to provide relevant and practical feedback, as they directly experience the outcomes of teaching methods. Their input can reveal gaps or strengths that may not be apparent from the teacher's perspective alone. This paper introduces and tests a method for collecting structured student feedback on a specific aspect of project-based instruction. The survey gathered data on students' views, such as their satisfaction with the teacher's organizational skills and the ability to provide support in critical moments. Rather than viewing student feedback as a threat, teachers should approach it as an opportunity to adjust and strengthen their pedagogical approach. A transparent and open attitude toward such feedback not only contributes to professional development, but also helps to establish a credible and respected teaching identity — one aligned with the expectations and needs of today's learners trust and credibility among students.

Keywords— students, teacher, evaluation, feedback, project-based teaching

I. INTRODUCTION

Teachers hold a central role in driving educational change — a role that remains incomplete without openness to reflection and student perspective. To initiate these changes, they must first engage with contemporary trends and acquire the necessary knowledge and skills [1]. The learning paradigm has led to a change in the role of teachers in the learning process. Teachers are given the role of collaborators, partners, and mentors in the design of teaching activities that are largely based on students as the main actors. In the teaching process, students express their subject position through student evaluation of teaching [2]. The project method is a collaborative approach to learning with the help of teachers in which students acquire and apply the knowledge and skills needed to define and solve real-world problems, using a process of extended inquiry [3]. Sparks and Verner [4] describe the teacher as a cultural mediator and change agent, creator of educational programs and teaching strategies [5]. Although it originated a long time ago, project-based learning is now considered an innovative form of teaching because it changes the positions and roles of students and teachers in the teaching process, in which the teacher is no longer in the role of a lecturer, as he had in traditional teaching [6]. In project-based learning, the

teacher is a guide in activities that students carry out on their own. This helps to increase self-confidence and self-responsibility in students/pupils and helps them in independent learning, choosing and developing a learning style that suits them.

II. LITERATURE REVIEW

Considering the current developments in the world in all spheres of society, including education, the conclusion is that the role of not only the teacher but also the student is changing a lot in the process of project-based learning. According to Glasser, [7] in order to obtain quality education, the teacher should become a leader in the learning process. He must have the ability to adapt to each student, to seek their opinion and self-assessment, but also to provide a pleasant learning environment in which there is no pressure and coercion. Meleš and Stričević [8] state that a teacher who organizes teaching through project activities should be ready to accept all necessary deviations from the curriculum and accept a new form of teaching that is different but also very demanding, more flexible in organizing the time needed for work, in applying different teaching methods that can lead to an uncertain outcome of the project. Fabijanić [9] believes that in project-based teaching, the teacher's role is to set goals and tasks for selected projects, then to encourage students to engage in creative research, to help them develop a project, to supervise and guide the planning process without giving advice and instructions, to suggest content and methods of work that follow current contemporary developments. The teacher should help in the socialization of students. It is especially important that, together with students, he critically evaluates the results of both the students' work and his work. Some of the key roles of the teacher in project-based teaching include: - Leader: the leader (facilitator) is a teacher who is an expert who provides advice, encourages, enables, expresses students' feelings, leads a discussion on alternative solutions to the situation, provides support, etc. [10]. He guides the process or activity, especially by encouraging individuals to find their solutions, clarifying doubts, motivating working groups and helping to solve various problems related to the task or problems that arise among team members or among team members [11], fostering a positive atmosphere and thus facilitating communication, interaction [12] in the teacher-student and student-student, student-group relationship. He acts as a

facilitator, guiding and supporting students as they work on their projects, providing resources, answering questions and being ready to share feedback that would be helpful to students [6]. The teacher encourages his students to work on the project collectively and cooperatively [3].

-Mentor: The teacher, as a mentor offers guidance and advice to students so that they can identify and overcome any challenges they may face, provides support and encouragement as needed, and provides support in overcoming stressful situations during work. During mentoring, the teacher achieves his professional development, while at the same time, in addition to his development, the learning and improvement of students are also achieved [13].

-Evaluator: The teacher-evaluator should be trained and have the necessary experience and education to work in teaching be able to assess the progress of students, providing feedback and evaluations that help students understand their strengths and weaknesses and to understand what they have learned and what they need to work on next [6]. In structured observation, evaluators report on observable behavior, but always assess from their own and unique perspective [14].

-Resource provider: The teacher provides students with the necessary physical and material resources needed to complete a project, such as books, equipment, and technology, so that students can access the information and tools they need to achieve their goals [6].

-Cooper: The teacher is a collaborator or facilitator in the knowledge transfer process. He works closely with students to develop and implement project plans and goals. He draws students' attention to the fact that their work contribution is part of the project being carried out and that they should therefore make their full contribution to achieving the goal [6].

-Motivator who encourages: An incentive is an aid or support in learning. For someone to undertake a task or action, they must be motivated. Motives are the driving forces of human activities that encourage an individual to strive towards a set goal or achieve desired results [15]. The teacher also encourages students to take responsibility for their learning, providing them with the support and guidance needed to achieve their desired goals. He helps them develop self-motivation, self-direction, and self-assessment skills [6].

III. RESEARCH METHODOLOGY

In the work Project-Based Learning in Vocational Studies by Mijić and Čebić [19], an example of a possible organization of the course of project teaching in the subject Computer Graphics, area of raster techniques, is given. Using this example, project teaching was organized and conducted for students of IT technologies in higher

In order for a teacher to fulfill his role, he needs to have good didactic and methodological knowledge, an understanding of modern teaching strategies, and developed communication and organizational skills that are important for collaborative (cooperative) learning [16], where students approach a problem together, explore a common topic, or build on shared knowledge with the aim of creating new ideas, new combinations, or unique innovations. In this way, students learn from each other, transferring their own experiences and knowledge, ensuring progress for everyone [9]. Project-based learning, as a didactic teaching system, is characterized by the possibility of taking place according to a project that allows for self-organized and self-responsible teaching in which the independent, individual work of students relies on the help of their colleagues and teachers. Available sources explain project-based teaching as a form of teaching organization that can be declared as an appropriate self-organization that allows the student to be independent in their learning, although it is impossible to expect it to be some ideal and complete independence. Therefore, project-based teaching should be understood as a joint effort made by students and the teacher to connect learning and work in the best possible way that will help them to consider the assigned task together to reach the desired result at the end of the work [17]. Students' prior knowledge in computer science, gained through studying subjects such as Computer Graphics and digital image processing (raster techniques) in the second year, allows the teacher to tailor the teaching content more effectively. This not only facilitates the management of project-based learning but also supports students in developing broader competencies essential for their overall education. This includes organizational skills, communication skills, creativity, determination and teamwork, and then responsibility is developed, where weaker students work more intensively and more indifferent students work more actively [18].

vocational education. From the implemented and conducted teaching, significant feedback was obtained from students, which was collected by surveying students after the end of the teaching. Students had the opportunity to evaluate the applied, organized form of work of teachers in project teaching. The evaluation was expressed

through the assessment of students' satisfaction with the organizational skills shown by the teacher during the project teaching and through his willingness to help in crises. The groups of students were heterogeneous due to the possibility of creative ideas as well as to establish better communication in the male-female relationship, because they can be a problem. This type of work has several advantages: it does not require a wide selection of tasks, it develops a competitive spirit, especially if project-based teaching is being carried out for the first time. The advantage for the teacher is that such teaching is easier to organize, implement and control, and it also provides an opportunity for students to get used to project work [20]. Students of vocational studies, Information Technologies participated in the research. There were 16 of them in total, divided into four groups of four students each.

IV. RESULTS AND DISCUSSION

In today's higher education, students are expected to engage in a certain academic activity aimed at organization and autonomy in learning. To actively participate in the assessment process — including self-assessment, peer assessment, and teacher assessment — students must first develop specific evaluative skills. However, involving students in such processes remains a challenging task. The difficulties that arise are mainly related to their low motivation. There is a prevailing opinion among students that they do not possess the necessary assessment competencies [21]. For these reasons, in this paper, students were given criteria for assessing teachers' work, and the assessment was anonymous. They were asked to perform the assessment as objectively as possible. They were told that the results obtained would be used to obtain information that the teacher would use to critically examine their teaching practice and see in which direction, how, and in which segments to improve and advance it.

The inclusion of students in the evaluation process is not carried to form a real grade [22], because they do not have the experience for such a procedure. The purpose is to gradually develop the students' ability to evaluate and self-assess. Therefore, it is necessary to approach evaluation procedures seriously [22] and, through learning about evaluation, students learn to respect certain regulations and norms of evaluation that are set as standards for evaluation. Student evaluation of the teacher's work contributes to the formation of a critical attitude of students towards the work invested by the teacher, towards his commitment during work and his willingness to come to help, if needed. A critical attitude will later enable students to become self-confident and secure in what they do in their professional work, strengthening team spirit. In this paper students evaluated

the work of teachers, according to the previously established criteria (Table I). The results of the evaluation of teachers' work are presented in Table I. Based on the results from Table 1, it can be seen that all surveyed students fully agree with the statements that: "The teacher provides the opportunity to ask questions, supports discussion and provides comments"; "The teacher is available to students for consultations where they can receive useful guidelines and the necessary answers to the questions asked" and "The teacher shows respect for students". The lowest level of agreement (I mostly agree) was observed with the statement "Working on solving a project task provides the opportunity to express initiative, critical thinking and creativity".

Table I. Evaluation of the teacher's work and his ability to help at critical moments in the project assignment (by students)

Questions	Arithmetic mean	Standard deviation
Clearly and understandably presented problem task,	4,615	0,650
A clearly and understandably stated project objective,	4,538	0,660
A clearly and understandably presented work plan for the project assignment,	4,846	0,376
The project task is well designed and prepared,	4,615	0,650
Project activities are adequately planned within the stipulated timeframe,	4,769	0,439
Project activities are well conceived and implemented,	4,538	0,660
Literature and necessary IT support are provided,	4,462	0,660
Instructions and explanations are given,	4,692	0,630
The teacher highlights the key concepts to be learned,	4,846	0,376
The work methods are effective about the desired goal,	4,462	0,660
The teacher points out the possibilities for achieving the set goal,	4,846	0,555
The pace of work is appropriate and adapted to the needs of all students,	4,615	0,650
The teacher provides the opportunity to ask questions, supports discussion and provides comments,	5,000	0,000
The teacher provides the opportunity to choose	4,692	0,480
The teacher encourages students to talk to each other and exchange opinions to achieve the set goal together,	4,692	0,630
The teacher directs the interaction among students; the	4,615	0,650

interaction is for the purpose of learning (uses questions, ideas, comments for project work),		
Working on a project assignment provides an opportunity to exercise initiative, critical thinking, and creativity.	4,308	0,855
The teacher is available to students for consultations where they can receive useful guidance and necessary answers to questions,	5,000	0,000
The teacher devotes enough time to each student and uses it effectively,	4,769	0,439
There was good two-way communication between teacher and student,	4,615	0,650
The teacher's assessment of the project assignment corresponds to my engagement and the knowledge I have achieved,	4,538	0,660
The teacher shows respect for the students,	5,000	0,000
The teacher encourages understanding and empathy,	4,923	0,277
General assessment of the overall work and organizational skills of the teacher on the project assignment.	4,769	0,439

**5-excellent (I completely agree); 4-very good (I mostly agree); 3-good (I am undecided); 2-sufficient (I mostly disagree); 1-unsatisfactory (I completely disagree)*

Based on the results, it can be said that students are largely satisfied with the work of the teacher and his organizational skills and willingness to help in critical moments, as shown by the overall score of 4.769 (standard deviation 0.439). Slight deviations (mostly agree) occur with the statements: "Work methods are effective about the desired goal" (4.462) and "Literature and necessary IT support are provided" (4.462). The results indicate that there is room for improvement in these segments in the future. Such results may also indicate the possibility of students becoming attached to the teacher's personality, which can give a negative but also a positive image of the teacher's work. The lowest student score, 4.308 (standard deviation 0.855), was given to the statement "Working on solving a project task provides an opportunity to demonstrate initiative, critical thinking, and creativity." A project task is a joint task of students, the solution of which requires the application of all previously acquired knowledge. Students solve the task together, which then demonstrates the practical application of what has been learned. Group assignments for students are more challenging and interesting because, in addition to learning, students socialize and exchange opinions, social skills are formed, students research and

express themselves creatively by finding solutions that they later present to others, their colleagues, teachers... For a project assignment to be successfully solved, the teacher must present it to the students clearly and understandably and state the goal of the project, clearly and understandably present the work plan, well-conceive and prepare the assignment, adequately, within the stipulated time frame, plan all necessary project activities and conceptualize and implement them well, provide material and technical support by obtaining literature and IT resources, and clearly present instructions for work, highlighting key concepts that need to be adopted. The teacher directs the pace of work so that the assignment is completed on time. He is the one who is available for specific questions from students and provides useful comments if necessary. Encourages students to engage in mutual discussions, exchange ideas and views, directs student interactions that are in the function of learning, leaving students the opportunity to choose, exercise initiative, critical thinking and creativity. The teacher shows respect for students, devotes sufficient time to them and, through good two-way communication with them, provides useful guidelines and necessary answers to questions. Achieves understanding and empathy in the group.

In higher vocational education in Serbia, students need to build their value system, way of thinking, to form their attitudes to actively engage in the educational process and form a basis for acquiring and shaping their own knowledge and skills, thereby taking responsibility for their education. The content of the subjects in the information technology study program, in addition to providing scientific and professional knowledge that a professional information technology engineer should possess, also influences the formation and development of the student's personality, which is reflected in the expression of their knowledge, attitudes, decisions and own values. Successful mastery of information content "enables the affirmation of the student's subjectivity, confirmation of the autonomy of his being, but also interaction, i.e. , cooperation with others" [23]. Teaching in information technology subjects "should, among other things, encourage the willing and conscious activity of students" [23]. Successful work on solving a project task is possible if each student is given the opportunity and if working conditions are created for taking the initiative to positively solve the project task through the manifestation of critical thinking and creativity. The concepts of initiative, cooperation and creativity, in the context of information technology subjects, refer to the desire to maintain a certain achieved level in the learning process, using a variety of teaching activities that will contribute to the functionality of student achievements that will contribute to the achievement of the set goal based on the

overall acquired knowledge, skills and formed attitudes. The slightly lower student score (4.308) for the statement "Working on solving a project task provides an opportunity to demonstrate initiative, critical thinking and creativity" may be related to the fact that most lectures at higher education institutions are conducted traditionally, ex cathedra (Latin eh cathedra), where creative work is largely neglected, almost any initiative of students is hindered, so that their role is that of passive participants in the learning process, where little attention is paid to the acquisition of the necessary competencies. For the role of students as passive participants to change to the role of active participants, it is necessary to educate a young cadre of teachers who have the courage and knowledge to accept new trends and new technologies, always ready for the challenges brought by the new era, ready for lifelong learning and improvement. In Serbia, teachers must be educated at teacher training colleges that, among other things, will be methodically and didactically literate.

Research in the field of educational psychology is focused on studying the cognitive aspects of learning, teaching, and interaction between students and teachers. Numerous studies have shown that the quality of student-teacher interaction, which implies a good socio-emotional state of students at school, is of essential importance for adaptation to school work, learning, and school achievement. The attachment of students and teachers, as the basis of their socio-emotional interaction, tends to stimulate learning and development [24].

V. CONCLUSION

The aim of this research was to encourage students to evaluate specific aspects of the teacher's work — particularly organizational skills and responsiveness in challenging situations — within a project-based learning environment. Based on clearly defined criteria, students provided feedback through a structured survey. This feedback offers valuable insight that teachers can use to reflect on and improve their practice.

Student perspectives serve not only as a mirror of current teaching effectiveness but also as a catalyst for change, prompting teachers to reevaluate their methods, priorities, and responsiveness to both positive and critical input. Thoughtful integration of such feedback can support the development of a teacher's professional identity and reputation while strengthening their role as competent and credible partners in the learning process.

Especially for early-career educators, student feedback provides a meaningful basis for refining their teaching strategies, improving time management, and enhancing their ability to plan, organize, and assess learning outcomes in a modern educational context.

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