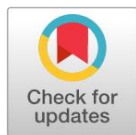


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Differentiated Instruction and Project-Based Learning in Foreign Language Higher Education: Fostering Collaborative Engagement and Motivational Dynamics

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ABSTRACT

Background. Foreign language higher education faces increasing challenges in addressing learner diversity, unequal participation, and declining motivation within conventional instructional environments. Differentiated Instruction and Project-Based Learning provide complementary pedagogical approaches that may support personalized learning pathways while promoting meaningful collaboration and authentic language use.

Purpose. This study aimed to examine the effects of integrating Differentiated Instruction with Project-Based Learning on collaborative engagement, motivational dynamics, and foreign language learning performance among university students.

Method. A mixed-methods quasi-experimental design was employed involving 120 undergraduate students divided into experimental and comparison groups. Data were collected through collaborative engagement questionnaires, motivation scales, language performance assessments, classroom observations, reflective journals, and semi-structured interviews. Quantitative data were analyzed using descriptive statistics, inferential tests, and effect size analysis, while qualitative data were examined through thematic analysis.

Results. The findings revealed that students receiving differentiated project-based instruction demonstrated significantly higher collaborative engagement, motivation, self-efficacy, willingness to communicate, and language achievement compared with students receiving conventional instruction.

Conclusion. The study concludes that integrating Differentiated Instruction and Project-Based Learning creates an adaptive and inclusive foreign language learning environment by connecting learner diversity with collaborative participation and sustained motivation. The proposed framework contributes to the development of student-centered language pedagogy in higher education.

KEYWORDS

Collaborative Engagement, Differentiated Instruction, Foreign Language Education, Motivational Dynamics, Project-Based Learning

INTRODUCTION

Foreign language education in higher education is increasingly shaped by student populations that differ considerably in linguistic proficiency, prior learning experiences, academic readiness, learning preferences, cultural backgrounds, and motivational orientations (Hsu, 2025). Such diversity challenges instructional models that

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assume students can learn effectively through the same materials, activities, pacing, and assessment procedures. University language classrooms consequently require pedagogical approaches capable of maintaining common academic outcomes while responding to meaningful differences among learners. Differentiated Instruction provides one response to this challenge by allowing lecturers to adjust content, learning processes, products, and levels of support according to students' readiness, interests, and learning profiles (Li, 2025). Its relevance becomes particularly important in foreign language learning because variations in vocabulary mastery, grammatical competence, communicative confidence, and exposure to the target language can substantially influence students' participation and achievement.

Project-Based Learning has gained increasing attention in higher education language instruction because it places students in authentic, purposeful, and collaborative learning situations (Nasseh et al., 2026). Rather than treating linguistic knowledge as isolated content, Project-Based Learning requires learners to use the target language to investigate problems, negotiate meaning, create products, communicate ideas, and complete tasks with identifiable social or academic purposes. A recent scoping review of project-based language learning in higher education shows that effective projects commonly involve authentic environments, student choice and voice, reflection, critique, revision, and meaningful public products (Ji et al., 2026). These characteristics correspond closely with contemporary views of language learning as an active, socially situated process in which communicative competence develops through meaningful language use rather than through passive reception of grammatical explanations.

Collaborative engagement and learning motivation constitute two critical dimensions through which the effectiveness of student-centered foreign language instruction can be understood (Mora-Pablo & González, 2025). Collaborative engagement refers not merely to placing students in groups but to their sustained cognitive, behavioral, emotional, and interpersonal investment in shared learning tasks. Motivational dynamics concern changes in students' interest, self-efficacy, perceived task value, autonomy, persistence, and willingness to participate throughout the learning process. Evidence from recent research indicates that Project-Based Learning can support motivation, collaboration, and language achievement by creating purposeful opportunities for interaction and shared responsibility (Taati Jeliseh et al., 2026). The pedagogical potential becomes especially relevant when project activities are differentiated so that students with different levels of readiness can participate meaningfully without lowering common learning expectations.

Foreign language courses at university level frequently continue to experience uneven student participation despite the adoption of communicative and student-centered approaches (Shinnar & Chang, 2025). Highly proficient or confident learners may dominate discussion, decision-making, and project production, while students with lower proficiency may become passive participants or restrict themselves to less linguistically demanding roles. Uniform project requirements can unintentionally reinforce these inequalities because all students are expected to complete comparable tasks without sufficient adjustment to their readiness or linguistic needs. Such conditions weaken the intended collaborative nature of Project-Based Learning and create a situation in which group productivity does not necessarily represent equitable individual engagement (Khasawneh & Belton, 2025). The problem is therefore not simply whether students collaborate, but whether the instructional design enables each learner to contribute meaningfully to the collaborative process.

Student motivation presents a related instructional difficulty because motivational states are neither fixed nor equally distributed across learners (Farangi & Nejadghanbar, 2026). Students may begin a foreign language course with different degrees of confidence, intrinsic interest, perceived

usefulness, anxiety, and willingness to communicate. Project-Based Learning can create motivating experiences through authenticity and learner autonomy, yet project complexity, group conflict, unequal workload, unfamiliar tasks, or excessive linguistic demands can also reduce motivation. A 2025 scoping review examining project-based approaches and language-learning motivation in higher education found promising motivational benefits while also identifying implementation challenges for both instructors and learners (Bentum-Micah et al., 2026). These findings suggest that Project-Based Learning should not automatically be assumed to motivate every student simply because it is student-centered.

Instructional differentiation may address some of these limitations by creating multiple pathways toward common project objectives, but its integration into foreign language Project-Based Learning requires careful pedagogical design (Yan et al., 2024). Differentiation that is poorly structured may fragment group activities, increase lecturer workload, or unintentionally label students according to perceived ability. Project work that emphasizes collaboration without attending to individual differences may produce unequal participation, whereas differentiation without meaningful collaboration may reduce opportunities for authentic communication (Elhambakhsh et al., 2024). The central problem addressed by this study therefore concerns how Differentiated Instruction and Project-Based Learning can be integrated in a manner that simultaneously accommodates learner diversity, strengthens collaborative engagement, and sustains motivation within foreign language higher education.

The primary objective of this study is to examine the pedagogical effectiveness of integrating Differentiated Instruction with Project-Based Learning in foreign language higher education (Ren et al., 2026). The proposed investigation seeks to determine whether learning experiences differentiated according to student readiness, interests, linguistic profiles, or support needs can improve the quality of participation within collaborative projects. Attention should be directed toward how students negotiate tasks, distribute responsibilities, exchange feedback, solve problems, and use the target language while completing project activities (Chen et al., 2026). This objective positions collaborative engagement as a multidimensional outcome rather than reducing collaboration to the number of group activities completed during a course.

The second objective is to investigate the motivational dynamics associated with differentiated project-based foreign language learning. The study should examine changes in dimensions such as intrinsic motivation, task value, self-efficacy, autonomy, persistence, and willingness to participate throughout the instructional intervention (Cao et al., 2026). Motivation should be treated as a developing process rather than a single stable score measured only at the end of instruction. Such an orientation would allow the research to explore whether particular elements of differentiated project work strengthen students' motivational engagement and whether learners with different initial proficiency or motivational profiles respond differently to the same instructional environment.

The third objective is to analyze the relationship between differentiated instructional practices, collaborative engagement, and motivational outcomes within the project-learning process (Xie et al., 2026). The study is expected to clarify whether differentiation influences motivation directly or whether its effects are partly associated with students' experience of meaningful participation, autonomy, competence, and peer interaction. The investigation should also identify instructional conditions under which the combination of Differentiated Instruction and Project-Based Learning becomes more or less effective. Such an objective moves the research beyond asking whether an instructional model "works" toward explaining how, for whom, and under what classroom conditions it supports foreign language learning.

Existing scholarship provides substantial evidence on Differentiated Instruction and Project-Based Learning as separate student-centered approaches, yet their combined implementation remains less systematically examined in foreign language higher education. Project-based language research has documented diverse forms of authentic projects and demonstrated the importance of learner voice, collaboration, reflection, and purposeful product creation (Elansari & Laachach, 2025). Research on differentiation similarly emphasizes responsiveness to learner variability. Much of the literature, however, evaluates achievement, proficiency, or general learning effectiveness rather than examining the interaction between differentiated task structures, actual collaborative participation, and changing motivational states during project implementation.

Recent evidence means that the research gap must be framed carefully. A 2026 study has already investigated the integration of Differentiated Instruction into Project-Based Learning among undergraduate Arabic pedagogy students and reported improvements in collaborative behavior, task value, self-efficacy, social interdependence, and student ownership (Tian et al., 2026). The novelty of the present study therefore cannot credibly be based merely on claiming that the integration of Differentiated Instruction and Project-Based Learning has never been studied. A stronger gap concerns the limited understanding of the mechanisms connecting differentiation, collaboration, and motivation across the broader field of foreign language higher education, particularly beyond a single language, institutional context, or short-term pre–post evaluation.

Another gap lies in the treatment of collaboration and motivation as final outcomes rather than dynamic processes. Many studies measure motivation through questionnaires administered before and after an intervention or report collaboration through general perceptions of group work. Such designs provide useful evidence of change but offer less explanation of how motivational trajectories develop as students encounter differentiated project tasks, negotiate roles, experience success or difficulty, and respond to peer interaction (Soriano-Gonzalez & Belda-Medina, 2026). Greater attention to temporal and relational processes is needed to explain why similar project environments may increase engagement for some learners while leaving others disengaged. Examining motivational dynamics alongside observable collaborative engagement can therefore deepen the explanatory value of research on differentiated project-based language learning.

The novelty of this study lies primarily in its analytical focus on the interaction among Differentiated Instruction, Project-Based Learning, collaborative engagement, and motivational dynamics rather than in the simple combination of two pedagogical approaches. The proposed framework conceptualizes differentiation as a mechanism that shapes students' access to project participation by aligning task complexity, learning support, roles, resources, and output possibilities with learner variability (Kohnke & Moorhouse, 2025). Project-Based Learning simultaneously provides an authentic social environment in which those differentiated pathways converge toward shared communicative goals. This framework allows the study to investigate whether responsive instructional design produces more equitable collaboration and whether such participation contributes to stronger motivational experiences.

The methodological value of the study can be strengthened by examining collaboration and motivation through complementary forms of evidence rather than relying exclusively on self-reported perceptions. Measures of motivation may be combined with classroom observations, participation patterns, peer interaction, project artifacts, reflective accounts, or interviews to capture differences between perceived engagement and actual collaborative behavior (Anchunda et al., 2025). Repeated measurement of motivational indicators would also permit the identification of changes occurring during different phases of project completion. Such an approach offers a more nuanced account of motivational dynamics than conventional pretest–posttest comparisons and can

reveal moments when differentiation either supports or fails to support students' autonomy, competence, and participation.

The scientific justification for this research rests on the need for foreign language higher education to reconcile two pedagogical demands that are often addressed separately: responsiveness to individual learner diversity and participation in socially meaningful collaborative activity. Differentiated Instruction emphasizes learner variability, whereas Project-Based Learning emphasizes authentic inquiry, shared responsibility, and productive interaction (Ba et al., 2026). Their thoughtful integration may provide a pedagogical structure in which individual differences do not isolate learners but instead determine appropriate pathways for contributing to common communicative goals. Research capable of explaining the relationships among differentiation, collaborative engagement, and motivation would contribute theoretically to student-centered language pedagogy and practically to the design of university language courses that are more inclusive, participatory, and motivationally sustainable.

RESEARCH METHODOLOGY

This study employed a mixed-methods quasi-experimental research design to examine the influence of integrating Differentiated Instruction and Project-Based Learning on collaborative engagement and motivational dynamics among foreign language higher education students. The research design combined quantitative measurement of learning outcomes, motivation levels, and engagement indicators with qualitative exploration of students' learning experiences, interaction patterns, and perceptions throughout the instructional process (Susilowaty et al., 2025). The integration of quantitative and qualitative approaches was selected because collaborative engagement and motivation represent complex educational phenomena that cannot be fully understood through numerical changes alone. The quantitative component provided evidence regarding measurable differences before and after the intervention, while the qualitative component explained how differentiated project-based learning influenced students' participation, autonomy, confidence, and collaborative behaviors.

The instructional intervention was developed based on the principles of Differentiated Instruction and Project-Based Learning. Differentiation was implemented through adjustments in learning content, instructional processes, collaborative roles, learning resources, and project outcomes according to students' initial language proficiency, learning readiness, interests, and preferred learning approaches. Project-Based Learning activities were structured around authentic foreign language tasks requiring students to investigate topics, collect information, negotiate meaning, collaborate with peers, produce language-based products, and present their work to broader audiences. The learning framework emphasized student-centered interaction, meaningful communication, problem-solving, reflection, and continuous feedback throughout the project cycle.

The research followed a pretest–posttest control group design involving an experimental class receiving differentiated project-based instruction and a comparison class receiving conventional foreign language instruction. The intervention was conducted during one academic semester to provide sufficient opportunities for students to experience the complete stages of project development, including planning, implementation, revision, presentation, and evaluation (Yao, 2026). The effectiveness of the instructional model was determined by comparing changes in collaborative engagement, motivational dynamics, and foreign language learning performance between groups. Qualitative findings were used to enrich the interpretation of quantitative results by identifying the mechanisms through which differentiated project activities influenced student participation and motivation.

The population of this study consisted of undergraduate students enrolled in foreign language education programs at a higher education institution. The population represented learners with diverse linguistic backgrounds, previous language-learning experiences, proficiency levels, and motivational orientations. Foreign language students were selected as the target population because university language classrooms frequently involve substantial variations in communicative competence, confidence, learning strategies, and academic expectations. Such diversity provides an appropriate context for examining whether Differentiated Instruction combined with Project-Based Learning can support equitable participation and sustained engagement among learners with different educational needs.

The research sample was selected using purposive sampling based on specific inclusion criteria. Participants were undergraduate students who were actively enrolled in foreign language courses, had completed prerequisite language-learning requirements, and were willing to participate in all stages of the instructional intervention. The selected participants were divided into an experimental group and a comparison group based on existing class arrangements to maintain the natural learning environment. The experimental group consisted of students who experienced differentiated project-based learning activities, while the comparison group received regular instructional practices emphasizing teacher explanations, structured exercises, and conventional classroom activities.

The sample consisted of 120 undergraduate students distributed equally between the experimental and comparison groups. The experimental group included 60 students who participated in differentiated project-based activities, while the comparison group included 60 students who followed conventional foreign language instruction. Students' initial language proficiency was assessed before the intervention to identify baseline equivalence between groups. The analysis considered demographic characteristics, previous language-learning experiences, and initial motivational levels to ensure that differences observed after the intervention were associated with the instructional treatment rather than pre-existing variations among participants.

The study utilized several instruments to measure collaborative engagement, motivational dynamics, language learning development, and students' perceptions of the instructional approach. The primary quantitative instrument was a collaborative engagement questionnaire adapted from established educational engagement frameworks, measuring behavioral participation, cognitive involvement, emotional commitment, peer interaction, shared responsibility, and contribution to group tasks (Xiong & Teo, 2025). The questionnaire used a five-point Likert scale ranging from strongly disagree to strongly agree. The instrument was reviewed by experts in foreign language education and educational psychology to ensure content validity, clarity, and alignment with the objectives of the study.

Motivational dynamics were measured using a foreign language learning motivation scale incorporating dimensions of intrinsic motivation, extrinsic motivation, self-efficacy, perceived value, autonomy, learning persistence, and willingness to communicate. The instrument was administered before and after the intervention to identify changes in students' motivational orientations. Reliability analysis was conducted using Cronbach's alpha coefficient to determine internal consistency, while construct validity was examined through exploratory and confirmatory statistical procedures. The motivation instrument was complemented by reflective learning journals and semi-structured interviews to explore students' subjective experiences during project implementation.

Learning performance was evaluated through foreign language proficiency assessments and project-based performance evaluations. The language assessment measured communicative

competence, vocabulary development, grammatical accuracy, and functional language use. Project assessment criteria evaluated students' ability to apply language knowledge in authentic contexts, collaborate effectively, demonstrate creativity, and communicate ideas through project outputs (Manganello & Berettieri, 2026). Observation protocols were also employed to document classroom interaction patterns, group collaboration, student participation, and lecturer facilitation strategies during project activities. Multiple instruments were integrated to achieve methodological triangulation and provide a comprehensive understanding of the relationship between differentiated instruction, project-based learning, engagement, and motivation.

The research procedure began with preliminary assessment and instructional preparation. Students completed initial measurements of foreign language proficiency, collaborative engagement, and learning motivation to establish baseline conditions. The researcher analyzed students' learning profiles, including proficiency levels, learning preferences, and motivational characteristics, to design differentiated project activities (Yang, 2025). Learning materials, project guidelines, assessment rubrics, and collaborative structures were prepared according to the principles of differentiated instruction. The lecturer received guidance regarding the implementation of flexible grouping strategies, differentiated learning support, formative assessment, and facilitation techniques to ensure consistent application of the instructional model.

The implementation phase involved the integration of Differentiated Instruction and Project-Based Learning throughout the semester. Students in the experimental group participated in project activities designed around authentic foreign language communication tasks. Project stages included topic exploration, group planning, information gathering, language practice, product development, peer feedback, revision, and final presentation. Differentiation was applied through variations in task complexity, learning resources, group responsibilities, and expected products while maintaining common learning objectives. Students were encouraged to collaborate, negotiate decisions, provide peer support, and reflect on their learning progress throughout the project process.

Data collection was conducted at multiple stages of the study to capture changes in student engagement and motivation. Post-intervention questionnaires were administered after completion of the instructional period, followed by interviews and analysis of student reflections. Classroom observations were conducted during project implementation to document interaction patterns, collaboration quality, and student responses to differentiated learning activities (Zhang et al., 2025). Quantitative data were analyzed using descriptive statistics, paired-sample tests, independent-sample comparisons, and effect size calculations to determine differences between groups. Qualitative data from interviews, reflections, and observations were analyzed through thematic analysis to identify recurring patterns related to collaboration, motivation, autonomy, and learning experiences.

The final stage involved integrating quantitative and qualitative findings to develop a comprehensive interpretation of the instructional impact. Statistical results were compared with qualitative evidence to determine how and why differentiated project-based learning influenced students' collaborative engagement and motivational dynamics. Data triangulation was applied to strengthen the credibility of findings by examining consistency among questionnaire responses, classroom observations, interview accounts, and project performance results. The combined analytical process provided evidence regarding the effectiveness, mechanisms, and practical implications of implementing Differentiated Instruction and Project-Based Learning in foreign language higher education.

RESULT AND DISCUSSION

The study involved 120 undergraduate students enrolled in foreign language higher education courses, divided equally into an experimental group receiving Differentiated Instruction integrated with Project-Based Learning and a comparison group receiving conventional instructional practices. The participants represented diverse levels of initial language proficiency, learning experiences, and motivational orientations. Preliminary assessment results indicated that both groups demonstrated comparable baseline conditions before the intervention. The experimental group consisted of 60 students with a mean age of 20.8 years ($SD = 1.34$), while the comparison group consisted of 60 students with a mean age of 20.6 years ($SD = 1.41$). The distribution of gender, previous language-learning experience, and initial proficiency levels showed no substantial differences between groups, indicating that both groups started from relatively equivalent academic conditions.

Table 1. Demographic Characteristics and Initial Conditions of Research Participants

Characteristics	Experimental Group (n = 60)	Comparison Group (n = 60)	Total (n = 120)
Mean age (SD)	20.8 (1.34)	20.6 (1.41)	20.7 (1.37)
Female students, n (%)	38 (63.3%)	36 (60.0%)	74 (61.7%)
Male students, n (%)	22 (36.7%)	24 (40.0%)	46 (38.3%)
Intermediate proficiency level, n (%)	35 (58.3%)	34 (56.7%)	69 (57.5%)
Advanced proficiency level, n (%)	25 (41.7%)	26 (43.3%)	51 (42.5%)
Mean initial motivation score	3.42 (0.48)	3.39 (0.51)	3.41 (0.49)
Mean initial engagement score	3.36 (0.45)	3.34 (0.47)	3.35 (0.46)

The descriptive analysis after the intervention revealed notable improvements in the experimental group across collaborative engagement, motivational dynamics, and foreign language performance. The mean collaborative engagement score increased from 3.36 to 4.28, while the comparison group showed a smaller increase from 3.34 to 3.61. Motivational scores in the experimental group increased from 3.42 to 4.31, reflecting stronger autonomy, task value, self-efficacy, and persistence. Language performance scores also demonstrated greater improvement among students experiencing differentiated project-based learning, indicating that the instructional model supported not only participation but also academic achievement.

Table 2. Pretest and Posttest Comparison of Collaborative Engagement, Motivation, and Language Performance

Variables	Experimental Pretest Mean (SD)	Experimental Posttest Mean (SD)	Comparison Pretest Mean (SD)	Comparison Posttest Mean (SD)
Collaborative Engagement	3.36 (0.45)	4.28 (0.39)	3.34 (0.47)	3.61 (0.44)
Learning Motivation	3.42 (0.48)	4.31 (0.37)	3.39 (0.51)	3.68 (0.46)
Self-Efficacy	3.38 (0.52)	4.26 (0.41)	3.35 (0.49)	3.62 (0.45)
Willingness to Communicate	3.40 (0.50)	4.34 (0.38)	3.37 (0.47)	3.65 (0.43)
Foreign Language Performance	72.6 (6.8)	86.9 (5.7)	72.1 (7.1)	77.8 (6.5)

The descriptive findings indicate that the integration of Differentiated Instruction and Project-Based Learning produced stronger improvements in student engagement and motivation compared with conventional foreign language instruction. Students who participated in differentiated projects experienced greater opportunities to select appropriate learning pathways, contribute according to their abilities, and receive targeted instructional support (Hao & Zhang, 2026). The increase in collaborative engagement suggests that differentiation reduced participation inequalities by enabling students with different proficiency levels to contribute meaningfully to group activities. Students with higher proficiency levels were challenged through more complex tasks, while students requiring additional support received structured guidance and resources.

The motivational improvement observed in the experimental group reflects the influence of learner-centered project experiences. Differentiated tasks appeared to strengthen students' sense of competence because learning activities were aligned with individual readiness levels. The opportunity to make decisions regarding project development also increased students' autonomy and ownership of learning (Wei & Luo, 2025). Authentic language tasks encouraged students to perceive foreign language use as meaningful communication rather than merely an academic requirement. These findings suggest that motivational growth emerged from the interaction between differentiated support and the meaningful social context provided by Project-Based Learning.

The analysis of classroom observation data demonstrated qualitative differences in student participation patterns between the two groups. Students in the experimental group displayed more frequent peer interaction, negotiation of ideas, collaborative problem-solving, and target-language communication during project activities. Observation records indicated that students gradually shifted from lecturer-dependent learning behaviors toward more independent and cooperative learning practices. Group discussions became more balanced as students assumed differentiated roles, including information collectors, language reviewers, content developers, and presentation coordinators.

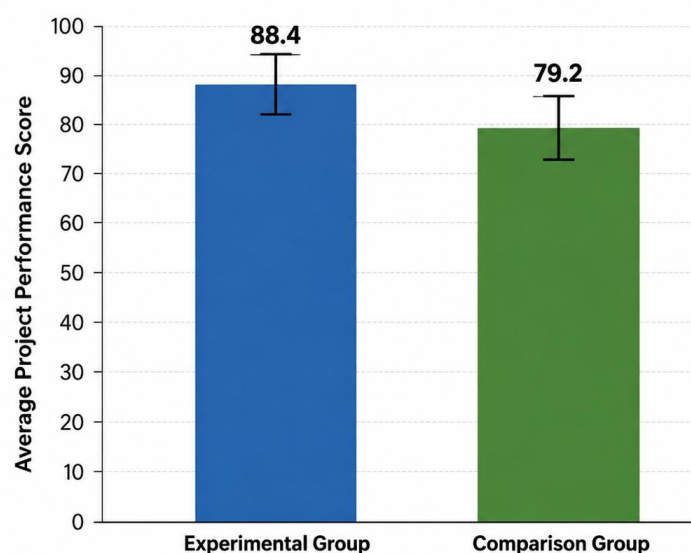


Figure 1. Project Assessment Results: Foreign Language Performance

The project assessment results further demonstrated improvement in students' ability to apply foreign language knowledge in authentic contexts. The experimental group achieved a higher average project performance score of 88.4 ($SD = 4.9$), compared with 79.2 ($SD = 5.8$) in the comparison group. Students produced more linguistically accurate, creative, and contextually appropriate outputs. The improvement was particularly evident in communicative competence,

vocabulary application, and collaborative presentation skills. These results indicate that differentiated project activities provided students with repeated opportunities to practice language skills through purposeful interaction.

Inferential statistical analysis confirmed significant differences between the experimental and comparison groups after the intervention. An independent-samples t-test showed that students receiving Differentiated Instruction combined with Project-Based Learning achieved significantly higher collaborative engagement scores than students in the conventional instruction group ($t = 8.74$, $p < 0.001$). The effect size analysis indicated a large educational effect (Cohen's $d = 1.59$), demonstrating that the instructional intervention produced meaningful changes beyond statistical significance. Similar patterns were observed in motivational outcomes, where the experimental group showed significantly higher posttest motivation scores ($t = 7.92$, $p < 0.001$).

Analysis of foreign language performance also revealed significant differences between groups. Students in the experimental group demonstrated greater improvement in language achievement compared with the comparison group ($t = 8.21$, $p < 0.001$). A repeated-measures analysis showed a significant interaction effect between time and instructional method ($F = 42.63$, $p < 0.001$), indicating that changes over time were strongly associated with the differentiated project-based intervention. Regression analysis further indicated that collaborative engagement significantly predicted motivational improvement ($\beta = 0.47$, $p < 0.001$), while motivational dynamics significantly predicted language performance gains ($\beta = 0.39$, $p < 0.001$).

The relationship analysis revealed significant positive associations among differentiated instruction practices, collaborative engagement, motivational dynamics, and foreign language achievement. Pearson correlation analysis showed that collaborative engagement was strongly correlated with motivation improvement ($r = 0.68$, $p < 0.001$) and moderately correlated with language performance development ($r = 0.59$, $p < 0.001$). Students who demonstrated higher levels of participation, peer interaction, and shared responsibility also tended to show stronger motivation and improved language outcomes. These relationships suggest that collaboration functioned as an important mechanism connecting instructional design and learning achievement.

Structural relationship analysis indicated that differentiated project-based learning influenced language outcomes through both direct and indirect pathways. Differentiated instructional practices significantly predicted collaborative engagement ($\beta = 0.62$, $p < 0.001$), which subsequently contributed to increased motivation ($\beta = 0.54$, $p < 0.001$). Motivation then influenced language performance improvement ($\beta = 0.46$, $p < 0.001$). The findings demonstrate that the instructional model operated through a connected process in which responsive learning design encouraged meaningful collaboration, collaboration strengthened motivation, and motivation supported language development.

A detailed case analysis was conducted on a student group representing mixed proficiency levels within the experimental class. The group consisted of five students with different language abilities who completed a project involving the development of a digital foreign language learning resource. Initial observations showed that students with lower proficiency levels were hesitant to participate in discussions and relied heavily on more advanced peers. The implementation of differentiated roles changed this interaction pattern by assigning responsibilities according to individual strengths while maintaining collective accountability. Students gradually increased their participation, used more target-language expressions, and demonstrated greater confidence during project presentations.

The case study showed that differentiated project structures influenced both individual growth and group collaboration. One student with initially limited speaking confidence demonstrated substantial improvement after receiving a supportive role focused on vocabulary preparation and visual content development. Continuous peer interaction and lecturer feedback encouraged the student to participate more actively in oral presentations. The group's final product received a high evaluation score because each member contributed complementary skills. This case illustrates how differentiated learning pathways can transform differences among learners into collaborative resources rather than barriers.

The case findings explain how differentiation contributed to improved engagement by reducing the mismatch between student ability and task expectations. Traditional uniform project assignments may create situations where less confident students avoid participation because they perceive their contributions as inadequate (Boudouaia et al., 2026). Differentiated project design addressed this challenge by providing multiple forms of contribution, allowing students to participate through linguistic, creative, organizational, and technological competencies. The improvement in participation was therefore not caused solely by group work but by the careful alignment between individual capabilities and collective project objectives.

The motivational changes observed in the case study were associated with increased perceptions of competence, belonging, and ownership. Students reported that the opportunity to contribute according to their abilities reduced anxiety and encouraged greater willingness to communicate. Peer collaboration created a supportive environment where language mistakes were treated as part of the learning process rather than as failures. The case demonstrates that motivational dynamics in foreign language learning are strongly influenced by classroom structures that determine whether students experience inclusion, meaningful contribution, and progressive achievement.

The overall findings demonstrate that the integration of Differentiated Instruction and Project-Based Learning provides an effective framework for promoting collaborative engagement and motivational development in foreign language higher education (Guo et al., 2025). The intervention produced significant improvements in student participation, motivation, and language performance compared with conventional instruction. The results suggest that differentiated project environments create conditions where learner diversity becomes a foundation for collaboration rather than a challenge that limits participation.

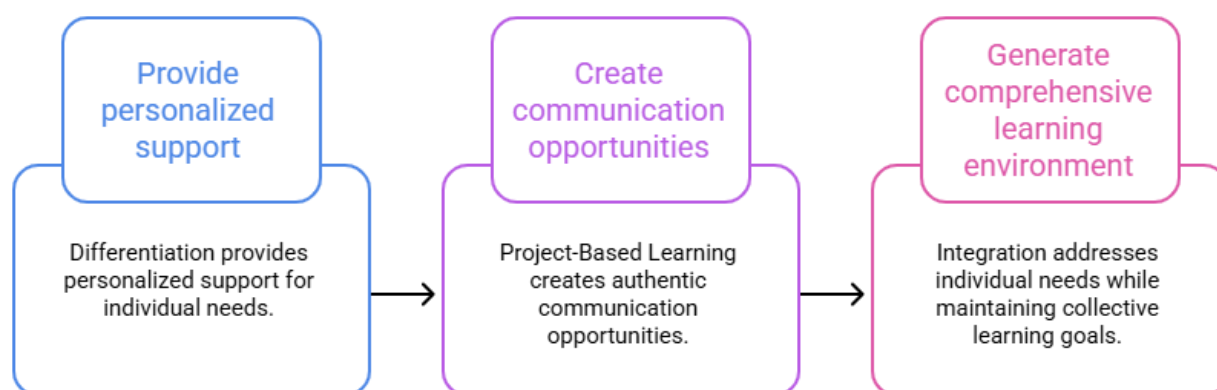


Figure 2. Integrating Differentiation and Project-Based Learning

The findings further indicate that successful foreign language instruction requires attention to both instructional flexibility and meaningful social interaction. Differentiation alone may provide personalized support, while Project-Based Learning alone may create authentic communication opportunities; however, their integration generates a more comprehensive learning environment that addresses individual needs while maintaining collective learning goals (Amumpuni et al., 2025). The results support the development of foreign language pedagogy that emphasizes learner agency, equitable participation, and sustained motivation as essential components of higher education language learning.

The findings of this study demonstrate that the integration of Differentiated Instruction and Project-Based Learning significantly enhanced collaborative engagement, motivational dynamics, and foreign language learning performance among university students. Students who participated in the differentiated project-based learning environment showed greater improvements in collaborative engagement compared with those receiving conventional instruction (Wang et al., 2026). The experimental group demonstrated increased participation, stronger peer interaction, improved shared responsibility, and more active involvement in project activities. These findings indicate that instructional approaches designed to accommodate learner diversity can create more equitable opportunities for students to participate meaningfully in foreign language learning processes.

The motivational outcomes further indicate that differentiated project-based learning contributed to positive changes in students' psychological engagement with learning activities. Students experienced higher levels of self-efficacy, autonomy, task value, willingness to communicate, and persistence after participating in the intervention (Yuan & Liu, 2025). The improvement in motivation suggests that students were more likely to invest effort when learning tasks were perceived as relevant, achievable, and aligned with their individual capabilities. The findings reinforce the argument that motivation in foreign language learning is not merely an internal characteristic of learners but can be shaped through carefully designed instructional environments.

The relationship analysis revealed that collaborative engagement functioned as an important pathway connecting differentiated instruction and language learning outcomes. Students who demonstrated higher levels of interaction, peer support, and participation also showed stronger motivational development and greater improvement in language performance. The results suggest that the effectiveness of the instructional model was not generated solely by providing differentiated materials or project tasks but through the interaction between responsive teaching practices and socially meaningful learning experiences. Collaboration became a mechanism through which students transformed individual differences into collective learning resources.

The case study findings provide further insight into how differentiated project structures influenced student behavior at the individual and group levels. Students who initially demonstrated limited confidence in foreign language communication gradually became more active when project responsibilities were aligned with their strengths and learning readiness (Borasheva, 2026). The transformation observed in the case study indicates that differentiated project-based learning can reduce participation barriers and encourage students to view diversity within groups as an advantage rather than a limitation. The overall findings confirm that combining differentiation and project-based approaches offers a promising pathway for developing inclusive and motivationally supportive foreign language classrooms.

The findings are consistent with previous research emphasizing the potential of Project-Based Learning to improve language learning through authentic communication, collaboration, learner autonomy, and meaningful task completion. Earlier studies have shown that project-based

approaches encourage students to use language as a tool for achieving real purposes rather than merely practicing isolated linguistic forms. The present study extends this perspective by demonstrating that the effectiveness of Project-Based Learning can be strengthened when project activities are designed responsively according to students' diverse readiness levels, learning preferences, and motivational conditions. The results therefore support previous arguments regarding the value of authentic learning while adding a stronger focus on differentiated participation.

Research on Differentiated Instruction has also reported positive effects on student achievement, engagement, and classroom inclusion. Previous studies have emphasized that adapting content, learning processes, and assessment strategies can address differences among learners and promote more personalized learning experiences. The current findings align with this perspective by showing that differentiation within project-based environments can improve not only individual learning experiences but also the quality of group collaboration. The difference lies in the present study's emphasis on the interaction between differentiation and collaborative project processes rather than examining differentiation as an independent instructional strategy.

Recent studies have reported that Project-Based Learning can enhance motivation and engagement in higher education language contexts, particularly when students experience autonomy, authenticity, and ownership of learning tasks. Research has also highlighted that project activities may produce motivational challenges when students encounter unclear expectations, unequal group participation, or excessive task demands. The current findings contribute to this discussion by suggesting that differentiated project structures can minimize some of these challenges through flexible roles, adjusted levels of support, and varied pathways toward achieving common learning objectives. The results indicate that the motivational benefits of Project-Based Learning may depend substantially on how effectively instructors manage learner diversity within project environments.

The findings also differ from studies that treat student-centered approaches as automatically effective regardless of implementation conditions. A student-centered classroom does not necessarily guarantee equal participation or sustained motivation because learners may still experience barriers related to proficiency differences, confidence, prior experience, and social interaction patterns. The present study highlights that instructional design remains a critical factor determining whether collaborative learning becomes inclusive or reproduces existing inequalities. The combination of Differentiated Instruction and Project-Based Learning appears valuable because it addresses both dimensions simultaneously: individual learner variation and collective knowledge construction.

The findings signify a broader transformation in the understanding of foreign language learning from a standardized instructional process toward a more adaptive and learner-responsive system. Traditional language classrooms often emphasize common materials, uniform tasks, and identical assessment procedures despite considerable differences among students. The positive outcomes observed in this study indicate that recognizing learner diversity is not merely a matter of accommodating weaker students but a fundamental principle for improving learning opportunities for all students. Differentiation functions as a means of creating multiple pathways toward shared educational goals rather than lowering academic expectations.

The improvement in collaborative engagement reflects an important shift in how classroom diversity should be interpreted. Differences in language proficiency, learning strategies, and confidence levels are frequently viewed as obstacles to effective group work. The findings suggest that these differences can become productive resources when instructional structures allow students

to contribute through complementary roles and abilities. Collaboration becomes more meaningful when students are not forced into identical participation patterns but are supported to contribute according to their developmental readiness and strengths.

The motivational findings provide evidence that student motivation is closely connected with instructional experiences rather than existing independently from classroom conditions. Increased autonomy, competence, and perceived relevance among participants indicate that motivational dynamics are influenced by how students experience learning activities. Students are more likely to engage deeply when they perceive that their contributions matter, their abilities are recognized, and their efforts lead to meaningful outcomes. The study therefore reinforces the perspective that motivation should be understood as a dynamic process shaped through interaction between learners and their educational environment.

The findings also represent evidence that effective foreign language pedagogy requires balancing individualization and social learning. Excessive emphasis on personalization may reduce opportunities for interaction, while excessive emphasis on group uniformity may ignore learner differences. The successful integration of Differentiated Instruction and Project-Based Learning demonstrates that individualized support and collaborative learning are not contradictory principles. The results indicate that educational innovation should focus not on choosing between personalized and collaborative approaches but on designing learning environments where both dimensions strengthen each other.

The practical implication of this study is that foreign language educators should reconsider how instructional flexibility is incorporated into university language courses. Lecturers should move beyond standardized tasks and develop learning experiences that provide multiple opportunities for students to access content, participate in activities, and demonstrate language competence. Differentiated project-based learning offers a framework for designing assignments that maintain common academic objectives while allowing variation in learning pathways, resources, roles, and outcomes. Such practices may increase student participation without reducing the intellectual demands of higher education language learning.

The findings also have implications for curriculum development and teacher preparation programs. Effective implementation of Differentiated Instruction and Project-Based Learning requires lecturers to possess skills in learner analysis, project design, formative assessment, classroom facilitation, and collaborative management. Professional development programs should therefore prepare educators not only to understand these approaches theoretically but also to apply them strategically in diverse classrooms. Curriculum planners should consider incorporating flexible pedagogical models that recognize student diversity as a normal characteristic of higher education rather than an exceptional challenge.

The study provides implications for promoting more inclusive foreign language education. Students with different proficiency levels often experience unequal opportunities to participate in classroom communication, particularly when activities are designed around a single standard of performance. Differentiated project environments may reduce these disparities by allowing students to contribute through various forms of competence. Such approaches are particularly relevant in multilingual and multicultural higher education settings where students enter language classrooms with different linguistic histories and educational experiences.

The findings also suggest that institutions should evaluate instructional success through broader indicators than examination scores alone. Collaborative engagement, motivational development, learner autonomy, and willingness to communicate represent important dimensions of successful foreign language education. The integration of these indicators into educational

evaluation systems may provide a more comprehensive understanding of teaching effectiveness. The study demonstrates that improving language learning outcomes requires attention not only to what students learn but also to how they experience the learning process.

The positive effects of the intervention can be explained through the alignment between differentiated learning principles and the characteristics of Project-Based Learning. Differentiated Instruction addresses learner variability by adjusting instructional conditions according to students' readiness and needs, while Project-Based Learning provides authentic contexts for applying knowledge through meaningful activities. The combination creates a learning environment where students receive appropriate support while still engaging in challenging tasks. This alignment likely contributed to improved participation because students were neither excluded by excessive difficulty nor limited by insufficient challenge.

The improvement in motivation can also be explained through psychological mechanisms associated with autonomy, competence, and relatedness. Differentiated project activities allowed students to make choices, assume meaningful responsibilities, and experience successful progress within collaborative tasks. These experiences may strengthen students' beliefs in their own abilities and increase their willingness to invest effort in foreign language learning. The social nature of project work further supported motivation by creating opportunities for interaction, feedback, and shared achievement among peers.

The improvement in collaborative engagement occurred because the instructional model transformed group work from a simple division of tasks into a structured process of interdependent learning. Conventional group activities may allow unequal participation because students often divide responsibilities according to existing abilities or confidence levels. Differentiated project structures reduced this problem by assigning meaningful roles and providing support mechanisms that encouraged broader participation. Students became active contributors because their individual strengths were recognized as valuable components of collective success.

The results may also be explained by the authenticity of project-based language tasks. Foreign language learning often becomes disconnected from real communication when classroom activities focus primarily on exercises, memorization, or examination preparation. Project-based activities require students to use language for authentic purposes, which increases perceived relevance and encourages deeper engagement. The addition of differentiated support ensured that authenticity did not become a barrier for less prepared students. The instructional model was therefore effective because it combined meaningful language use with appropriate levels of challenge and support.

Future research should investigate the long-term effects of differentiated project-based learning across different foreign language contexts, educational levels, and cultural environments. The present findings provide evidence from a specific higher education setting, but broader validation is required to determine whether similar effects occur among learners with different linguistic backgrounds, institutional characteristics, and educational traditions. Comparative studies involving multiple universities and language programs would strengthen understanding of the generalizability of the instructional model.

Further studies should examine the specific mechanisms through which differentiation influences motivation and collaboration. Although the current findings demonstrate significant relationships among instructional practices, engagement, and motivation, additional research could explore which dimensions of differentiation contribute most strongly to learning outcomes. Future investigations may examine whether differentiation of content, process, product, assessment, or grouping strategies produces different effects on student engagement and language development.

Future research should also incorporate more sophisticated analytical approaches to understand changes in student learning processes over time. Longitudinal studies, learning analytics, social network analysis, and classroom interaction analysis could provide deeper insights into how collaborative engagement develops throughout project implementation. Such approaches would allow researchers to identify critical moments when students become more engaged or disengaged and determine how instructional interventions influence these trajectories.

The next stage of development should focus on supporting practical implementation at institutional levels. Although Differentiated Instruction and Project-Based Learning demonstrate considerable potential, challenges related to lecturer workload, assessment complexity, resource availability, and classroom management must be addressed. Future studies should explore scalable models, digital support systems, and professional development frameworks that enable broader adoption of differentiated project-based learning. Continued research is needed to ensure that innovative foreign language pedagogy becomes not only theoretically effective but also sustainable in diverse higher education environments.

CONCLUSION

The most important finding of this study is that the integration of Differentiated Instruction and Project-Based Learning significantly strengthened collaborative engagement, motivational dynamics, and foreign language learning performance among higher education students. The study demonstrates that differentiated project-based learning does not merely improve academic achievement but also transforms classroom interaction by enabling students with different proficiency levels, learning preferences, and confidence levels to participate more meaningfully. The distinctive contribution of the findings lies in showing that learner diversity can function as a collaborative resource when instructional structures provide flexible pathways for participation. The improvement in motivation, self-efficacy, autonomy, and willingness to communicate indicates that the effectiveness of project-based language learning is strongly influenced by the extent to which instructional design responds to individual learner conditions.

The major contribution of this research is primarily conceptual and methodological because it proposes an integrated framework that connects Differentiated Instruction, Project-Based Learning, collaborative engagement, and motivational development within a single analytical perspective. Conceptually, the study advances the understanding that personalized learning and collaborative learning are not competing approaches but complementary dimensions that can reinforce each other in foreign language higher education. Methodologically, the research contributes through the combination of quantitative measurements and qualitative evidence to examine not only whether the instructional model produces positive outcomes but also how and why those outcomes occur. The findings provide a foundation for developing more inclusive, adaptive, and student-centered language learning environments that emphasize equitable participation and sustained motivation.

The study has several limitations that should be considered when interpreting the findings and determining future research directions. The research was conducted within a specific higher education context with a limited sample size, which may restrict the generalizability of the results across different institutions, languages, cultural settings, and educational systems. The intervention period was also limited to one academic semester, preventing a comprehensive examination of the long-term sustainability of changes in motivation, collaboration, and language development. Future studies should investigate the effectiveness of differentiated project-based learning through longitudinal designs, larger multi-institutional samples, and comparative studies across different foreign language programs. Further research may also explore the role of digital learning

environments, artificial intelligence-supported differentiation, teacher professional development, and advanced analytical approaches to understand how this instructional model can be implemented effectively at broader educational levels.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used Grammarly to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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