Research Article

A PROJECT-BASED ONLINE COLLABORATIVE LANGUAGE LEARNING MODEL: A CASE STUDY OF PODCAST CREATION BY CROSS-UNIVERSITY STUDENTS

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Article Info

Abstract

The digitalization of higher education necessitates innovative pedagogical models that promote authentic language use and foster 21st-century skills. While online learning offers flexibility, creating engaging, collaborative environments that bridge institutional boundaries remains a significant challenge. This study aims to describe the implementation of a project-based online collaborative language learning model and to analyze students' collaborative dynamics and learning outcomes during a cross-university podcast creation project. Employing a qualitative case study design, this research involved 20 undergraduate students from two distinct universities. Data were gathered via virtual observations, semi-structured interviews, and artifact analysis of the final podcasts and reflective journals. Findings reveal the model effectively facilitated dynamic collaboration, leading to significant development not only in linguistic competencies, such as speaking fluency and vocabulary, but also in digital literacy, negotiation, and teamwork. The cross-university nature of the project enhanced intercultural communication, despite initial logistical challenges. The study concludes that the project-based online collaborative learning model, specifically through podcast creation, serves as a viable and effective framework for enhancing language acquisition and collaborative skills in a virtual, cross-institutional setting.

INTRODUCTION

The contemporary landscape of higher education is undergoing a profound transformation, driven by the dual forces of globalization and rapid technological advancement. Traditional pedagogical paradigms, which have long been characterized by didactic, teacher-centered instruction within the physical confines of a classroom, are increasingly being re-evaluated for their efficacy in preparing students for the complexities of the 21st-century digital society (Garcia dkk., 2013). This evolution necessitates the adoption of innovative instructional models that not only disseminate knowledge but also cultivate essential competencies such as critical thinking, digital literacy, and cross-cultural collaboration. The integration of digital technologies into curricula has moved beyond a supplementary role to become a core component of instructional design, fostering environments where learning is more accessible, flexible, and learner-centric (Lau dkk., 2025). This shift is particularly salient in the post-pandemic era, where online and hybrid learning modalities have become institutionalized, compelling educators to explore and implement frameworks that can replicate and even enhance the interactive richness of face-to-face learning in a virtual space.

Language education, in particular, stands at a critical juncture within this transformative period. The fundamental objective of language acquisition extends beyond the memorization of grammatical rules and vocabulary; it is rooted in the development of communicative competence through authentic, meaningful interaction (Bassiouny dkk., 2025). Conventional methodologies have often struggled to provide learners with sufficient opportunities for spontaneous language use in realistic contexts, a challenge that can be amplified in poorly designed online settings. The need for pedagogical approaches that immerse students in authentic communicative tasks is therefore more pressing than ever. Project-Based Learning (PjBL) has emerged as a powerful framework to address this need (Yang dkk., 2024). By engaging students in sustained, collaborative inquiry culminating in the creation of a tangible public product, PjBL fosters deep learning, intrinsic motivation, and the practical application of linguistic skills in a context that mirrors real-world challenges and professional workflows.

The convergence of PjBL with online collaborative technologies presents a potent opportunity to design highly engaging and effective language learning experiences (Brahimi & Sarirete, 2024). Platforms and tools for synchronous and asynchronous communication enable students to collaborate on complex projects irrespective of their geographical locations, thereby breaking down institutional silos (Pereira dkk., 2021). This synergy facilitates the creation of a vibrant, socially constructed learning environment where students actively negotiate meaning, co-construct knowledge, and provide peer scaffolding. When this collaboration extends across different universities, it introduces a valuable dimension of intercultural exchange, preparing students for the globalized professional environments they will eventually enter. This study is situated at the intersection of these domains, exploring a model that leverages the affordances of online collaboration and the pedagogical strengths of PjBL to create a novel language learning ecosystem.

Despite the theoretical promise of online learning, its practical implementation often falls short of its potential, particularly in fostering genuine collaboration and authentic communication (Calvert dkk., 2023). Many online courses are structured as repositories for content, relying on passive consumption of materials followed by individual assessments, which fails to cultivate a sense of community or shared intellectual endeavor. This passive design is fundamentally at odds with the principles of language acquisition, which is an inherently social and interactive process (Conesa dkk., 2013). The absence of dynamic, task-based interaction can lead to student disengagement, heightened communication anxiety, and a failure to develop the pragmatic and sociolinguistic competencies that are crucial for effective communication. The challenge for language educators is to design virtual learning

environments that are not merely digital replicas of traditional classrooms but are instead dynamic spaces that promote active, collaborative, and meaningful use of the target language.

This general problem is significantly exacerbated when collaborative projects are implemented across institutional boundaries. While cross-university collaborations offer immense potential for enriching the learning experience, they are fraught with logistical, administrative, and technological challenges (Jovkovska, 2023). Students and instructors must navigate disparate academic calendars, differing institutional policies, and incompatible learning management systems. Furthermore, establishing effective communication protocols and building group cohesion among students who have never met in person and who may come from different academic cultures requires deliberate and careful pedagogical design. The lack of established models and best practices for structuring and facilitating such inter-institutional projects often leads to fragmented efforts, resulting in student frustration and a failure to achieve the intended learning outcomes (Addone dkk., 2022). The specific problem, therefore, is the absence of a well-defined and empirically validated pedagogical framework for implementing project-based collaborative language learning in a cross-university online context.

The choice of podcast creation as the central project introduces a further layer of complexity that highlights a specific dimension of the problem. Producing a high-quality podcast requires more than just linguistic proficiency; it demands a suite of digital literacy skills, including audio recording and editing, scriptwriting for an oral medium, and narrative construction. Many language learners may lack experience and confidence in these technical domains, and language curricula have traditionally overlooked the explicit instruction of such digital production skills (Pinto & Escudeiro, 2017). The problem, therefore, is not only how to facilitate linguistic and interpersonal collaboration online but also how to effectively scaffold the acquisition of the necessary technical competencies required for the successful completion of a sophisticated digital media project. Without a structured model to address this dual challenge, the cognitive load on students can become overwhelming, detracting from the core language learning objectives.

The primary objective of this study is to meticulously describe and analyze the implementation of a project-based online collaborative language learning model centered on podcast creation by students from two distinct universities. This research seeks to provide a comprehensive, fine-grained account of the pedagogical framework, the technological tools employed, and the instructional strategies used to facilitate the collaborative process. The study aims to move beyond a mere summative evaluation of outcomes to illuminate the nuanced dynamics of the learning process itself, documenting the challenges encountered and the solutions devised by both students and instructors (Perifanou & Economides, 2021). By presenting this detailed case study, the research intends to offer a transparent and replicable model that other educators can adapt and implement in their own institutional contexts.

A key secondary objective is to investigate the impact of this model on students' development of both linguistic and non-linguistic competencies. On the linguistic front, the research aims to examine gains in areas such as oral fluency, pronunciation, lexical diversity, and pragmatic competence as demonstrated through the podcast production process and the final artifacts (Guralnick dkk., 2022). Concurrently, the study will analyze the development of critical 21st-century skills. This includes evaluating the growth of students' digital literacy through their engagement with audio production software, their ability to collaborate effectively in a virtual team environment, their problem-solving skills in navigating logistical and technical hurdles, and their capacity for negotiation and consensus-building during the creative process.

Furthermore, this research aims to explore the affective and sociocultural dimensions of the cross-university collaborative experience. The study will investigate students' perceptions, attitudes, and levels of motivation throughout the project. It seeks to understand how the

online, inter-institutional format influenced group dynamics, the building of rapport and social presence, and the development of intercultural awareness. By analyzing students' reflective journals and interview responses, this objective is focused on capturing the lived experience of the learners, providing insights into the affective factors that contribute to or hinder the success of such collaborative endeavors (Dewi & Sukarni, 2024). This will help to formulate recommendations for fostering a positive and productive social climate in future implementations.

The existing body of scholarly literature contains extensive research on the application of Project-Based Learning within traditional, face-to-face educational settings. These studies have robustly demonstrated the effectiveness of PjBL in enhancing student engagement, critical thinking, and long-term knowledge retention across various disciplines. Similarly, the field of Computer-Assisted Language Learning (CALL) has produced a wealth of research exploring the use of digital tools to support language acquisition, with numerous studies focusing on computer-mediated communication, virtual exchanges, and online learning platforms (Hart & Amos, 2014). These foundational bodies of work provide strong theoretical and empirical support for the individual components of the model under investigation in this paper.

However, a discernible gap emerges in the literature at the intersection of these fields. While some studies have explored online PjBL, they have predominantly focused on collaborations within a single institution or have centered on text-based projects such as wikis, blogs, or collaborative writing assignments. Research that specifically investigates the use of multimodal, creative production tasks, such as podcasting, as the central pillar of an online PjBL framework for language learning remains relatively scarce (O'Dowd, 2015). The unique affordances and challenges of audio-based collaborative projects—which foreground speaking, listening, and prosodic skills—are consequently undertheorized and lack a sufficient empirical base in the existing literature.

The most significant and critical lacuna, which this study directly addresses, is the dearth of research on the design and implementation of PjBL models in a cross-university online context for language learning (Baiio & Ray, 2011). The logistical and pedagogical complexities inherent in orchestrating collaboration between students from different institutional cultures, who are separated geographically and operate under different administrative structures, have not been adequately explored. Most existing models of online exchange or telecollaboration tend to focus on short-term, less integrated tasks rather than a semester-long, deeply embedded PjBL approach (Gong dkk., 2024). This study, therefore, fills a crucial gap by providing an in-depth case study of a structured, sustained, and product-oriented collaborative project that bridges institutional divides, offering insights into a vital and increasingly relevant area of higher education pedagogy.

The primary novelty of this research lies in its holistic and integrated pedagogical model. It synthesizes three critical elements—Project-Based Learning, online collaborative technologies, and a cross-university framework—into a cohesive whole, using the specific and contemporary medium of podcast creation as the project's core. This integrated approach is novel because it moves beyond studying these components in isolation, instead examining the synergistic effects that arise from their combination (Jeanmaire & Kim, 2019). The focus on podcasting as a learning artifact is itself an innovative aspect, as it shifts the focus of language production from traditional written essays or oral presentations to a publicly shareable, digitally native format that requires a sophisticated blend of linguistic, technical, and narrative skills. This provides a fresh perspective on authentic assessment in language education.

This study is justified by its potential to make significant contributions to both theory and pedagogical practice. Theoretically, it extends the application of sociocultural learning theories, such as Vygotsky's Zone of Proximal Development and the concept of communities of practice, to the complex, digitally mediated, and inter-institutional learning context. It provides empirical data on how knowledge is co-constructed and skills are scaffolded within a virtual

project team composed of learners from diverse backgrounds. From a pedagogical standpoint, the research is justified by the urgent need for evidence-based models for effective online and collaborative teaching (Oksana & Galstyan-Sargsyan, 2021). The findings will provide practical, actionable insights for language educators, instructional designers, and curriculum developers seeking to create more engaging, authentic, and impactful learning experiences that cultivate the skills demanded by a globalized, digital world.

The broader significance of this research extends to its implications for the future of higher education. As universities increasingly seek to foster collaboration and internationalization, models that facilitate meaningful cross-institutional projects are of paramount importance. This study provides a blueprint for leveraging technology to create high-impact learning practices that transcend the traditional boundaries of the university campus (Gil-Pechuán dkk., 2009). The findings will be of value to university administrators and policymakers interested in promoting innovative pedagogies and developing scalable frameworks for inter-institutional cooperation (Denkel dkk., 2024). By documenting a successful case of a cross-university collaborative project, this research provides not just a scholarly contribution but also a practical and inspiring example of how to build connected learning communities in the digital age.

RESEARCH METHOD

The following section contains the type of research, research design, targets/subjects, procedures, instruments, and data analysis techniques used in this study (Srimadhaven dkk., 2020). The details are organized into sub-chapters using sub-headings written in lowercase with an initial capital letter, following the formatting guidelines.

Research Design

This study employed a qualitative case study methodology to gain an in-depth, holistic understanding of the project-based online collaborative language learning model. A case study approach was deemed most appropriate as it facilitates an intensive investigation of the contemporary cross-university podcast creation project within its real-life context (Murphy dkk., 2009). The research design is bounded by the specific pedagogical intervention and the group of participants involved over one academic semester. This approach allows for a rich, detailed description of the processes, challenges, and outcomes of the model, focusing on the "how" and "why" of student interactions and learning experiences through an interpretive lens.

Research Target/Subject

The participants in this study comprised 20 undergraduate students enrolled in intermediate-level English for Specific Purposes (ESP) courses at two different public universities in Indonesia. Purposive sampling was utilized to select participants from intact classes taught by the collaborating instructors. The sample consisted of 10 students from a Faculty of Engineering (University A) and 10 students from a Faculty of Social and Political Sciences (University B). This intentional, heterogeneous composition was designed to foster dynamic intercultural and interdisciplinary exchange. All participants were non-native English speakers with an approximate proficiency level of B1 on the CEFR, and their ages ranged from 19 to 21 years.

Research Procedure

The research was conducted over a 16-week academic semester and followed a structured four-phase procedure. The first phase (Weeks 1–2) involved participant recruitment, orientation, and technology training (introducing platforms like Google Docs, Slack, Audacity). The second phase (Weeks 3–5) focused on group formation into mixed-university

groups of four and collaborative project planning. The third and longest phase (Weeks 6–14) was the project implementation and data collection period, during which students executed their projects and researchers conducted virtual observations and collected reflective journals. The final phase (Weeks 15–16) involved the submission of the final podcasts, followed by the administration of the semi-structured interviews. All collected data were subsequently anonymized, transcribed, and prepared for thematic analysis.

Instruments, and Data Collection Techniques

Data for this research were collected through a triangulation of multiple qualitative instruments to ensure the credibility and richness of the findings (Wiese dkk., 2003). The primary instruments included: individual semi-structured interviews conducted with all 20 participants at the conclusion of the project; non-participant virtual observations carried out during synchronous virtual meetings (via Zoom), focusing on group dynamics and communication strategies; and document analysis performed on student-produced artifacts, including the final podcast episodes, collaborative scripts, and weekly individual reflective journals, which provided insight into linguistic output and personal reflections.

Data Analysis Technique

The collected qualitative data (interview transcripts, observation notes, and document artifacts) will be analyzed using thematic analysis (Sabadash dkk., 2025). This technique will involve a rigorous, iterative process of familiarization, coding, theme generation, review, and final reporting (Al Khateeb & Hassan, 2023). The analysis will focus on identifying recurring patterns and core themes related to the collaborative process, challenges faced, skill development, and participants' subjective meanings of the learning experience, directly addressing the research objectives.

RESULTS AND DISCUSSION

Thematic analysis of the qualitative data collected from semi-structured interviews and reflective journals yielded four superordinate themes and several associated sub-themes regarding the student experience. These themes illuminate the multifaceted impact of the project-based online collaborative learning model on participants' development (Reus, 2022). The frequency of these themes across the participant cohort provides a quantitative overview of the most salient perceived outcomes of the pedagogical intervention. A summary of these findings is presented below.

Table 1. Summary of Major Themes from Interview and Journal Data

Superordinate Theme	Sub-theme	Frequency (N=20)	Illustrative Quote
1. Enhanced Communicative Competence	Increased Speaking Confidence	19	"I was very nervous at first, but after practicing for the podcast, I feel I can speak more freely now."
	Expanded Vocabulary	16	"We learned many new terms about engineering and social issues from our new friends."
	Improved Listening Skills	18	"Editing the audio forced me to listen very carefully to pronunciation and mistakes."
2. Development of Collaborative Skills	Negotiation and Compromise	20	"Deciding on one topic was hard. We had to debate and finally vote to be fair."

	Role Delegation	17	"We assigned roles like researcher, writer, editor... it made the work more organized."
	Intercultural Communication	15	"My partners from the other university have different ways of thinking. It was interesting."
3. Growth in Digital Literacy	Technical Skill Acquisition	18	"I had never used Audacity before. Now I can edit audio, add music, and remove noise."
	Digital Communication Tools	20	"We used Slack for quick chats and Google Docs for the script. It was very efficient."
4. Affective Domain Impact	Increased Motivation	16	"Making a real podcast for others to hear was more motivating than a normal class assignment."
	Sense of Accomplishment	19	"When we finished our first episode, we felt so proud of our work."
	Initial Anxiety	14	"I was worried about working with strangers from another campus and about the technology."

The data detailed in Table 1 indicates that participants overwhelmingly perceived the project as beneficial for their development. The themes of Negotiation and Compromise and proficiency with Digital Communication Tools were universal, mentioned by all 20 participants. High-frequency themes such as Increased Speaking Confidence (n=19), Sense of Accomplishment (n=19), Improved Listening Skills (n=18), and Technical Skill Acquisition (n=18) underscore the model's perceived effectiveness in enhancing both linguistic and practical competencies. The presence of Initial Anxiety (n=14) suggests that while the outcomes were positive, the initial phase of the project presented significant challenges for a majority of the students.

Explanations for the high prevalence of themes related to communicative competence centered on the authentic nature of the podcasting task. Participants expressed that the project required them to use English for a genuine communicative purpose rather than for a contrived classroom exercise. The need to produce a clear, engaging, and coherent audio product for a public audience compelled students to focus intently on their pronunciation, intonation, and clarity, moving beyond mere grammatical accuracy (Miguel & Carney, 2022). This purpose-driven context appeared to lower the affective filter for many, transforming speaking practice from a source of anxiety into a creative and collaborative endeavor.
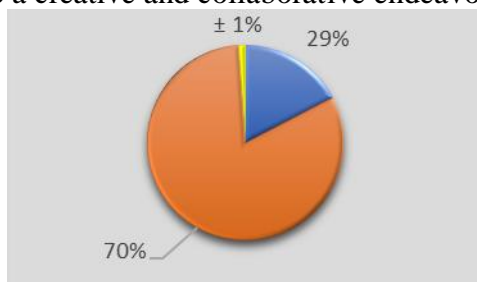

Figure 1. Discourse of Core Competencies VS. Iniitial Affective Challenges

The development of collaborative skills was explained by the project's inherent interdependence. The cross-university and interdisciplinary group structure made collaboration a necessity, not an option. Students reported that they could not have completed the complex task of producing a podcast alone, forcing them to learn how to effectively negotiate ideas, manage conflicts, and delegate tasks based on individual strengths. This process was often described as challenging but ultimately rewarding, providing students with practical experience in teamwork that they viewed as directly applicable to their future professional lives.

Descriptive data from the non-participant virtual observations provide a behavioral correlate to the self-reported data. Analysis of recorded synchronous meetings revealed a clear evolution in group interaction patterns over the semester. Initial meetings were often characterized by long silences, a reliance on the instructors for direction, and communication dominated by one or two more confident individuals (Madkour & Alaskar, 2024). Communication was frequently transactional, focused solely on dividing tasks with minimal social interaction.
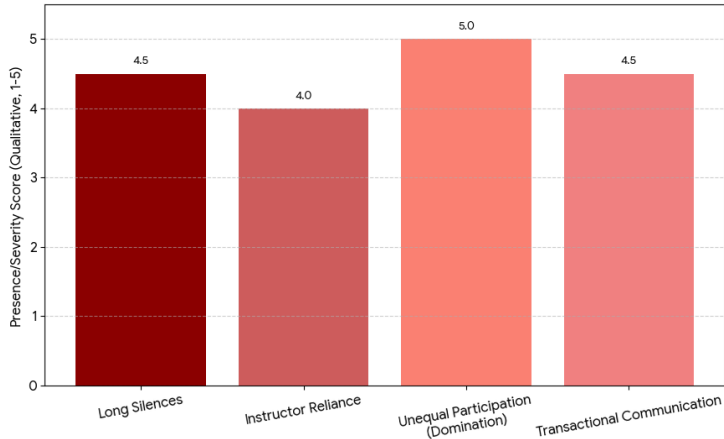

Figure 2. Initial Group Interaction Patterns (Start of Semester)

As the project progressed, a tangible shift in dynamics was observed. Later meetings demonstrated more distributed leadership, with different members initiating discussion points and taking the lead on various aspects of the project. There was a marked increase in instances of peer scaffolding, where students would explain technical concepts to one another or provide linguistic feedback on script drafts. Social talk and instances of humor also became more frequent, indicating a higher level of group cohesion and comfort among the participants.

Inferential analysis of these evolving interaction patterns suggests that the project structure successfully fostered a community of practice within each group. The shared goal and sustained engagement over several weeks allowed students to move beyond their initial status as strangers and develop a sense of collective identity and mutual trust. This transition appears crucial, as the observed increase in collaborative and social behaviors coincided with the periods of most intensive scriptwriting and audio production, implying that the established group cohesion enabled more effective and efficient work during critical project phases.

The scaffolding provided by the instructors in the initial phases can be inferred as a critical factor in mitigating the initial anxiety reported by students. The early-stage training on technology and project management provided a foundational structure that helped groups navigate the initial uncertainty. This structured support appears to have empowered students, allowing them to build confidence and take ownership of their project over time. The gradual reduction in instructor intervention observed in later meetings suggests that this initial scaffolding was successful in fostering student autonomy.

A strong relationship was evident between the themes emerging from the reflective journals and the quality of the final podcast artifacts. Groups whose journals documented detailed and reflective discussions about their topic, narrative structure, and target audience tended to produce podcasts that were more coherent, engaging, and polished. The journals

acted as a space for metacognitive reflection, and this planning and problem-solving process was directly manifested in the sophistication of the final product.

There was also a clear convergence between the interview data on perceived skill development and the observational data. For instance, students who reported significant gains in speaking confidence were often the same individuals observed taking on more active speaking roles in group meetings as the semester progressed. This triangulation of data strengthens the validity of the finding that the model fostered genuine development, as the participants' internal perceptions were supported by external, observable behavioral changes.

The case of one specific group, "The Innovators," composed of two engineering students and two political science students, serves as a poignant illustration of the project's dynamics. This group's reflective journals and initial meeting observations revealed significant early-stage conflict regarding their podcast topic. The engineering students proposed a highly technical topic on renewable energy, while the political science students advocated for a topic on youth political engagement. Their initial discussions were strained and unproductive, reflecting a disciplinary divide.

Their breakthrough occurred in the fourth week, documented in their journals, when they decided to merge their interests. They created a podcast series titled "Tech for Change," with their first episode focusing on how social media technology was used to organize youth-led environmental movements. This compromise allowed all members to contribute their specific domain knowledge. The final podcast demonstrated a seamless integration of technical explanation and social analysis, and their final interview responses were filled with positive statements about learning from each other's disciplines.

The case of "The Innovators" clearly explains the process of interdisciplinary negotiation and knowledge co-construction. Their journey shows that the project's structure compelled students to move beyond their academic silos and find common ground, a crucial skill in real-world problem-solving. Their final product was richer and more nuanced than a project created by a disciplinary homogenous group likely would have been, illustrating the direct benefits of the cross-university, interdisciplinary model.

This case also explains the practical application of collaborative skills. The group's ability to navigate their initial conflict and arrive at an innovative compromise exemplifies the negotiation and problem-solving skills reported in the broader dataset. Their success was not accidental but a direct result of a structured process of communication, debate, and consensus-building facilitated by the project's requirements, highlighting the model's capacity to teach process as much as content.

A brief interpretation of these results indicates that the project-based online collaborative learning model was highly effective in achieving its intended objectives. The findings from all data sources consistently point towards significant gains in students' linguistic skills, collaborative competencies, and digital literacy. The model appears to successfully leverage the authentic task of podcast creation to foster an engaging and motivating learning environment.

The cross-university element, while introducing initial hurdles related to communication and group formation, ultimately served as a powerful catalyst for growth. It pushed students out of their comfort zones and exposed them to different perspectives, enhancing both their intercultural communication skills and the quality of their academic work. The positive affective outcomes, particularly the strong sense of accomplishment, suggest that the challenging yet supportive nature of the project fostered resilience and a deep sense of ownership among the participants.

This study's findings collectively demonstrate the profound effectiveness of the implemented project-based online collaborative learning model. Participants reported substantial and multifaceted growth across several key domains. The most salient outcomes were clustered around enhanced communicative competence, the development of robust collaborative skills, and a significant increase in digital literacy. These self-reported gains were

corroborated by observational data that captured the evolution of group dynamics from tentative, transactional interactions to a more cohesive and synergistic state of collaboration. The results paint a picture of a learning experience that was both challenging and deeply rewarding for the students involved.

The affective dimension of the student experience emerged as a critical component of the results. A significant number of participants acknowledged experiencing initial anxiety, stemming from the novel task of working with unknown peers from another institution and the technical demands of podcast production. This initial apprehension, however, was largely supplanted by a powerful sense of motivation and ultimate accomplishment. The authenticity of the final product, a publicly accessible podcast, served as a powerful intrinsic motivator, driving engagement and a commitment to quality that might be absent in more conventional academic assignments.

The universality of certain developed skills, such as negotiation and the use of digital communication tools, is a noteworthy result. Every participant identified these as areas of growth, highlighting the model's capacity to deliver consistent outcomes in core 21st-century competencies. The cross-disciplinary nature of the groups, as exemplified by the case of "The Innovators," was shown to be a crucible for these skills, forcing students to bridge conceptual divides and co-construct new, integrated knowledge. This process of intellectual and interpersonal negotiation was central to the project's success.

A final summary point relates to the clear relationship between process and product. The triangulation of data from reflective journals, observations, and final artifacts revealed that the quality of the collaborative process directly predicted the quality of the final podcast. Groups that engaged in more thorough reflection, demonstrated more effective communication, and successfully navigated conflicts invariably produced superior work. This underscores the idea that the model did not just teach content or skills in isolation; it taught a holistic process of collaborative creation from ideation to final execution.

The findings of this study strongly align with and extend existing literature in the field of Project-Based Learning. The observed increases in student motivation and engagement resonate with a large body of research that champions PjBL for its ability to connect learning to real-world contexts. The work of Thomas (2000) and the Buck Institute for Education has consistently shown that authentic tasks lead to deeper learning and greater student ownership. This study contributes to that literature by demonstrating these principles hold true, and are perhaps even amplified, in a fully online, cross-university environment.

The development of communicative competence, particularly speaking confidence and listening skills, supports previous research in Computer-Assisted Language Learning (CALL) and telecollaboration. Scholars like O'Dowd (2007) have highlighted the potential of virtual exchanges to provide authentic audiences and purposes for language use. This research differs by embedding the linguistic practice within a long-term, product-oriented project, suggesting that the sustained nature of PjBL may offer a more robust framework for developing fluency and accuracy than shorter, more fragmented virtual exchange tasks.

The study's results diverge from some of the more cautious literature regarding online collaboration, which often highlights issues of social loafing, technological barriers, and transactional distance. While our participants did experience initial anxiety, the structured scaffolding and the inherent interdependence of the podcasting task appeared to mitigate these potential pitfalls effectively. This finding suggests that the specific design of the project is a critical variable (Xhafa & Poulovassilis, 2011). Unlike more diffuse collaborative tasks, the concrete, multi-stage process of creating a podcast provided a clear and compelling pathway for student interaction, fostering positive interdependence.

The unique contribution of this research is its detailed examination of a cross-university, interdisciplinary project centered on a creative, multimodal product. While previous research has explored online collaboration, the combination of these three variables remains

underexplored (Leow & Neo Dr, 2013). This study provides empirical evidence that such complex collaborations are not only feasible but can lead to unique learning outcomes, such as enhanced intercultural communication and the ability to synthesize knowledge from disparate fields. The case of "The Innovators" provides a clear example of this synergistic outcome, a result not typically captured in studies of single-institution or mono-disciplinary projects.

The successful implementation of this model signifies a validation of sociocultural learning theories in a complex, digitally mediated context. The observed peer scaffolding, negotiation of meaning, and eventual formation of a community of practice are real-world manifestations of Vygotskyan principles. The project created a collective Zone of Proximal Development where students, through collaboration, could achieve a level of linguistic and technical sophistication that would have been unattainable individually. The results reflect the power of social interaction as the primary engine of learning.

These findings also represent a shift towards a more holistic and authentic paradigm for language assessment. The final podcast artifact served as a rich, performance-based assessment that captured a wide range of competencies, from linguistic accuracy and fluency to creativity, critical thinking, and technical skill. This stands in stark contrast to traditional assessments that often measure linguistic knowledge in discrete, decontextualized ways. The project reflects an educational philosophy where the process of creation is as valuable as the final product.

The ability of students to overcome initial anxieties and build cohesive, productive teams with strangers online is a powerful signifier of their resilience and adaptability. It suggests that with appropriate pedagogical design, online environments can foster deep social connections and a strong sense of community (Arai dkk., 2019). The evolution from transactional to collaborative interactions indicates that social presence can be deliberately cultivated in virtual spaces, challenging the notion that online learning is inherently isolating.

The results ultimately mark the potential of technology to act as a bridge rather than a barrier. The project successfully transcended institutional and geographical boundaries, creating a shared learning space for students from different academic cultures (Kapoor dkk., 2019). This is a reflection of the future of higher education, where collaboration and networked learning will become increasingly central. The model serves as a microcosm of a more connected and open educational ecosystem.

The implications of these findings are significant for pedagogical practice in language education and beyond. The study provides educators with a detailed, evidence-based framework for designing and implementing high-impact, authentic learning experiences in online settings. It offers concrete strategies for scaffolding technology use, structuring group work, and fostering the development of both linguistic and 21st-century skills. The model is adaptable and can be modified for different languages, proficiency levels, and project types.

For curriculum designers and institutional administrators, the implications point towards the value of fostering inter-institutional collaborations. This research demonstrates that such partnerships are a viable means of enriching the curriculum, expanding learning opportunities for students, and promoting a culture of innovation (Maulina dkk., 2021). It provides a justification for investing in the technological and administrative support structures necessary to facilitate these kinds of cross-boundary educational initiatives.

The findings carry theoretical implications for the study of online collaborative learning and CALL. The study provides a rich, contextualized dataset that can be used to refine existing models of online interaction and community formation. It highlights the critical role of task design, particularly the importance of authenticity and interdependence, in shaping the quality of online collaboration. It extends our understanding of how sociocultural learning unfolds within digitally mediated, project-based environments.

Furthermore, the research has implications for how we prepare students for the future workforce. The skills that were most prominently developed in this project—cross-cultural communication, virtual teamwork, digital literacy, and creative problem-solving—are precisely

the competencies that are in high demand in the globalized, digital economy (Mazzucato & Kic-Drgas, 2021). The study suggests that educational models that explicitly integrate and cultivate these skills are essential for ensuring that graduates are prepared for the challenges and opportunities of the 21st-century workplace.

The effectiveness of this model can be attributed to several key design features. The authenticity of the podcasting task was a primary driver of student motivation and engagement (Bui dkk., 2018). Creating a product for a real audience gave the students' work a sense of purpose and significance that is often lacking in traditional assignments. This external purpose transformed the learning process from an academic exercise into a meaningful act of communication and creation.

The project's success was also due to its inherent requirement for positive interdependence. The task was intentionally designed to be too complex for any one student to complete alone, necessitating the pooling of diverse skills and perspectives. The cross-university, interdisciplinary group composition amplified this effect, making collaboration and negotiation essential for progress. This structure fostered a genuine need for teamwork, which in turn drove the development of collaborative skills.

The carefully structured scaffolding provided by the instructors was another crucial factor. Recognizing the potential for cognitive overload, the project was phased, with initial sessions dedicated to technology training and project management. This front-loading of support helped to mitigate the initial anxiety reported by students and provided them with the tools and confidence needed to take ownership of their work (Papadopoulos & Lazzarino, 2024). The gradual withdrawal of this support fostered autonomy and self-directed learning.

The choice of a multimodal, creative project like a podcast was a key reason for the breadth of skill development observed. The project required students to integrate various modes of communication—speaking, writing (scripting), and listening (editing)—and to develop both their analytical and creative faculties (Farshad dkk., 2024). This multifaceted challenge pushed students to develop a wider range of competencies than a more traditional, mono-modal project might have, contributing to the holistic nature of the learning outcomes.

The immediate next step for research in this area should be to investigate the scalability and transferability of this model (Terrazas-Arellanes dkk., 2014). Future studies could implement the framework in different cultural contexts, with larger student cohorts, and across different disciplines to assess its robustness and identify necessary adaptations. Longitudinal studies that track participants' skill development and application beyond the scope of the project would also provide valuable insights into the long-term impact of this pedagogical approach.

For practitioners, the immediate task is to explore the adaptation of this model for their own specific teaching contexts. This could involve experimenting with different types of digital media projects, such as short documentaries, animated videos, or collaborative blogs, based on available resources and learning objectives. Developing and sharing a repository of best practices, project templates, and assessment rubrics would be a valuable step in supporting the wider adoption of this pedagogical approach.

Further research should also employ a mixed-methods approach to complement the qualitative findings of this case study (Sabitha dkk., 2025). The integration of quantitative measures, such as pre- and post-project assessments of linguistic fluency or standardized tests of critical thinking skills, could provide more objective evidence of the model's impact. Network analysis of communication patterns within groups could also offer a more fine-grained understanding of the collaborative process.

Ultimately, the challenge for the field is to move from isolated pockets of innovation to more systemic implementation. This requires a concerted effort from educators, administrators, and instructional technologists to build the necessary support structures for cross-institutional collaborative learning. This includes creating flexible scheduling options, ensuring

technological interoperability between campuses, and providing professional development for instructors (Conesa dkk., 2012). The "now-what" is to begin the work of building a more connected and collaborative educational future, using models like the one presented in this study as a guide.

CONCLUSION

This study's most significant finding is the synergistic effect of integrating project-based learning within a cross-university, online collaborative framework. The research revealed that this combination not only enhances discrete linguistic skills but also cultivates a holistic suite of 21st-century competencies, including digital literacy, intercultural communication, and complex problem-solving. A distinctive outcome was the observed transformation of initial student anxiety into a profound sense of ownership and accomplishment, driven by the authentic and interdependent nature of the podcast creation task. The model proved uniquely effective in fostering a dynamic community of practice that transcended institutional and disciplinary boundaries, leading to a depth of collaboration and knowledge co-construction that is seldom achieved in conventional online learning environments.

The primary contribution of this research is twofold, offering value as both a conceptual framework and a methodological guide. Conceptually, it provides an empirically grounded model that synthesizes sociocultural learning theory with the practicalities of digital pedagogy, demonstrating how to structure an effective online collaborative project that is both challenging and highly scaffolded. Methodologically, the detailed case study of the podcast creation project serves as a replicable blueprint for educators and instructional designers. It offers a clear, phased approach to implementation, from technology training and group formation to project execution and assessment, providing a valuable resource that bridges the gap between educational theory and classroom practice.

The findings of this study must be considered in light of its limitations, which in turn suggest clear directions for future research. The small-scale, qualitative nature of this case study, conducted within a specific Indonesian higher education context, means that the results may not be generalizable to all settings. Future research should seek to validate these findings with larger, more diverse student populations and in different cultural and institutional contexts. A quantitative or mixed-methods approach could provide more objective measures of linguistic gain and skill development, while longitudinal studies are needed to assess the long-term impact of participation in such a project on students' academic and professional trajectories.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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