

Contribution of European Union Erasmus Plus Projects to Teachers' Professional Development: The Sample of Aydın City¹

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Abstract

This study aims to examine the relationship between professional development, professional learning, and professionalism among teachers who have participated in Erasmus+ projects—a type of European Union initiative—and gained international experience. The study group consists of 347 teachers and administrators who went abroad between 2014 and 2019. Data were collected using the Demographic Information Form, the "EU Projects Contribution Assessment Scale," the "Professionalism Scale," and the "Teacher Professional Learning Scale." For data analysis, independent samples t-test, one-way ANOVA, Pearson correlation test and regression analysis were employed. The findings indicate that teachers participating in EU projects perceived moderate and positive contributions to their professional development, particularly in the sub-dimensions of foreign language and cultural development. Additionally, their levels of professionalism showed moderate positive effects in the dimensions of personal development, emotional labor, and institutional contribution. No statistically significant differences were found in teachers' professional learning and professionalism levels based on variables such as gender, age, seniority or branch of teaching. According to the result of the research; participation in European Union projects has a positive impact on teachers' professional development.

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Introduction

In the twenty-first century, rapid developments are transforming every dimension of human life. Societal progress is sustained by science and knowledge, while scientific advancement, in turn, relies fundamentally on education. Within this context, the shift from traditional chalkboards to interactive smartboards—propelled by technological innovation—illustrates the profound transformation occurring in contemporary education. This technological evolution underscores a broader principle: educational systems function not only as sites of innovation but also as cultural frameworks that shape how societies preserve and renew themselves.

Every nation maintains an education system that transmits its culture to future generations, fosters societal development, and reflects its distinctive characteristics. One of the most critical elements for the effective implementation, accurate transmission, and high-level success of this system is teachers. Educators act as the primary implementers of state-mandated educational policies, yet their pedagogical practices and discretionary choices in the classroom simultaneously shape and refine the very policies they are tasked with executing. However, their role has expanded far beyond policy implementation. Contemporary research reframes teachers as central, active agents of educational change, who are tasked with navigating global challenges, integrating digital technologies, and fostering skills like critical thinking and global citizenship in their students (OECD, 2020; Erdem & Koç, 2024). This transformative role requires teachers to engage in continuous professional learning to adapt to rapidly evolving societal and educational demands, making their professional development a strategic investment in national progress rather than a peripheral activity (Liu & Hallinger, 2021).

Consequently, professional development holds immense significance in the teaching profession, just as it does in other fields. Historically, teachers were tasked with intellectually nurturing only a small elite from the upper social strata. Today, however, they must equip students from all social backgrounds with advanced skills (Jackson & Lewis, 2010).

A powerful method for achieving this modern skill set is through active, collaborative projects. Through projects, teachers and students gain the attitude and behaviour of taking responsibility, developing strategies for obtaining information, working in coordination, presenting information in the desired format, and acting with purpose (Başaran et al., 2021). However, these changes are not limited to physical infrastructure; they also directly impact both learners and educators, particularly teachers. To navigate this transformation effectively, teachers must cultivate a continuous and systematic approach to professional development, enabling them to stay abreast of innovations and master new methodologies.

Consequently, professional development holds immense significance in the teaching profession, just as it does in other fields. Historically, teachers were tasked with intellectually nurturing only a small elite from the upper social strata. Today, however, they must equip students from all social backgrounds with advanced skills (Jackson & Lewis, 2010). To achieve this, teachers must cultivate a continuous and systematic approach to professional development, enabling them to stay abreast of innovations and master new methodologies.

The teaching profession constitutes a specialized vocation that demands distinct expertise, encompasses a multifaceted skill set, and serves as a fundamental agent in societal formation. Educators must possess comprehensive knowledge and competencies to adequately execute their professional responsibilities while simultaneously cultivating students in accordance with prevailing sociocultural demands Ekiz (2003). The attainment of educational system objectives and the optimization of pedagogical outcomes necessitate robust support mechanisms for teachers, encompassing both personal and professional dimensions. Within the framework of professional learning, educators emerge as autonomous practitioners who: actively orchestrate their own developmental trajectories; engage in substantive collaborative endeavours with professional peers; systematically refine instructional methodologies through critical analysis of learner and colleague feedback; conduct rigorous observations of pedagogical

approaches employed by fellow educators, followed by deliberate reflective practice (Liu & Hallinger, 2018).

This professional paradigm underscores the dynamic and reflective nature of contemporary teaching, positioning educators not merely as knowledge transmitters, but as perpetual scholars engaged in continuous professional evolution. Effective school leadership is a critical catalyst for teacher professional learning, as principals play a key role in creating the supportive and collaborative organizational conditions necessary for growth (Liu & Hallinger, 2021). The cultivation of such sophisticated professional capacities remains imperative for the actualization of both individual pedagogical excellence and systemic educational objectives. Professional development constitutes a longitudinal process encompassing systematically planned opportunities and experiences designed to facilitate career advancement (Wells, 2014). In contemporary society, guided by the principle of lifelong learning, all individuals are now able to participate actively in learning activities. Teachers, as pivotal agents within this perpetual educational continuum, remain engaged in an ongoing process of learning and transformation throughout their professional lives.

A fundamental objective of modern education systems lies in providing educators with developmental opportunities that enhance their competencies and cultivate a highly qualified workforce (OECD, 2017a). The training and developmental processes that teachers require – both in personal and professional domains – contribute not only to individual growth but also to societal advancement through their instructional influence. This is because teachers serve as vital conduits for the effective transmission of educational systems to students. Recent analyses confirm that this objective is more critical than ever, as teachers face new challenges such as supporting student well-being post-pandemic, integrating artificial intelligence in pedagogy, and fostering inclusivity in diverse classrooms (OECD, 2024; UNESCO, 2023). Empirical research has consistently demonstrated that teachers' openness to professional learning and their sustained commitment to improvement exert a positive influence on student achievement,

regardless of the specific methodologies employed (Yoon et al., 2007). This relationship continues to be validated in contemporary studies, which highlight that effective professional development is not a one-time event but a continuous process characterized by collaboration, coaching, and active learning—often referred to as "professional learning" to denote its ongoing and embedded nature (Darling-Hammond et al., 2022). This evidence underscores the critical importance of maintaining robust professional development frameworks within educational ecosystems. Ultimately, investing in high-quality, continuous teacher professional learning is one of the most effective strategies for educational systems to improve student outcomes and build resilience for future challenges (World Bank, 2024).

Both in Turkey and internationally, teachers engage in ongoing professional development throughout their careers, beginning from pre-service training and continuing during active service. Research consistently demonstrates a strong positive correlation between teachers' professional experience and student achievement (Clotfelter, Ladd, & Vigdor, 2007). Consequently, teacher education and development programs emphasize several critical components: professional experience, graduate education, pre-service training, and in-service professional development.

The teaching profession, by its very nature, is dynamic rather than static. Its practice spans multiple generations and must continually adapt to technological advancements, thereby requiring comprehensive teacher training initiatives. Gültekin and Çubukçu (2008) mentioned, teachers consistently seek to acquire knowledge in emerging focus areas, creating sustained demand for in-service training opportunities. The concept of teacher professionalism has evolved to necessitate continuous growth, as modern education systems require educators to be 'lifelong learners' who constantly adapt their practices (OECD, 2021). This evolution is now characterized by a shift from standardized, top-down in-service training towards more personalized, collaborative, and digitally-enabled models of professional learning. These contemporary models prioritize agency,

allowing teachers to identify their own learning needs and engage in professional learning communities (PLCs) and coaching cycles that drive instructional improvement (Darling-Hammond et al., 2022). This professional curiosity and adaptability are essential for maintaining educational relevance in a rapidly changing world.

Professional development for teachers constitutes a specialized domain within adult education, encompassing individual, social, and economic dimensions while operating under the framework of lifelong learning. The approaches to teachers' professional development have undergone significant transformation throughout the decades. The European Commission's 2007 report "Teacher Professional Development: A European International Comparison" established a comprehensive framework for teacher development organized into four critical phases; Initial Teacher Education comprising university-based preparation programs that equip future educators with foundational knowledge and skills; Induction Training providing structured support during the probationary period to facilitate the transition from theory to classroom practice; In-Service Training offering continuous professional development opportunities throughout a teacher's career to address evolving educational demands; and School-Based Professional Growth fostering contextualized, ongoing improvement through collaborative learning within authentic school environments. This foundational framework remains relevant but has been critically expanded by recent research. Current studies emphasize that these phases are not linear but cyclical and interconnected, advocating for a "continuum of teacher learning" that is coherent, career-long, and deeply integrated into the daily fabric of teaching (Caena & Redecker, 2024; European Commission/EACEA/Eurydice, 2021). Moreover, the definition of effective professional development now explicitly includes a focus on developing teachers' abilities to promote equity, well-being, and digital citizenship among their students, reflecting the new urgencies of the 21st-century classroom (UNESCO, 2023).

Teachers play a pivotal role in cultivating human capital, transmitting societal

values, and enhancing collective welfare, making their professional perspective and development essential (Demirkasımoğlu, 2010). The concept of teacher professionalism has emerged as a cornerstone of educational effectiveness, driven by the need to elevate occupational standards and competencies. Like other revered professions, teaching demands a high degree of professionalism, requiring educators to stay abreast of pedagogical advancements while remaining attuned to societal needs and maintaining ethical collaboration with peers. While the primary goal of professional development is teacher growth, its ultimate value is measured by its impact on students; evidence shows that high-quality, sustained coaching programs can lead to significant gains in student achievement (Kraft & Hill, 2020). Technological and social transformations have reshaped teaching practices, necessitating adaptive perspectives and positioning teaching as a globally evolving profession. Hargreaves (2000) delineates four historical phases of teacher professionalism: the pre-professional era, the autonomous practitioner phase, the collaborative phase, and the postmodern professionalism phase. Concurrently, the duties and qualifications of teachers have been formally codified in response to these developments, with teacher competencies undergoing significant restructuring in recent decades (Lawn, 2011). This professional evolution underscores teaching's transition from a vocation to a dynamic, standards-driven global profession, integral to meeting the challenges of modern education systems.

For a society to cultivate an effective vision for the future, its education system must be strategically designed to reflect this vision, and teachers must be trained accordingly. Consequently, policymakers have placed teachers at the heart of educational reforms (Mete, 2013). While approaches to teacher training, curricula, and assessment systems vary across nations, the fundamental importance of teacher education remains universal. As Kavcar (2002) asserts, "A school is only as good as its teachers." Teachers directly shape students through their interactions, thereby the future of society itself. Given their pivotal role, teachers' professional development continuously evolves in response to national needs and global advancements. This underscores the critical

importance of both pre-service and in-service teacher training. Worldwide, teacher preparation and development programs are tailored to each country's unique educational policies and systems.

Contemporary research reinforces that the most effective systems are those that view this development as a continuous, career-long "learning continuum" rather than a series of disconnected events, integrating innovation and digital pedagogy into the core of teacher training (European Commission, 2021; Caena & Redecker, 2024). Ultimately, cultivating educational excellence depends on nurturing professional, continuously developing, and lifelong-learning educators.

In today's world, education stands as a fundamental pillar for both societal advancement and individual growth. Nations worldwide prioritize developing adaptable generations capable of leading change, with the European Union playing a significant role through its diverse educational initiatives. Hargreaves and Shirley (2020) argue that true teacher professionalism is not defined by compliance with standards, but by a 'moral commitment to serve the well-being and achievement of every student.' Particularly focused on teacher development, EU programs aim to enhance educators' professional competencies and personal growth through various approaches like professional learning communities, international exchanges, and observation programs. Recent studies on Erasmus+ initiatives, a flagship EU program, validate their multi-dimensional impact, demonstrating significant gains in teachers' foreign language proficiency, digital skills, intercultural competence, and overall self-efficacy, which are essential for navigating contemporary classrooms (Gök et al., 2023; García-Martínez et al., 2023). Research by Kassel (2007) confirms that participation in such projects not only expands teachers' professional knowledge and skills but also strengthens their personal accountability while providing valuable exposure to different educational systems. These comprehensive efforts share a common goal: to equip teachers with the tools and perspectives needed to develop innovative educational approaches, ultimately fostering more effective learning environments that can meet the complex

demands of our globalized era. This is critical, as UNESCO (2023) identifies empowering teachers with these 21st-century competencies as the most strategic investment for building resilient and equitable education systems worldwide. By investing in teachers' dual-dimensional development - both professional and personal - these initiatives position educators as transformative agents capable of shaping future-ready education systems.

This study systematically examines the effects of participation in Erasmus+ projects on the professional development of educators in Aydın Province, Turkey, with particular emphasis on three core dimensions: professional development, professional learning, and professional identity. The investigation is guided by three principal research objectives:

- 1- To assess participating teachers' perceptions concerning the extent to which Erasmus+ initiatives contribute to their professional advancement;
- 2- To determine the existence of statistically significant correlations among these three professional constructs;
- 3- To evaluate whether professional development and learning constitute significant predictive factors for enhanced professional identity.

Through this multidimensional analysis, the research aims to establish empirical evidence regarding the transformative potential of international mobility programs in shaping educator competencies, while providing substantive insights for the formulation of evidence-based professional development policies.

Method

Research Design

This quantitative study employs a correlational survey research design to systematically examine relationships between teacher characteristics (gender, age, professional experience, and subject area) and three key professional variables: professional development, professional learning, and professional identity. The selection of this methodological approach is predicated on its established efficacy in identifying co-variation

patterns among multiple variables, as well as determining both the existence and degree of such relationships (Karasar, 2018, p. 114). The correlational model proves particularly appropriate for this investigation as it enables rigorous analysis of the nature and strength of associations between participation in EU Erasmus+ projects and subsequent changes in teachers' professional learning outcomes and professional identity development of this research.

Study Group

The study population of this research consists of teachers working in the province of Aydın, Türkiye. Within this population, there are 1,124 teachers and administrators who participated in overseas mobility through Erasmus+ projects between 2014 and 2019 (Aydın Provincial Directorate of National Education, 2019).

The purposive sample comprises teachers from various branches employed at these schools who had international experience through European Union Erasmus+ projects between 2014 and 2019. The criteria for participation included: (1) being employed at a public school under the National Education administration in the province of Aydın, (2) having had overseas experience through an EU Erasmus+ project between 2014 and 2019, and (3) voluntary consent to participate in the study. This study, conducted with teachers from different branches across Aydın province, aimed to achieve maximum variation sampling. Attempts were made to reach 920 teachers, representing the study population, via email and/or message, and the survey instruments were successfully delivered to 736 individuals. Out of the distributed surveys, responses were received from 373 teachers. During the data cleaning phase, 26 teachers who filled out the scales incorrectly were excluded from the analysis. Consequently, data from 347 teachers were utilized in the research.

The demographic characteristics of the 347 participating teachers revealed a sample predominantly comprised of female educators (64.84%), holding bachelor's degrees (81.3%), and specializing in English language teaching (65.1%). In terms of professional experience, the largest cohort had 6-10 years of seniority (46.9%), with the majority of participants falling within the 31-40 age range (53.4%). The

sample also included teachers from Mathematics and Science (6.5%), Turkish and Classroom Teaching (6.2%), Vocational Courses (8%), and other branches (14.2%), ensuring a degree of professional diversity. Furthermore, the distribution captured less represented groups, including teachers with associate degrees (2.3%), those in the early stage of their careers (1-5 years, 9.3%), and seasoned educators with over two decades of experience (21+ years, 13.3%). While 95 reported involvement in two or more projects. Furthermore, 328 participants (94.5%) took part in Key Action 1 (KA1) mobility projects, 19 (5.4%) participated in Key Action 2 (KA2) cooperation partnerships, and 1 individual (0.1%) reported involvement in other European Union project types.

The study sample was determined through purposive sampling and comprises 347 teachers from various disciplines who participated in European Union Erasmus+ projects involving international mobility between 2014 and 2019. The research population was formally approved by the Educational Research Ethics Committee under decision number 2021/03 dated February 4, 2021. The population was formally approved by the Educational Research Ethics Committee under decision number 2021/03 dated February 4, 2021.

Data Collection

This study employed a comprehensive psychometric assessment protocol utilizing four validated research instruments to ensure robust data collection. The measurement battery consisted of: (1) a standardized Personal Information Form capturing essential demographic and professional variables; (2) the EU Projects Contribution Assessment Scale (Kesik & Balci, 2015), a multidimensional 31-item inventory comprising five theoretically-derived subscales that demonstrated exceptional internal consistency ($\alpha=.95$) and satisfactory model fit ($\chi^2/df=2.25$) in confirmatory factor analysis; (3) the Professionalism Scale (Yılmaz & Altinkurt, 2014), a 24-item measure operationalizing four distinct yet interrelated dimensions of professional practice, exhibiting strong reliability coefficients ranging from $\alpha=.74$ to $\alpha=.90$ and confirmed structural validity

($\chi^2/df=2.66$); and (4) the Teacher Professional Learning Scale (Gümüş & Apaydın, 2018), a 27-item assessment instrument evaluating four critical domains of professional learning that consistently demonstrated acceptable to excellent reliability estimates ($\alpha=.78$ to $\alpha=.85$) and appropriate factor structure ($\chi^2/df=2.9$). All instruments incorporated a 5-point Likert-type response format, consistent with contemporary psychometric practices in educational research. The psychometric properties of these scales, including their demonstrated construct validity through confirmatory factor analysis and reliability coefficients exceeding conventional thresholds ($\alpha>.70$), support their appropriateness for rigorous empirical investigation. This multi-method measurement approach facilitated a nuanced examination of the complex relationships between international project participation and key professional outcomes, while maintaining methodological rigor through the use of established, psychometrically-sound assessment tools. The research protocol received institutional ethics committee approval prior to implementation, with all data collection procedures adhering to established ethical guidelines regarding informed consent and participant confidentiality.

Data Analysis

The statistical analysis revealed that the EU Projects Contribution Assessment Scale obtained a mean score of 4.11 (SD = 0.11) with acceptable normality parameters (skewness = 0.41; kurtosis = 0.88). Similarly, the Teacher Professional Learning Scale showed a mean of

4.01 (SD = 0.84, skewness = 0.33, kurtosis = 0.47), while the Teacher Professionalism Scale yielded a mean of 4.08 (SD = 0.72, skewness = 0.40, kurtosis = -0.11). Following Tabachnick and Fidell's (2013) recommendations, all scales demonstrated normal distribution as evidenced by skewness and kurtosis values falling within the ± 1.5 threshold. To examine demographic influences, independent samples t-tests were conducted for the dichotomous gender variable, while one-way ANOVAs with eta-squared effect size measures were employed for multi-categorical variables including age, professional experience, and subject specialization. The study further investigated inter-scale relationships through Pearson product-moment correlation analysis and examined predictive relationships using multiple linear regression. This comprehensive analytical approach ensured rigorous examination of both demographic factors and theoretical constructs while maintaining appropriate statistical controls, with all procedures adhering to contemporary standards for educational research employing multiple measurement instruments. The normal distribution of all scale scores supported the use of parametric tests throughout the analysis.

Findings

The table below presents the findings on how teachers' participation in European Union Erasmus+ Projects contributes to their professional development, professional learning, and professionalism.

Table 1
Descriptive Statistics on the Contributions of European Union Erasmus+ Projects to Teachers' Professional Development, Learning, and Professionalism

Scales	N	\bar{x}	Sd
<i>EU Projects Contribution Assessment Scale</i>	347	4,11	0,11
<i>Teacher Professional Learning Scale</i>	347	4,01	0,84
<i>Professionalism Scale</i>	347	4,08	0,72

As shown in Table 1, the EU Projects Contribution Assessment Scale had a mean score of 4.11 (SD = 0.11). The Teacher Professional Learning Scale yielded a mean of 4.01 (SD = 0.84), and the Teacher Professionalism Scale had a mean of 4.08 (SD = 0.72). In light of the data, the teachers' scores on the three scales are close to each other. Therefore, it can be said that the teachers' levels of EU project contribution assessment, teacher

professional learning, and professional professionalism are high.

In Table 2, the correlation values of the EU projects contribution assessment scale, professional learning scale, and professionalism were determined by the correlation coefficient and the results of the correlation analysis are presented in Table 2.

Table 2
Correlation Values of the EU Projects Contribution Assessment Scale, Professional Learning Scale, and Professionalism Scale

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. EU Projects Contribution Assessment Scale	r	1															
	p																
	N	347															
2. Institutional Development	r	0,19	1														
	p	.000															
	N	347	347														
3. Personal/Professional Development	r	0,24	0,41	1													
	p	.000	.000														
	N	347	347	347													
4. Foreign Language Development	r	0,38	0,28	0,56	1												
	p	.000	.000	.000													
	N	347	347	347	347												
5. Social Development	r	0,25	0,70	0,46	0,39	1											
	p	.000	.000	.000	.000	.000											
	N	347	347	347	347	347											
6. Cultural Development	r	0,36	0,12	0,17	0,25	0,34	1										
	p	.000	.000	.000	.000	.000	.000										
	N	347	347	347	347	347	347										
7. Professional Learning Scale	r	0,10	0,19	0,41	0,26	0,05	0,12	1									
	p	.000	.000	.000	.000	.000	.000	.000									
	N	347	347	347	347	347	347	347									
8. Practice	r	0,15	-0,05	0,24	0,24	0,11	0,03	0,13	1								
	p	.000	.000	.000	.000	.000	.000	.000	.000								
	N	347	347	347	347	347	347	347	347								
9. Accessing Knowledge Base	r	0,38	0,08	0,07	0,09	0,16	-0,05	0,14	0,72	1							
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000							
	N	347	347	347	347	347	347	347	347	347							
10. Collaboration	r	0,04	0,02	0,01	0,19	0,14	0,03	0,31	0,51	0,54	1						
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000						
	N	347	347	347	347	347	347	347	347	347	347						
11. Reflection	r	0,14	0,14	0,05	-0,05	0,15	0,03	0,11	0,54	0,61	0,01	1					
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000					
	N	347	347	347	347	347	347	347	347	347	347	347					
12. Professionalism Scale	r	0,29	0,14	0,24	0,12	0,02	0,13	0,89	0,19	0,05	0,04	0,05	1				
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000				
	N	347	347	347	347	347	347	347	347	347	347	347	347				
13. Personal Development	r	0,47	0,01	0,38	0,31	0,26	0,26	0,07	0,57	0,54	0,07	0,08	0,38	1			
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000			
	N	347	347	347	347	347	347	347	347	347	347	347	347	347			
14. Professional Sensitivity	r	0,21	0,02	0,03	0,02	0,02	0,02	0,12	0,69	0,51	0,01	-0,07	0,12	0,68	1		
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		
	N	347	347	347	347	347	347	347	347	347	347	347	347	347	347		
15. Institutional Contribution	r	0,21	0,14	0,07	0,07	0,11	-0,02	0,15	0,72	0,83	0,15	0,21	0,58	0,17	0,22	1	
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	347	347	347	347	347	347	347	347	347	347	347	347	347	347	347	
16. Emotional Labor	r	0,03	0,01	0,08	-0,08	0,09	0,04	0,12	0,79	0,78	0,12	0,19	0,59	0,21	0,62	0,17	1
	p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	347	347	347	347	347	347	347	347	347	347	347	347	347	347	347	347

** Correlation is significant at the 0.01 level (2-tailed).

The total score of the European Union Projects Scale showed positive and low correlations with its subdimensions of institutional development ($r = .19, p < .05$), personal/professional development ($r = .24, p < .05$), and social development ($r = .25, p < .05$). Moderate positive correlations were found with foreign language development ($r = .38, p < .05$) and cultural development ($r = .36, p < .05$).

Analysis of scale correlations revealed several significant relationships. The Professional Learning Scale showed positive low correlations with its subdimensions of practice ($r = .13, p < .05$), accessing knowledge base ($r = .14, p < .05$), and reflection ($r = .11, p < .05$), while demonstrating a moderate correlation with collaboration ($r = .31, p < .05$). For the Professionalism Scale, professional sensitivity showed a positive low correlation ($r = .12, p < .05$), while stronger relationships emerged for institutional contribution ($r = .58, p < .05$), personal development ($r = .38, p < .05$), and emotional labor ($r = .50, p < .05$). Regarding the European Union Projects Scale subdimensions, particularly strong associations were found between social and institutional development ($r = .70, p < .05$). Moderate correlations were observed between multiple dimensions including: institutional and personal/professional development ($r = .41, p < .05$); personal/professional and foreign

language development ($r = .56, p < .05$); social development with both foreign language ($r = .38, p < .05$) and personal/professional development ($r = .46, p < .05$); and cultural with social development ($r = .34, p < .05$).

Analysis of subdimension correlations revealed significant relationships across scales. For the Professional Learning Scale, a strong positive correlation emerged between practice and accessing knowledge base ($r = .72, p < .05$). Moderate positive correlations were found between: collaboration and practice ($r = .51, p < .05$); collaboration and accessing knowledge base ($r = .54, p < .05$); reflection and practice ($r = .54, p < .05$); and accessing knowledge base and reflection ($r = .61, p < .05$). Regarding the Professionalism Scale, moderate positive correlations appeared between professional sensitivity and personal development ($r = .68, p < .05$) and between emotional labor and professional sensitivity ($r = .62, p < .05$). However, several weak negative correlations were identified: practice with institutional development ($r = -.05, p < .05$); reflection with foreign language development ($r = -.05, p < .05$); accessing knowledge base with cultural development ($r = -.04, p < .05$); professional sensitivity with reflection ($r = -.07, p < .05$); institutional contribution with cultural development ($r = -.02, p < .05$); and emotional labor with foreign language development ($r = -.08, p < .05$).

Table 3

Regression Values for the EU Projects Contribution Assessment Scale, Professional Learning Scale, and Professionalism Scale

Dependent Variable	Other Variables	R	R ²	F	B	S.D	β	t	
EU Projects Contribution Assessment Scale		0,506	0,216	65,86	4,86	0,39	-	12,29	
	<i>Practice</i>				-0,45	0,18	-0,09	-0,50	
	<i>Accessing Knowledge Base</i>					0,13	-0,25	-1,82	
	<i>Collaboration</i>				-0,52				
	<i>Reflection</i>				-0,53	0,16	-0,21	-1,32	
	<i>Professional Learning Scale</i>					0,15	0,09	0,23	2,52
	<i>Personal Development</i>					0,14	-0,14	-0,97	
	<i>Professional Sensitivity</i>				-0,43				
	<i>Institutional Contribution</i>				0,18	0,16	0,14	0,87	
	<i>Emotional Labor</i>					0,11	-0,03	-0,27	
	<i>Professionalism Scale</i>				-0,24				
						0,33	0,13	0,40	
						0,52			
					0,37	0,20	0,03	0,16	
					0,28	0,15	0,01	0,09	

As shown in Table 3, the EU Projects Contribution Assessment Scale significantly predicts the subdimensions of both the Professional Learning Scale and Professionalism Scale ($R = 0.506$, $R^2 = .216$, $F = 65.86$, $p < .05$). Together, these three variables explain approximately 21% of the total variance. The EU Projects were found to be significant predictors of the following Professional Learning Scale subdimensions: accessing knowledge base ($\beta = -0.25$, $p < .05$), collaboration ($\beta = -0.21$, $p < .05$), and reflection ($\beta = 0.23$, $p < .05$). However, analysis revealed that EU project contributions did not significantly predict the following Professionalism Scale subdimensions: personal development ($\beta = 0.14$, $p < .05$), professional sensitivity ($\beta = 0.13$, $p < .05$), institutional contribution ($\beta = 0.13$, $p < .05$), emotional labor ($\beta = 0.03$, $p < .05$), nor the practice subdimension of the Professional Learning Scale ($\beta = 0.09$, $p < .05$).

Discussion

Within the framework of the study's first sub-problem, it was demonstrated that teachers who participated in European Union Erasmus+ Projects exhibited high levels of professional development, professional learning, and professionalism. The results indicate that teachers in Aydın province schools; implementing EU projects perceive these initiatives as positively contributing to their professional development, learning, and professionalism. These findings suggest the importance of encouraging teachers'

participation in both national and international project activities.

This result aligns with previous research by Akay and Yanpar Yelken (2012), Tavşan (2013), Başçı (2015), Günbayı and Vezne (2016), Bozak et al. (2016), Bardakçı (2017), Yılmaz (2019), Fansa (2021), and Savaş (2021), who similarly found that EU projects contribute to teachers' academic and professional development. Supporting evidence comes from the European Commission's (2007) final evaluation report of Community Programs II, Leonardo da Vinci, and e-Learning, which concluded that participating teachers across member states benefited positively from project outcomes, particularly in personal development, language skills, and professional competencies. Kassel's (2007) pan-European study further confirmed that project participation enhanced teachers' professional knowledge and skills. Research indicates that transnational mobility programs, such as Erasmus+, significantly enhance teachers' professional development by fostering not only pedagogical skills but also intercultural competence and a renewed sense of motivation (García-Martínez et al., 2023).

The analysis of the study's second sub-problem revealed significant relationships between teachers' professional learning and professionalism through their participation in EU Erasmus+ Projects. The EU Contribution Assessment Scale showed positive low correlations with institutional development ($r = .19$), personal/professional development ($r =$

.24), and social development ($r = .25$), while demonstrating moderate correlations with foreign language ($r = .38$) and cultural development ($r = .36$). Similarly, the Professional Learning Scale exhibited positive low correlations with practice ($r = .13$), knowledge acquisition ($r = .14$), and reflection ($r = .11$), alongside a moderate correlation with collaboration ($r = .31$). The Professionalism Scale displayed a positive low correlation with professional sensitivity ($r = .12$) and moderate correlations with institutional contribution ($r = .58$), personal development ($r = .38$), and emotional labor ($r = .50$), all $ps < .05$. These patterns collectively suggest that while all measured dimensions show significant positive associations, the strength of relationships varies substantially across different aspects of professional development, with institutional contributions and language/cultural competencies showing particularly strong benefits from project participation.

The findings reveal that teachers participating in European Union projects experience significant benefits, particularly in foreign language acquisition ($r = .38$, $p < .05$) and cultural development ($r = .36$, $p < .05$). The collaborative nature of these projects fosters both professional growth and intercultural competence, as working with diverse teams enhances language skills while promoting positive attitudes toward multicultural collaboration. Notably, the results demonstrate meaningful improvements in emotional labor ($r = .50$, $p < .05$) and professional sensitivity ($r = .62$, $p < .05$), suggesting that project participation facilitates personal development alongside professional enhancement. Furthermore, the strong correlation with institutional contribution ($r = .58$, $p < .05$) indicates that these benefits extend beyond individual teachers to their schools, as acquired skills and knowledge are effectively transferred to the workplace. These outcomes align with established research on EU educational projects, confirming their multidimensional value for educators' professional practice and personal growth.

The study's third sub-problem examined the predictive relationships between teachers' professional learning and professionalism through EU Erasmus+ project participation. Regression analysis revealed

significant associations ($R^2 = .21$, $F = 65.86$, $p < .05$), with three key dimensions of the Professional Learning Scale emerging as significant predictors: accessing knowledge bases ($\beta = -0.25$), collaboration ($\beta = -0.21$), and reflection ($\beta = 0.23$). These findings suggest that project participation meaningfully enhances teachers' professional learning processes.

The results indicate that teachers develop improved research skills and information literacy through project preparation and implementation. Cross-national collaboration with local and foreign partners appears to strengthen cooperative competencies, while these acquired skills demonstrate transfer value to both personal and professional domains. This is particularly crucial in the Turkish context, where, as the Education Reform Initiative (2023) report emphasizes, the professional development system for teachers is still largely based on in-service training courses and requires a transition to school-based, sustainable development models. Furthermore, the study by Şen and Yıldız (2022) reveals that the biggest obstacles to teachers' professional development are bureaucratic tasks and a lack of time, while the most important source of motivation is seeing student success. International projects directly address these challenges by offering immersive, practical learning (countering passive courses) and creating direct, tangible positive impacts on students through new methodologies and heightened teacher motivation.

Conclusion

A review of the relevant literature revealed a significant gap, with no prior studies specifically examining the synergistic relationship between teachers' professional development, professional learning, and professionalism within the unique context of EU Erasmus+ projects. This absence underscores the original contribution of this research to the academic field, moving beyond general professional development to explore a potent, multifaceted catalyst for teacher growth. The findings of this study robustly demonstrate that participation in EU projects significantly accelerates both the personal and professional growth of teachers. More importantly, it acts as a powerful engine for developing the core tenets of teacher professionalism: not merely

enhancing skills but fostering a renewed ethical commitment, collaborative autonomy, and a reflective, inquiry-oriented mindset (Hargreaves & Shirley, 2020). These benefits manifest across multiple levels, yielding profound positive effects for the individual educator through increased motivation and refined pedagogy, and for the institution through enhanced internationalization, shared leadership, and a strengthened culture of collective improvement (Gök et al., 2023; OECD, 2021).

Consequently, these projects are expected to leave a lasting mark by broadening teachers' educational vision, technological proficiency, cross-cultural collaboration skills, and institutional contributions. To systematically amplify these positive outcomes, it is imperative that educational policymakers and school leaders actively strategize to encourage and facilitate widespread teacher participation in such project-based activities. This requires moving beyond ad hoc involvement and towards a structured integration of project work into the fabric of teacher education and career development.

Recommendations

To maximize the benefits of project-based learning and international collaboration, a multi-faceted approach is required. Teacher training curricula at universities should be updated to include mandatory modules on EU project design (e.g., Erasmus+, eTwinning) and project-based learning methodologies. This would equip future teachers with the practical skills to write proposals, manage international partnerships, and integrate collaborative projects into their lesson plans from the very start of their careers (Gök et al., 2023; García-Martínez et al., 2023).

Ongoing training for practicing teachers must move beyond one-off workshops. School districts and the Ministry of National Education should incentivize and fund sustained professional learning communities (PLCs) focused on project work. These PLCs would allow teachers to share best practices, troubleshoot challenges, and collaboratively design projects, thereby embedding professional development directly into their daily practice (Kaya, 2024; OECD, 2021).

Recognizing that professional development is a lifelong ability, support structures must blend digital and traditional methods. Develop and promote centralized, user-friendly online portals (perhaps through the Ministry or EU National Agency) that offer resources, video tutorials, and forums for collaboration. This would provide just-in-time support for teachers managing projects. Establish formal mentorship programs where teachers experienced in EU projects ("project champions") guide novices through the process. This peer-to-peer coaching, which can be facilitated both online and in-person, is a powerful driver of sustainable professional growth (Liu & Hallinger, 2021).

The success of these initiatives hinges on supportive school leadership. School administrators must be trained about projects. Recognize that the time invested in projects yields significant returns in teacher motivation, skill development, and school reputation (Demir, 2021). Actively work to reduce the bureaucratic burden on teachers by providing administrative support for budgeting, reporting, and logistics, allowing teachers to focus on the pedagogical and collaborative aspects of the projects.

Therefore, based on the results of this study, it is recommended that pre-service teacher training programs incorporate mandatory modules on EU project design and management, equipping the next generation of educators with these critical skills from the outset. For in-service teachers, sustained support through professional learning communities, reduced administrative burdens, and formal recognition of project participation are essential to incentivize engagement (Liu & Hallinger, 2021). Ultimately, engaging in diverse projects—from job shadowing and best practice observation to collaborative curriculum development—provides the authentic, experiential learning necessary to foster continuous professional advancement and cultivate a deeply ingrained, modern professional identity among teachers, thereby enriching the entire educational ecosystem. Finally, national and institutional curricula should be explicitly updated to value and include the transversal competencies developed through projects. Creating clear pathways for teachers to apply their newly acquired skills in

digital literacy, intercultural communication, and collaborative problem-solving within their official teaching mandates. Recognizing and rewarding project participation and successful outcomes as a formal component of teacher performance and career advancement evaluations. By implementing these targeted strategies, Türkiye can systematically harness the power of project-based learning to build a teaching force that is not only more professional and skilled but also actively engaged in shaping a modern, globally connected educational environment.

Limitations

The findings of this study should be interpreted with the recognition that the data are limited to responses from teachers in Aydın province who participated in European Union projects between 2014 and 2019.

Ethics statement

During the data collection, analysis, and reporting processes, utmost attention was paid to ethical principles regarding human privacy, data security, and confidentiality. This study was produced by the 1st author's master's thesis under the supervisor of the 2nd author.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of interest

None

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