TEACHERS' USE OF PROJECT-BASED LEARNING IN PRIMARY EDUCATION: THE ROLE OF PROFESSIONAL TRAINING AND INSTITUTIONAL SUPPORT

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Abstract

Project-based learning (PBL) is widely promoted as a student-centred approach, yet its implementation depends on teachers' professional preparation and the institutional conditions within schools. This study examined the relationships among PBL-related professional training, frequency of PBL use, implementation challenges, perceived need for institutional support, and school leadership support among primary-school teachers in Ferizaj, Kosovo. A quantitative, cross-sectional correlational design was used, and the study involved 156 teachers from six public primary schools in the Municipality of Ferizaj. Data were collected through a structured researcher-developed questionnaire administered through Google Forms and paper format. Descriptive statistics and Spearman's rank-order correlations were used to analyse the data. The findings showed that 44.2% of teachers reported using project-based tasks often or always, while 49.4% reported having received no PBL-specific professional training. Implementation challenges were rated as substantial by 73.1% of respondents, and 89.1% agreed or strongly agreed that greater institutional support was needed. PBL-related professional training was positively associated with PBL use frequency ($\rho = .365$, $p < .001$), while implementation challenges were positively associated with the perceived need for institutional support ($\rho = .440$, $p < .001$). School leadership support was negatively associated with the need for additional institutional support ($\rho = -.221$, $p = .006$). The findings suggest that sustainable PBL implementation in primary education is associated with both teachers' professional preparation and supportive school-level conditions.

Keywords: project-based learning; professional training; institutional support; school leadership; primary education; teachers

1. Introduction

Project-based learning (PBL) has become an increasingly important student-centred approach in contemporary education because it engages learners in meaningful tasks that require research, collaboration, problem-solving, and reflection. Rather than receiving knowledge only through direct instruction, students are encouraged to participate actively in the learning process by investigating authentic questions and developing concrete products or solutions. Previous research has highlighted the potential of PBL to support a more in-depth learning and the development of competencies required in contemporary educational environments (Bell, 2010; Kokotsaki et al., 2016; Chen & Yang, 2019).

However, the successful implementation of PBL depends not only on the characteristics of the method itself but also on teachers' capacity to plan, organize, and manage project-based activities. Teachers are expected to structure learning tasks, facilitate collaboration, monitor students' progress, and assess both the learning process and its outcomes. These responsibilities can make PBL demanding, particularly when teachers have limited experience or insufficient preparation. Research has therefore emphasized professional development as an important factor in teachers' ability and willingness to implement PBL effectively (Farrow et al., 2022; Yang et al., 2021).

Moreover, institutional conditions also play a significant role in determining the effectiveness of project-based learning in the classroom. Access to appropriate resources, sufficient time, professional support, and encouragement from school leadership can facilitate the implementation of project-based activities, whereas their absence may represent significant

barriers. Previous studies have shown that teachers' attitudes and practices related to PBL are influenced by training opportunities, available resources, and social and organizational support within schools (Cai et al., 2023). In the Kosovo educational context, teacher professional development is also considered an important component of educational improvement, although its effectiveness depends on its relevance to teachers' practical needs (Krasniqi, 2022).

Within this context, the present study examines the relationships among teachers' PBL-related professional training, frequency of PBL use, implementation challenges, perceived need for institutional support, and the input of school leadership. The study was conducted with primary-school teachers from six public schools in the Municipality of Ferizaj, Kosovo. By focusing on teachers' professional preparation and institutional conditions, the study seeks to contribute to a better understanding of the factors associated with the implementation of project-based learning in primary education.

The following hypotheses were examined:

H1: Higher levels of professional training related to PBL are positively associated with more frequent use of project-based tasks.

H2: Greater challenges in implementing PBL are positively associated with a greater perceived need for institutional support.

H3: Greater support from school leadership is associated with a lower perceived need for additional institutional support.

2. Theoretical Background

2.1 Project-based learning in primary education

Project-based learning is an active and student-centred instructional approach in which learners acquire knowledge and skills through sustained engagement with meaningful questions, problems, or tasks. PBL commonly incorporates inquiry, collaboration, student autonomy, communication, reflection, and the production of a tangible outcome. These characteristics distinguish it from short classroom activities because projects generally require students to integrate knowledge and skills over an extended learning process (Kokotsaki et al., 2016; Markula & Aksela, 2022).

In primary education, PBL can provide opportunities for students to connect academic content with practical and authentic situations. Through project activities, learners may be required to plan, investigate, communicate, collaborate with peers, and evaluate possible solutions. Such experiences can make learning more meaningful and can contribute to the development of broader competencies alongside subject knowledge (Bell, 2010; Chen & Yang, 2019).

2.2 Professional training and PBL implementation

The teacher plays a central role in the successful implementation of PBL. Unlike more teacher-directed approaches, project-based instruction requires teachers to design appropriate tasks, organize learning processes, guide student inquiry, facilitate group work, and apply suitable assessment strategies. Consequently, effective implementation requires both pedagogical knowledge and practical experience with the PBL approach.

Professional development can help teachers develop these competencies and increase their confidence in applying project-based methods. Farrow et al. (2022) reported associations between teachers' prior professional development and the enactment of PBL practices, while Yang et al. (2021) emphasized the importance of teachers' learning experiences in developing the knowledge and skills necessary for PBL implementation. More recent research has similarly shown that teachers' competency development in PBL is shaped by both barriers and

facilitating conditions related to professional preparation and implementation support (Li et al., 2026).
Accordingly, limited access to specialized training may restrict the extent to which teachers can use project-based learning consistently and effectively. Professional development should therefore move beyond general theoretical instruction and include practical opportunities for planning projects, managing classroom activities, assessing project work, and reflecting on implementation.

2.3 Challenges in PBL implementation

Although PBL offers important pedagogical opportunities, its implementation can also be demanding. Teachers may experience difficulties related to available resources, time, classroom organization, assessment, and their own level of experience. These challenges can be particularly relevant in primary education, where teachers must adapt project activities to students' developmental level while simultaneously meeting curriculum requirements.
Furthermore, implementation difficulties should not necessarily be interpreted only as individual teacher weaknesses. They may also reflect broader organizational and institutional conditions within schools. When appropriate resources, professional guidance, and opportunities for collaboration are limited, teachers may find it more difficult to integrate PBL into regular classroom practice. Consequently, examining perceived challenges together with the need for institutional support provides a broader understanding of the conditions surrounding PBL implementation.

2.4 Institutional and school leadership support

The institutional environment can play an important role in supporting innovative teaching practices. School leadership may facilitate PBL implementation by encouraging professional learning, supporting teacher collaboration, allocating resources, providing organizational flexibility, and promoting an environment in which teachers feel able to experiment with new instructional approaches.
Cai et al. (2023) identified factors such as training, resources, time, and social support as relevant to teachers' attitudes toward PBL. From this perspective, school leadership support can be viewed as part of the broader institutional framework that enables teachers to implement project-based activities more effectively. Where such support is insufficient, teachers may perceive a stronger need for additional institutional assistance.
Therefore, professional development and institutional support should not be considered independently. Effective and sustainable implementation of PBL is more likely when teachers possess the necessary professional competencies and work within a school environment that provides adequate resources, encouragement, and organizational support.

3. Methodology

3.1 Research design

This study involves a quantitative, cross-sectional correlational research design. The purpose was to examine relationships among teachers' professional training related to project-based learning, frequency of PBL use, implementation challenges, perceived need for institutional support, and support received from school leadership.

The study focused exclusively on teachers' responses. Since no variables were experimentally manipulated and the data were collected at one point in time, the analyses were designed to identify statistical associations rather than causal relationships.

3.2 Participants and research setting

The research was conducted in six public primary schools in the Municipality of Ferizaj, Kosovo. The final sample consisted of **156 primary-school teachers** teaching Grades I–V.
A non-probability sampling approach was used within the selected schools. The participants varied in age, teaching experience, and grade level taught. Of the 156 respondents, **66 teachers (42.3%)** completed the questionnaire through Google Forms, while **90 teachers (57.7%)** submitted their responses on paper.

3.3 Research instrument

Data were collected using a structured, researcher-developed questionnaire based on the instrument used in Dullovi's (2025) master's thesis on project-based learning in primary education. The questionnaire included demographic questions and 11 substantive items concerning the use of project-based tasks, professional preparation, perceived effects of PBL, implementation challenges, and institutional support.
For the purposes of the present study, five variables were selected: **frequency of PBL use, PBL-related professional training, implementation challenges, need for institutional support, and school leadership support**.
The questionnaire used ordered response categories with four- or five-point scales, depending on the item. Because the focal variables were represented by individual ordinal items rather than multi-item scales, internal consistency coefficients such as Cronbach's alpha were not calculated for these measures.

3.4 Data collection procedure

The questionnaire was administered in two formats. A total of 66 responses were collected electronically through Google Forms and 90 responses were collected using paper questionnaires. The same coding structure was applied to both administration formats, and a source variable was retained in the dataset to distinguish electronic from paper responses.
The analytical dataset contained no personally identifying information. Responses from the two administration modes were combined for the primary analyses, while additional analyses were conducted separately by questionnaire mode as a sensitivity check.

3.5 Data analysis

The data were analyzed using IBM SPSS Statistics. Descriptive statistics were used to summarize participant characteristics and the distribution of the focal study variables. Frequencies and percentages were calculated for categorical responses, while medians and quartiles were reported for the ordinal variables.
Spearman's rank-order correlation coefficient was used to examine the hypothesized relationships because the principal study variables were measured on ordinal response scales. All significance tests were two-tailed, with the statistical significance level set at $\mathbf{p < .05}$.
Three primary relationships were tested: the association between PBL-related professional training and PBL use frequency; the association between implementation challenges and

perceived need for institutional support; and the association between school leadership support and perceived need for additional institutional support.
As a sensitivity analysis, the Spearman correlations were also examined separately for respondents completing the questionnaire through Google Forms and those completing the paper questionnaire. These analyses were used to assess whether the principal patterns were consistent across the two modes of administration rather than to estimate causal mode effects.

3.6 Methodological limitations

Several methodological limitations should be acknowledged. The cross-sectional correlational design does not permit causal conclusions about the relationships among the variables. In addition, the study was conducted in six public schools within a single municipality and used a non-probability sample, which limits the generalizability of the findings to the broader population of primary-school teachers in Kosovo.
The findings were based on self-reported responses and may therefore be influenced by participants' perceptions and response tendencies. Furthermore, the focal constructs in this study were represented by individual questionnaire items rather than standardized multi-item scales. These considerations should be taken into account when interpreting the results.

4. Results

Descriptive analyses were first conducted to characterize the sample and the focal study variables. Spearman's rank-order correlations were subsequently used to test the hypothesized relationships, followed by sensitivity analyses according to questionnaire administration mode.

Table 1. *Characteristics of the teacher sample (N = 156)*

Characteristic	**Category**	**n**	**%**
Gender	Male	8	5.1
	Female	148	94.9
Age	Under 30	27	17.3
	31–40	61	39.1
	41–50	40	25.6
	Over 50	28	17.9
Teaching experience	0–5 years	48	30.8
	6–10 years	37	23.7
	11–15 years	22	14.1
	Over 15 years	49	31.4
Grade currently taught	Grade I	39	25.0
	Grade II	24	15.4
	Grade III	28	17.9
	Grade IV	24	15.4
	Grade V	41	26.3
Questionnaire mode	Google Forms	66	42.3
	Paper questionnaire	90	57.7

Table 1 presents the demographic characteristics of the participating teachers. The sample consisted of 156 primary-school teachers and was predominantly female (94.9%). The largest age group was 31–40 years (39.1%), followed by teachers aged 41–50 years (25.6%). In terms

of teaching experience, 31.4% had more than 15 years of experience, while 30.8% had between 0 and 5 years. Teachers from all five primary grades were represented, with the largest proportions teaching Grade V (26.3%) and Grade I (25.0%). Regarding questionnaire administration, 57.7% submitted their answers on paper and 42.3% responded through Google Forms.

Table 2. *Distribution of the focal PBL variables (N = 156)*

Variable	**1, n (%)**	**2, n (%)**	**3, n (%)**	**4, n (%)**	**5, n (%)**	**Median (Q1–Q3)**
PBL use frequency	5 (3.2)	16 (10.3)	66 (42.3)	51 (32.7)	18 (11.5)	3 (3–4)
PBL-related professional training	77 (49.4)	36 (23.1)	19 (12.2)	22 (14.1)	2 (1.3)	2 (1–3)
Implementation challenges	4 (2.6)	38 (24.4)	69 (44.2)	45 (28.8)	—	3 (2–4)
Need for institutional support	1 (0.6)	2 (1.3)	14 (9.0)	50 (32.1)	89 (57.1)	5 (4–5)
School leadership support	32 (20.5)	50 (32.1)	32 (20.5)	23 (14.7)	19 (12.2)	2 (2–4)

Note. PBL use frequency: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always. PBL-related professional training: 1 = No training, 2 = Basic training, 3 = Moderate training, 4 = Several advanced trainings, 5 = Continuous specialized training. Implementation challenges: 1 = Not true at all, 2 = Partly true, 3 = Very true, 4 = Extremely true. Need for institutional support: 1 = Strongly disagree, 2 = Disagree, 3 = Partly agree, 4 = Agree, 5 = Strongly agree. School leadership support: 1 = Not at all, 2 = Sometimes, 3 = Several times, 4 = Regularly, 5 = Always.

Table 2 shows the distribution of responses across the five focal variables. Project-based tasks were used often or always by 44.2% of the teachers, while 42.3% reported using them sometimes. Despite this level of implementation, almost half of the respondents (49.4%) reported having received no professional training specifically related to PBL. Implementation difficulties were also common, with 73.1% of teachers rating challenges related to limited resources or experience as very or extremely true. The strongest pattern concerned institutional support: 89.1% of respondents agreed or strongly agreed that greater institutional support was needed for effective project implementation, and the median response was 5 (Q1–Q3 = 4–5). In contrast, support from school leadership was less consistently reported, with 52.6% indicating that such support was not received at all or only sometimes.

Table 3. *Spearman correlations among the focal study variables (N = 156)*

Variable	**1**	**2**	**3**	**4**	**5**
1. PBL use frequency	—				
2. PBL-related professional training	.365***	—			
3. Implementation challenges	−.025	−.032	—		
4. Need for institutional support	.013	−.097	.440***	—	
5. School leadership support	.158*	.312***	−.090	−.221**	—

*Note: Values are Spearman's rank-order correlation coefficients (ρ). * p < .05; ** p < .01; *** p < .001. All tests were two-tailed.*

Table 3 presents the Spearman rank-order correlations among the five focal study variables. The first hypothesis was supported: PBL-related professional training was positively associated with the frequency of using project-based tasks ($\rho = .365$, $p < .001$), indicating that teachers reporting higher levels of professional training also tended to report more frequent use of PBL. The second hypothesis was also supported. Implementation challenges showed a moderate positive association with the perceived need for institutional support ($\rho = .440$, $p < .001$), suggesting that teachers who experienced greater difficulties related to resources or experience also expressed a stronger need for institutional assistance. The third hypothesis was supported as well: school leadership support was negatively associated with the perceived need for additional institutional support ($\rho = -.221$, $p = .006$). In addition, two exploratory relationships were statistically significant: school leadership support was positively associated with PBL use frequency ($\rho = .158$, $p = .049$) and with PBL-related professional training ($\rho = .312$, $p < .001$). The remaining correlations were not statistically significant.

Sensitivity analyses conducted separately for Google Forms and paper respondents showed that the three primary associations remained in the same direction in both administration groups. The relationship between professional training and PBL use was $\rho = .375$ ($p = .002$) for Google Forms and $\rho = .363$ ($p < .001$) for paper questionnaires. The relationship between implementation challenges and need for institutional support was $\rho = .508$ ($p < .001$) and $\rho = .344$ ($p = .001$), respectively. School leadership support was negatively associated with the need for additional institutional support in both groups, $\rho = -.300$ ($p = .014$) for Google Forms and $\rho = -.292$ ($p = .005$) for paper questionnaires. These results indicate that the main patterns were not confined to a single mode of questionnaire administration.

5. Discussion

The findings of this study highlight the importance of both professional preparation and institutional conditions for the implementation of project-based learning in primary education. Although project-based tasks were used often or always by 44.2% of the participating teachers, almost half of the respondents reported having received no PBL-specific professional training. This discrepancy suggests that teachers may be implementing project-based activities despite limited formal preparation, rather than as a result of systematic professional development. The positive association between PBL-related professional training and frequency of PBL use ($\rho = .365$, $p < .001$) supports the first hypothesis and indicates that teachers with greater exposure to relevant training tend to use project-based tasks more frequently. This finding is consistent with Farrow et al. (2022), who found that prior professional development was associated with stronger enactment of several PBL practices, and with research emphasizing the importance of targeted preparation for teachers who are expected to plan and implement PBL effectively.

This result is particularly relevant in the Kosovo educational context. Krasniqi (2022) found that training sessions and workshops represent the most frequently used forms of teacher professional development in Kosovo, while also emphasizing that their effectiveness depends on alignment with teachers' professional needs and experience. The present findings therefore suggest that increasing the number of training opportunities alone may not be sufficient. Professional development related to PBL should be practical, sustained, and closely connected to classroom implementation, including project planning, classroom management, assessment, and the effective use of available resources.

The second hypothesis was also supported. Teachers who reported greater challenges in implementing project-based tasks expressed a stronger need for institutional support ($\rho = .440$, $p < .001$). This relationship is consistent with the descriptive findings, as 73.1% of respondents reported substantial implementation challenges and 89.1% agreed or strongly agreed that greater institutional support was needed. These findings indicate that difficulties related to

resources and experience should not be viewed solely as individual teacher limitations. Rather, these difficulties appear to be associated with broader support conditions within the school. Similar conclusions were reported by Cai et al. (2023), whose study of elementary-school teachers identified training, social support, resources, and available time as important factors associated with teachers' attitudes toward PBL. The original study on which the present research builds (Dullovi, 2025), similarly emphasized the importance of structured training, necessary resources, collaboration among teachers, and institutional support for effective project implementation.

The third finding further strengthens the institutional dimension of PBL implementation. School leadership support was negatively associated with teachers' perceived need for additional institutional support ($\rho = -.221$, $p = .006$). Although the association was relatively modest, its direction suggests that teachers who perceive greater support from school leadership tend to report less unmet need for additional institutional assistance. Moreover, school leadership support was positively associated with PBL-related professional training ($\rho = .312$, $p < .001$) and, to a smaller extent, with PBL use frequency ($\rho = .158$, $p = .049$). Taken together, these findings are consistent with the view that supportive school leadership may be associated with conditions that facilitate access to professional learning opportunities and the implementation of project-based activities. This interpretation is also consistent with previous research showing that school-level social support and a clear institutional vision are relevant to teachers' engagement with PBL.

The sensitivity analyses provide additional support for the consistency of the overall pattern of findings. The three hypothesized relationships remained in the same direction when the analyses were conducted separately for Google Forms and paper respondents. Thus, the principal associations observed in the full sample do not appear to be confined to one questionnaire administration mode. Nevertheless, these analyses should be viewed as a verification of consistency rather than evidence that the two modes are fully equivalent, since participants were not randomly assigned to the administration format. The main correlations and their stability across modes are documented in the current results.

Several limitations should be considered when interpreting the findings. First, the study used a cross-sectional and correlational design; consequently, the observed relationships should not be interpreted as causal effects. Second, the sample was drawn from six public primary schools in one municipality using a non-probability approach, which limits the generalizability of the findings to teachers across Kosovo. Third, the findings are based on teachers' self-reports and may therefore be influenced by perceptions or response tendencies. Finally, the focal variables were measured using individual questionnaire items rather than multi-item standardized scales. Despite these limitations, the study provides useful evidence that PBL implementation is associated not only with teachers' professional preparation but also with the institutional environment in which they work.

6. Conclusions

This study examined the relationships among professional training, implementation challenges, institutional support, and the use of project-based learning among primary-school teachers in Ferizaj, Kosovo. The findings indicate that PBL implementation is associated with the professional and institutional conditions in which teachers work. Teachers with higher levels of PBL-related professional training tended to use project-based tasks more frequently, while those who experienced greater implementation challenges expressed a stronger need for institutional support. In addition, greater support from school leadership was associated with a lower perceived need for additional institutional assistance.

The results suggest that expanding the use of PBL in primary education requires more than encouraging teachers to adopt innovative teaching methods. Schools and educational institutions should provide continuous, practice-oriented professional development, appropriate resources, opportunities for collaboration among teachers, and consistent support from school leadership. Such conditions may help teachers translate the principles of project-based learning into sustainable classroom practice. The importance of structured professional development and institutional support is also consistent with the recommendations developed in the original study (Dullovi, 2025).

Given the correlational design and the geographically limited sample, the findings should be interpreted with appropriate caution. Future research could include teachers from a wider range of municipalities and schools, employ longitudinal or mixed-method designs, and examine more closely how specific forms of professional development and leadership support contribute to the quality and sustainability of PBL implementation.

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