

Linking Language Learning, Technology, and Sustainability through Project-Based Ecotourism Education

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Abstract: *This study explores how Technology Project-Based Learning (TPBL) can be integrated into the English for Tourism curriculum at UIN Saizu Purwokerto to create media-based products promoting sustainable ecotourism in Banyumas, Central Java. Banyumas has a lot of natural and cultural resources that could be used for ecotourism, but the local marketing strategies do not always use new and educational media. The study used a Research and Development (R&D) approach with both qualitative and quantitative methods. The participants of this study are English for Tourism students and tourism stakeholders. The data are collected through observation, interviews, and focus group discussions. By implementing TPBL, students produce digital media: videos, social media campaigns, and websites for introducing local tourism objects in Banyumas. The results show that using TPBL enhances students' creativity, critical thinking, teamwork, and environmental awareness, and it also produces authentic practice that promote sustainable tourism. The study finds that TPBL not only helps students learn a new language, but it also changes the way teachers teach by integrating education, technology, and local sustainability.*

Keywords: Ecotourism, English for Tourism, Technology Project-Based Learning, Sustainable Tourism, Media Education

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INTRODUCTION

Indonesia's rich biodiversity and cultural diversity make it one of the most potential countries for developing ecotourism that supports both environmental conservation and local empowerment (Buckley, 2000; Hongsuwan & Seemarorit, 2024; Vipriyanti, 2024). Ecotourism encourages responsible travel that protects nature and benefits local communities (Hongsuwan & Seemarorit, 2024; Jaya, 2024). In Central Java, Banyumas Regency offers attractive natural destinations such as Baturraden, Curug Telu, and the Serayu River, which embody harmony between local culture and the environment (Ardiansyah, 2021). Thus, Banyumas has potential for promoting sustainable tourism to support Sustainable Development Goals (Hall & Weaver, 2015; Ilahi & Musyafiq, 2023; Nasihuddin, 2020).

Despite its potential, ecotourism promotion in Banyumas is still inadequate because the marketing method is still traditional, the stakeholders have weak coordination, and the use of digital media is still lack. Research shows that the problems of tourism management is not integrating community well and the area is often centralized (Wildan & Surya, 2016; Zain et al., 2025). As a result, many local attractions are not well-known, especially to younger or international visitors (Warsito, 2024). To make media-based promotion stronger and get more people involved in their communities, there should be new ways of teaching and using technology (Murtono & Wahyudi, 2025).

Technology Project-Based Learning (TPBL) is a promising method that combines hands-on learning with creative use of digital tools. TPBL lets students make real projects, like videos, websites, or social media campaigns, that deal with real tourism problems while also improving their English speaking, writing, and critical thinking skills (Czerkawski & Lyman, 2016; Stoyanov et al., 2021; Thomas, 2000). Applied in the context of ecotourism, TPBL can create useful media that helps people become more aware of the environment and promotes sustainable tourism.

At UIN Saizu Purwokerto, the *English for Tourism* (EFT) course aims to prepare students with communicative and cultural competencies needed in the global tourism industry (Adorjan, 2013; Bonsignori, 2022; Bury, 2022; Zahedpisheh et al., 2017). Yet, instruction often remains theoretical, focusing on language mastery rather than real-world application. Implementing TPBL in EFT provides students a chance to create bilingual marketing materials and also using English in the tourism area are good for the environment.

Previous studies have discussed media's role in tourism promotion (Buhalis & Law, 2008; Marlina et al., 2024; Xiaoyi & Boonyanmethaporn, 2024) and project-based approaches in education (Freeman, 2021; Gibson & Hauge, 2013; Mandić et al., 2025), but

few have combined these elements in a localized setting. More importantly, most studies haven't look at the creation of real, student-made digital media products that can be used to promote ecotourism in the area and are tested by getting input from stakeholders. Therefore, this study, titled "Media-Based Ecotourism Development through Technology Project-Based Learning in English for Tourism at UIN Saizu Purwokerto," aims to explore how TPBL can be integrated into the English for Tourism curriculum to produce media-based products that promote sustainable ecotourism in Banyumas.

This study explores how Technology Project-Based Learning (TPBL) can be integrated into the English for Tourism curriculum at UIN Saizu Purwokerto to create media-based products promoting sustainable ecotourism in Banyumas, Central Java. The novelty of this study lies in three specific contributions. First, it develops a set of TPBL-based instructional modules that systematically guide students in producing bilingual (Indonesian-English) ecotourism promotional media. Second, it generates authentic digital products, such as short promotional videos, social media campaign content, and digital brochures, designed based on local ecotourism potentials and sustainability principles. Third, the study incorporates direct stakeholder validation (local communities, tourism actors, and practitioners) to evaluate the relevance, usability, and impact of the media products, ensuring that the outputs are not only pedagogically valuable but also practically applicable in real tourism contexts.

LITERATURE REVIEW

Ecotourism and Sustainable Tourism

Ecotourism refers to responsible travel to natural areas that conserves the environment and sustains the well-being of local communities (Esparza-Huamanchumo, 2024; Hall & Weaver, 2015; Luong, 2024; Society., 1990). It encourages people to care about the environment, appreciate other cultures, and get involved in their communities (Hall, 2019). Biodiversity conservation, environmental education, community empowerment, and low impact on the environment are some of the main ideas behind ecotourism (Honey, 2008; Kunjuraman, 2024; Muflihah & Prajanti, 2023; Zada, 2025).

Sustainable tourism development adds these ideas by balancing economic growth, social inclusion, and ecological preservation (Brundtland, 1987; Hunter, 2002; Karaçar et al., 2024). Sustainable tourism development adds to these ideas by finding a balance between economic growth, social inclusion, and protecting the environment (Bramwell & Lane, 2008; Rusmawan et al., 2023; Turčinović, 2025; UNWTO., 2013). Within the local context of Banyumas, ecotourism development offers opportunities to improve community-based tourism by integrating ecological and cultural values into the visitor experience (Suprapti et al., 2019; Zhong, 2025).

English for Tourism

English for Tourism (EFT) is a subfield of English for Specific Purposes (ESP) designed to equip learners with linguistic and intercultural competencies for the tourism and hospitality industries (Adorjan, 2013; Baker, 2010; Bonsignori, 2022; Namtapi, 2022). Effective EFT instruction combines learning a language with real-life tasks like giving tours, making reservations, and promoting places to visit (Baldi et al., 2017; Deller & Price, 2015; Lin, 2023). It also stresses communication between cultures, which lets students communicate to people from all over the world while still respecting local cultures (Evans & Green, 2007; Phaiboonnugulkij, 2023). In the context of UIN Saizu Purwokerto, EFT is an important part of getting students ready for careers in tourism that are good for the environment and the community.

Technology and Media in Ecotourism

Media serves as a powerful instrument for promoting ecotourism, shaping tourist perceptions, and raising awareness of sustainability issues (Bramwell & Lane, 2008; Ma, 2024; Viñán-Ludeña, 2022). Digital platforms, such as social media, travel blogs, and online videos, have transformed tourism marketing by providing interactive and accurate storytelling tools (Buhalis & Law, 2008; Sawitri et al., 2025).

In sustainable tourism, media not only advertises destinations but also educates travelers about conservation and responsible travel behaviors (Chen, 2024; Hall & Weaver, 2015; Xiaoyi & Boonyanmethaporn, 2024). Appearing technologies such as Augmented Reality (AR) and virtual tours can improve tourist engagement and environmental understanding (Chien, 2019). However, few initiatives have utilized media as a pedagogical tool in higher education, especially to connect students' learning with community-based ecotourism development (Muflihah & Prajanti, 2023).

Technology Project-Based Learning (TPBL)

Project-Based Learning (PBL) emphasizes active, experiential learning through real-world projects that foster collaboration, critical thinking, and problem-solving (Beckett & Slater, 2005; Carvalho, 2023; Thomas, 2000; Viñán-Ludeña, 2022). At the same time, Technology Project-Based Learning (TPBL) extends this model by providing digital tools to boost creativity, communication, and innovation (Altinay, 2025; Czerkawski & Lyman, 2016; Ma, 2024; Viñán-Ludeña, 2022).

In EFT, many experts claim that TPBL allows students to design authentic outputs in learning, such as promotional videos, bilingual websites, or social media campaigns, that connect language learning with professional and environmental contexts (Freeman, 2021; Gibson & Hauge, 2013; Mandić et al., 2025; Phaiboonnugulkij, 2023; Yusra, 2022). Through

TPBL, students not only acquire English proficiency but also practice digital literacy and ecological responsibility. By engaging students in projects that promote local ecotourism, TPBL provides a transformative framework linking education, technology, sustainability, and community empowerment, making it an appropriate pedagogical strategy for UIN Saizu Purwokerto in supporting both academic and regional development goals.

METHOD

This study adopted a Research and Development (R&D) design, which is fundamentally geared toward developing and validating educational products to improve instructional quality (Borg & Gall, 1983). Following a systematic developmental procedure, a qualitative approach was mostly employed in this study, to gain an in-depth understanding of how TPBL is integrated into EFT curriculum at UIN Saizu Purwokerto. This qualitative perspective corresponds with the constructivist paradigm, which asserts that knowledge is collaboratively developed through natural, experiential tasks and social engagement (Creswell & Poth, 2018).

Following an R&D framework adapted from the simplified stages of Borg & Gall, (1983) and Richey & Klein (2007), the research was executed through four iterative stages:

1. Needs Assessment: A qualitative inquiry involving situational analysis to identify instructional gaps in EFT and the specific promotional needs of sustainable ecotourism in Banyumas.
2. Design and Development: The conceptualization of TPBL-based lesson that guide students in creating media outputs, such as digital brochures and social media campaigns, as authentic learning artifacts.
3. Implementation: Putting the developed lesson plan into the EFT classroom to see if they work as teaching tools
4. Evaluation and Refinement: A formative evaluation phase that used feedback from stakeholders and self-reflection to improve the model.

By focusing on qualitative data during these R&D phases, the study produced the formulated TPBL framework that is both technically applicable and pedagogically relevant to the local context of Banyumas ecotourism.

The study took place at the English Education Study Program, Faculty of Tarbiyah and Teacher Training, UIN Saizu Purwokerto, Central Java, Indonesia. Participants consisted of 32 undergraduate students enrolled in the English for Tourism course. Additionally, local stakeholders, including tourism business owners, community representatives, and local government officers, were engaged during the evaluation phase to assess the effectiveness and relevance of the students' media products. This collaborative design ensured that the research not only examined pedagogical impact but also community benefit.

Data Collection

The study employed multiple data collection techniques to ensure the validity and triangulation of findings. Firstly, documentation was used to analyse the curriculum document of English Tourism subject in order to design the implementation of the TPBL in the course. Observation was also conducted throughout the implementation of Technology Project-Based Learning (TPBL) to capture how students engaged in the learning process, collaborated in groups, and demonstrated creativity during the development of media-based ecotourism products. These observations provided a thorough understanding of classroom dynamics and student engagement in genuine tasks. To support the observation, semi-structured interviews were held with students and teachers to get a better understanding of how they see things, what problems they face, and what they learn during the teaching and learning process. The interviews allowed the researcher to examine participants' perceptions regarding the integration of TPBL into the English for Tourism course and its significance for promoting sustainable tourism. At the end of the project, Focus Group Discussions (FGDs) were also held to get feedback from both students and teachers. These discussion were a chance to evaluate about the quality, content, and long-term viability of the media products that were made. By using both qualitative and quantitative methods, the study was able to get a full and multi-faceted view of how effective TPBL is at promoting sustainable ecotourism through English language education, which made it more credible.

Data Analysis

The data collected through interviews, observations, and documentation were analyzed qualitatively using a thematic analysis approach. All interview recordings, observational and FGD field notes were first transcribed and then systematically coded to identify meaningful statements related to the implementation of Technology Project-Based Learning (TPBL) in the English for Tourism course. Through an inductive coding process, similar codes were grouped into broader categories and further developed into emerging themes. Triangulation among these three data sources enhanced the validity of the findings by ensuring alignment among participants' perceptions, classroom practices, and project outcomes. The final themes were then analyzed in relation to the research question to give a full picture of how TPBL helped make media-based ecotourism promotional products.

RESULTS AND DISCUSSION

Results

Curriculum Mapping and Outcome Alignment

This section reports the results of curriculum mapping conducted to examine the extent to which the existing English for Tourism curriculum aligns with the principles of Technology Project-Based Learning (TPBL) and sustainability-oriented ecotourism education. The analysis was carried out across five curriculum levels: Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK), Sub-CPMK, learning activities, and assessment components.

Table 1.

Mapping of CLO → CPMK → Sub-CPMK → Learning Activities → Assessment

Level	Description from the RPS	Analysis of Relevance
CPL of Study Program (Graduate Learning Outcomes)	Emphasizes the ability to communicate in English, collaborate creatively, utilize information technology and media, and demonstrate social and environmental awareness.	These CPLs already show strong alignment with the three dimensions of TPBL: <i>language use</i> , <i>media creation</i> , and <i>sustainability awareness</i> . But there is still no clear link to ecotourism or environmental literacy.
CPMK (Course Learning Outcomes)	Students are able to: <ul style="list-style-type: none"> • Use media like leaflets, ads, and vlogs to talk about tourist spots. • Create travel plans, ads, and videos to promote local places. 	The CPMKs emphasize project-based results and how to use digital media to communicate in English. The content is still mostly about promoting general tourism, though, and it hasn't yet included information about sustainability or ecotourism.
Sub-CPMK (per meeting)	Learning activities include creating brochures, leaflets, itineraries, vlogs, videos of local food reviews, and ads.	The activities show how PBL can be used, but they aren't set up as TPBL yet because they don't look into interactive technologies like AR/VR, websites, or digital platforms for promoting sustainable tourism.
Learning Activities	Students do fieldwork, research in their own communities, make media, and give project presentations.	These tasks fit with the Implementation phase of TPBL, but there is no clear "design" or "evaluation" phase, which is common in models for developing educational products.
Assessment	The assessment consists of project work, portfolios, presentations, quizzes, and final exams.	The assessment system is already based on performance, but it doesn't yet use sustainability criteria (like sustainability message, digital ethics, and stakeholder relevance) as evaluation criteria.

The results of the curriculum mapping show that the English for Tourism course already has many of the main parts of Project-Based Learning, especially when it comes to real-world tasks, making media, and using language to communicate. The curriculum at

both the program and course levels focuses on English proficiency, creativity, teamwork, and the use of digital media, which are all important parts of TPBL.

However, the analysis reveals three critical gaps. First, the CPL, CPMK, and Sub-CPMK do not clearly include sustainability and ecotourism literacy. This means that environmental awareness is still not a part of learning outcomes. Second, the technological aspect is restricted to fundamental media production tools, lacking the incorporation of advanced or interactive technologies that define TPBL environments. Third, the TPBL learning cycle is missing parts because the curriculum focuses mostly on implementation and does not have structured phases for design, development, and evaluation. Also, the assessment system is based on performance, but it does not include criteria for evaluating sustainability. This means that the main things that teachers look at when grading students' projects are the language and technical aspects, not the environmental, social, and ethical ones.

In general, these results show that the current curriculum is a good starting point for English project-based learning, but it needs to be redesigned in a systematic way to fully incorporate TPBL principles and ecotourism-based sustainability skills.

Alignment of Learning Outcomes with TPBL Dimensions

This part shows the results of the study on how well the learning goals of the English for Tourism course fit with the parts of Technology Project-Based Learning (TPBL). The analysis looked at how the current learning outcomes fit with the three main TPBL areas: language use, media creation, and awareness of sustainability.

The results show that the current curriculum puts a lot of focus on how to use language and the results of projects that use media. However, the sustainability dimension appears less explicitly articulated at the course level. Overall, the alignment analysis reveals both strengths and areas requiring further enrichment to support comprehensive TPBL integration.

Table 2.
 Alignment of Learning Outcomes with TPBL Dimensions

TPBL Dimension	Relevant Elements from the RPS	Potential Enhancement
Language Use	CPMK: students' ability to speak, write, and describe tourist destinations in English.	Already strong can be expanded to include eco-awareness communication, such as "how to talk about conservation" and "how to explain responsible travel."
Media Creation	Tasks for the portfolio include making leaflets, vlogs, tourism ads, and promotional videos.	There is already a strong base. Digital tools like Canva, AR/VR, and website builders, as well as interactive technology-based storytelling, can make it stronger.

TPBL Dimension	Relevant Elements from the RPS	Potential Enhancement
Sustainability Awareness	CPL: being aware of social and environmental issues; RPS: including content about local culture and nature.	Not yet explicit in <i>sustainable tourism</i> principles (conservation, local empowerment, ecotourism ethics). Content on "Ecotourism and Responsible Travel" should be incorporated.

The analysis shows that the English for Tourism curriculum has a lot of content that focuses on language use. Students must improve their speaking and writing skills by doing tasks like describing a destination, promoting tourism, and communicating about services. These activities show that they are in line with TPBL's focus on using language in real-life situations.

The results show that the curriculum already includes different types of digital media production when it comes to making media. Students engage in creating leaflets, vlogs, and promotional videos as part of their course portfolio. These outputs reflect project-based learning practices and indicate an initial alignment with the technology component of TPBL, although the use of technology remains primarily product-oriented.

The sustainability awareness dimension is present at the program level through the inclusion of social and environmental awareness in the CPL. Course materials also include information about the local culture and nature. The results, on the other hand, show that sustainability is not clearly defined in the learning outcomes for courses or the themes of projects, especially when it comes to the principles of ecotourism and responsible tourism practices.

Overall, The alignment analysis shows that the English for Tourism course is very similar to TPBL in terms of how it uses language and makes media. In contrast, sustainability awareness is less explicitly integrated at the course level. These results suggest that while the curriculum supports communicative and media-based learning, further refinement is needed to achieve balanced alignment across all TPBL dimensions.

Identification of TPBL Position in the RPS and Relevant Topics

This section presents the results of the analysis aimed at identifying the position of Technology Project-Based Learning (TPBL) within the English for Tourism RPS and determining relevant topics that support its integration. The analysis examined teaching methods, course topics, project activities, and assessment components to identify existing elements of Project-Based Learning (PBL) and potential entry points for TPBL implementation.

The results indicate that the RPS already incorporates a project-based learning approach, particularly through student-centered activities and media-based project

outputs. However, the integration of technology and sustainability-oriented learning remains implicit and has not yet been systematically articulated within the course structure.

Table 3.
 Identification of TPBL Position in the RPS and Relevant Topics

Position/ Topic	Evidence from the RPS	Analysis of TPBL Integration
Teaching Method	"The course will be conducted using a <i>project-based learning</i> approach... students will create leaflets, pamphlets, advertisements, and video vlogs."	Indicates a strong foundation in PBL. To evolve into TPBL, the course needs more work in the areas of integrating technology and using reflective sustainability practices (like digital platforms and interacting with stakeholders).
Most Relevant Topics	<ul style="list-style-type: none"> • <i>Tourist Destination and Attractions</i> (Meetings 3–4) • <i>Marketing and Promotion</i> (Meetings 13–14) • <i>Accommodation and Food</i> (Meetings 10–11). 	These three topics are ideal for implementing a TPBL Ecotourism Media Project. Students can make projects to promote sustainable tourism, like eco-lodges, green restaurants, and cultural heritage sites.
Potential Project Activities	Creating vlogs, advertisements, and leaflets.	Can be turned into a " <i>Digital Ecotourism Campaign Project</i> " that uses social media, websites, and augmented reality (AR/VR) technology.
Aspects of Assessment to be Expanded	Currently focused on general media outputs.	It should be more indicators, like how clear the environmental message is, how ethical it is to use media, and how well Islamic values are incorporated into caring for the environment.

The analysis shows that the RPS clearly describes a project-based way of teaching. Students are involved in creating tangible media outputs as a component of their educational activities. This shows that the course is built on a strong PBL base that helps students learn through experience and by putting them at the center of the learning process.

It was found that some course topics were very useful for TPBL integration, especially those about tourist destinations, places to stay and eat, and marketing tourism. These subjects involve real-life tourism situations and let students use English in real-life situations through project work. The current project activities are making promotional materials like vlogs, ads, and flyers. These activities are in line with project-based learning, but they focus more on the end products than on processes that use technology or content that is good for the environment. The RPS's assessment system focuses on performance-based outputs, such as media products and presentations. In contrast, the results show that

the assessment criteria have not included issues of sustainability, ethical digital communication, or community relevance.

Overall, the findings demonstrate that the English for Tourism course already integrates fundamental aspects of Project-Based Learning and offers an appropriate basis for the incorporation of TPBL. Meanwhile, the analysis indicates that the integration of technology and sustainability principles remains implicit rather than systematically incorporated into pedagogical approaches, project initiatives, and evaluative measures.

Designing the TPBL Implementation Framework

This section presents the results of the second stage of the study, which focused on designing a Technology Project-Based Learning (TPBL) implementation framework for the English for Tourism course. The framework was developed based on the analysis of the existing RPS and was intended to align learning outcomes, instructional activities, and assessment components with technology-enhanced and sustainability-oriented learning.

The results show that the TPBL implementation framework was structured by integrating curriculum levels, Program Learning Outcomes (CPL), Course Learning Outcomes (CPMK), and Sub-CPMK with learning activities, technological tools, sustainability focus, and performance-based assessment. This design resulted in a coherent framework that positions TPBL as a systematic instructional model rather than an isolated project activity.

Table 4.
Designing the TPBL Implementation Framework

Level/ Component	Description from the Existing RPS	Proposed TPBL Integration	Sustainability/ Ecotourism Focus	Form of Assessment
Program CPL (Attitude & Values)	Collaborate, innovate, demonstrate social and environmental awareness; utilize information technology.	TPBL makes it easier for teams to work together and be responsible for the results of digital media that have an impact on society.	Encouraging ecological responsibility and moral awareness when showing off local culture and nature.	Observation of collaboration, individual reflection, and media ethics evaluation.
Program CPL (Knowledge)	Mastery of English language studies and information technology for professional contexts.	Combining English for Specific Purposes (ESP) theory with learning through media.	Getting to know the ideas of responsible communication and sustainable tourism when promoting a destination.	Concept tests, case analysis, digital quizzes.

Level/ Component	Description from Existing RPS	Proposed Integration	TPBL	Sustainability/ Ecotourism Focus	Form Assessment	of
Course CPMK (Learning Outcomes)	Students are able to: • Describe tourist destinations through leaflets, vlogs, or advertisements. • Create itineraries and advertisements for local tourism destinations.	Students can use English to talk about and make digital media that promotes sustainable ecotourism.		Connecting tourism promotion with messages about protecting nature, local culture, and the Islamic values of <i>rahmatan lil 'alamin</i> .	Media project portfolios, digital product presentations, and reflection reports.	
Sub-CPMK (Competency Unit per Theme)	Creating brochures, itineraries, vlogs, and tourism advertisements.	Adding a technology-based <i>Ecotourism Media Project</i> like a video, website or AR/VR.		Using stories about the environment and local Banyumas culture in media.	Media products, peer review, and “eco-message integration” rubrics.	
Learning Activities	Field observation, leaflet creation, promotional video production, and project presentation.	A four-step TPBL model: Planning, Design, Implementation, and Evaluation. Students work together to make a digital campaign called “Sustainable Tourism in Banyumas.”		Using the 3P principles (People, Planet, Profit) in media messages.	Formative (weekly feedback) and summative (final product assessment).	
Media / Technology Used	Canva, video vlogs, digital leaflets.	Wix and WordPress are for making websites, CapCut and Filmora are for editing videos, and AR and VR are for virtual tours.		Increasing digital literacy and ethical storytelling in the context of ecotourism.	Assessment of digital skills and media ethics.	
Most Relevant Topics (in RPS)	Tourist Destination (Weeks 3–4), Marketing and Promotion (Weeks 13–14), Food & Drink (Week 11).	Integrating TPBL into three main projects: “Eco Destination Campaign,” “Sustainable Culinary Promotion,” and “Green Travel Media.”		Highlighting Banyumas local wisdom: Baturraden, Serayu, Sokaraja, Curug Cipendok.	Thematic project assessment and group reflection.	
Assessment	Presentations, project work, quizzes, portfolios,	TPBL-based rubric: 1. Content Accuracy (25%)		Comprehensive performance-based assessment emphasizing	Final project rubric and stakeholder feedback	

Level/ Component	Description from Existing RPS	Proposed Integration	TPBL	Sustainability/ Ecotourism Focus	Form Assessment	of
	midterm & final exams.	2. English Communication (25%) 3. Creativity & Technology Use (25%) 4. Sustainability Message & Ethical Awareness (25%).		sustainability values.	(community/local tourists).	

The results show that the TPBL framework advances the current curriculum in a systematic way by including technology use and a focus on sustainability at all levels of the curriculum. At the program level, TPBL integration focuses on collaborative learning and being aware of ethics in making digital media. At the course level, the learning outcomes are changed so that they focus on ecotourism communication that is good for the environment instead of general tourism promotion.

At the instructional level, learning activities are put together in a structured TPBL sequence that includes planning, design, implementation, and evaluation phases. This structure lets students work on long-term projects with the help of digital tools and in the context of local tourism issues. Also, the assessment parts fit with the TPBL framework by using performance-based criteria to look at how well students use language, technology, and messages about sustainability.

Overall, the results show that the TPBL implementation framework that was created is a clear and unified way to add technology-enhanced, sustainability-focused project-based learning to the English for Tourism course. The framework brings together curriculum goals, learning activities, media tools, and ways to test students in one cohesive way.

Applying TPBL in the English for Tourism Course

At the instructional level, the implementation of Technology Project-Based Learning (TPBL) in the English for Tourism course followed four interconnected phases: planning, design, implementation, and evaluation. These phases were observed through classroom observation, project documentation, and lecturer interviews.

During the early stage of implementation, students were introduced to local ecotourism contexts in Banyumas. Observation data showed that students identified various tourism-related issues, including environmental management, promotion strategies, and community involvement. Tourism sites explored by students included Baturraden, Curug Cipendok, and the Serayu River area. Students gathered information

through guided discussions, short interviews with local tourism actors, and online searches related to tourist behavior and environmental practices.

The lecturer explained:

"We asked students to start from real problems in their surroundings, such as how waste is managed in Baturraden or how tourism promotion could highlight eco-friendly activities. This made them think critically about tourism and sustainability." (Interview, Lecturer YP, 13 October 2025)

Classroom observation indicated that although students showed high enthusiasm, many initially focused more on tourist attractions and marketing language than on sustainability aspects. With the help of their teachers and class discussions, students slowly started to think about the environment when they learned about tourism.

In the next step, students worked together in groups of four to five to come up with project ideas. Observation data showed that students came up with ideas for campaigns, wrote English scripts, and planned media content for their projects. Each group picked one local tourist spot and came up with campaign ideas like Eco Destination Banyumas, Responsible Traveler Tips, and Green Culinary Tourism.

One lecturer stated:

"The design phase was where students' creativity emerged. They started to think about the message they wanted to deliver, how to use English not just for tourism marketing but for raising awareness about sustainability." (Interview, Lecturer YP, 13 October 2025)

During this phase, students used storyboards to plan visual layouts and narratives. Roles within groups were distributed, including scriptwriter, narrator, camera operator, and editor. Observation data showed that group members talked, worked together, and interacted more with each other as they negotiated ideas and improved their project plans.

During the implementation phase, digital ecotourism media were made. It was clear from watching that students were using online tools like Canva, CapCut, Filmora, Wix, and others to make digital brochures, promotional videos, and websites. In English, each group made a 2–3 minutes promotional video and other digital materials to go with it. Featured destinations included Baturraden Eco-Park, Sokaraja culinary tourism areas, and the Serayu River rafting site.

Throughout this phase, the lecturer provided supervision through regular consultations and offered feedback related to English language use, visual presentation, and clarity of environmental messages. According to the lecturer:

"Students became more independent during this phase. They explored digital tools we hadn't even introduced before, and they learned from each other. Their confidence in using English for narration and presentation also improved."
(Interview, Lecturer YP, 13 October 2025)

Observation data also indicated variation in students' technological abilities. Students with stronger digital skills tended to take responsibility for editing and technical production, while others focused on script development, narration, or content research. Challenges such as limited equipment and time constraints were observed; however, peer support within groups helped address these issues.

The last step was to evaluate the projects by having students present them and giving feedback. During the presentations, it was clear that students showed their digital products in English to their classmates, teachers, and tourism professionals who were invited. Students talked about the messages about tourism and sustainability that were in their media products.

Feedback sessions were conducted interactively. Stakeholders liked how creative and relevant to the situation the students' projects were, and they said that some of the products could be useful for promoting tourism.

A lecturer commented:

"The reflection and feedback session helped students realize that their work had real value beyond the classroom. They learned to see English as a tool for social impact."
(Interview, Lecturer YP, 13 October 2025)

Overall observation and interview data showed that students were actively involved throughout the TPBL process. Students demonstrated increased participation, collaboration, and engagement in using English for tourism-related communication. The integration of technology supported students in producing meaningful digital content while connecting English learning with local tourism contexts and sustainability issues.

Students' Project Outputs

As part of the TPBL implementation in the English for Tourism course, students produced three main project outputs that integrated English communication, technology use, and sustainability awareness in the context of Banyumas. The products consisted of an e-brochure of local natural attractions, a YouTube video focusing on local food sustainability, and a website promoting environmental awareness and cultural heritage. These outputs were developed collaboratively and presented as final project deliverables.

One group of students made an e-brochure that worked as a digital guide to the natural attractions in Banyumas. The e-brochure had a lot of information about different places, like Baturraden Pancuran Pitu, Curug Jenggala, Curug Jomblang, Curug Bayan, and the Serayu River. Each place had a description in English and high-quality pictures that showed off natural scenery like forests, waterfalls, and river areas.

The e-brochure also had useful information for visitors, like full addresses and interactive maps to help them find their way around. There were transportation routes available, including some that promoted eco-friendly travel. Also, information about places to stay was given, including hotels, homestays, and eco-friendly places to stay, along with price ranges. A closer look at the content showed that students included suggestions for things to do as a tourist, like walking tours, nature observation, educational activities related to protecting the environment, and water-based activities like rafting on the Serayu River. The brochure also contained guidelines for visitors, such as avoiding littering, protecting plants and animals, and minimizing the use of single-use plastics.

Overall, the e-brochure served as both an informational and educational digital product, combining tourism promotion with messages related to environmental responsibility.



Figure 1. E-Brochure

Another group produced a YouTube video that focused on local food sustainability in Banyumas. Observation of the video showed that it combined visual storytelling with English narration to present traditional Banyumas dishes and their production processes. The video opened with scenic views of agricultural and rural areas in Banyumas, followed by footage from local food vendors, traditional kitchens, and small-scale food production sites.

A number of local foods were featured in the video. Footage of a local vendor making *Gethuk Goreng* with cassava from nearby farms introduced the dish. The video had short interviews and narration that explained how to use local ingredients. *Sroto Sokaraja* was shown in a traditional *warung* (store), with close-up shots of the cooking process and comments on where the ingredients came from. The use of locally grown soybeans in a tofu-making workshop in Kalisari village was recorded by *Tahu Kalisari*. *Cireng Pasir* was shown as a popular snack made with tapioca flour, and *Klepon Banyumas* was shown as a traditional dessert made with palm sugar and sticky rice from local farms.

The presenter talked about taste, ingredients, and how food is made in English throughout the video. The video ended with an invitation for people to visit Banyumas and help local food producers. It also gave information about local food stalls, markets, and places to eat. This video showed that students could put together English communication, digital video production, and local content into a single media product.

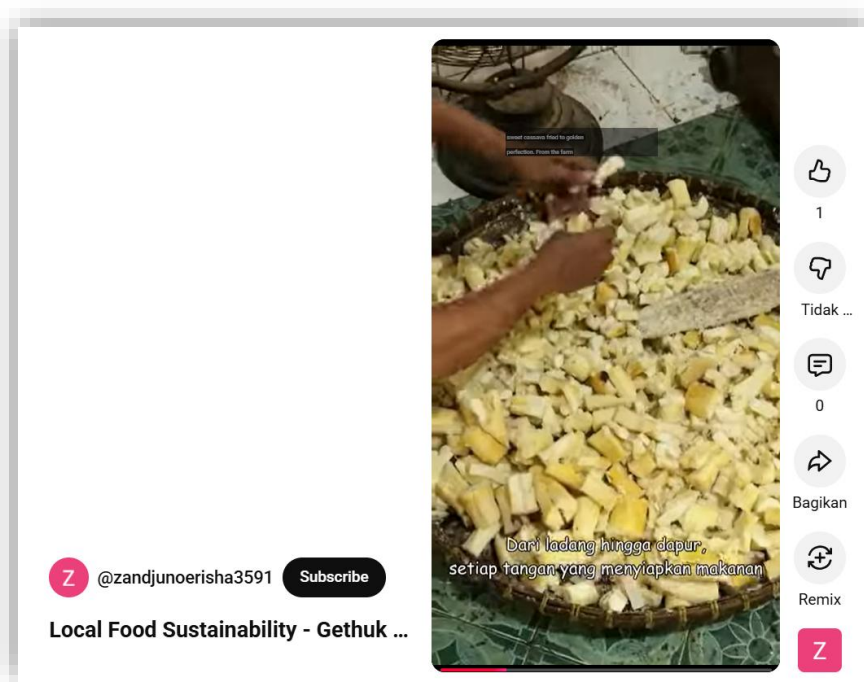


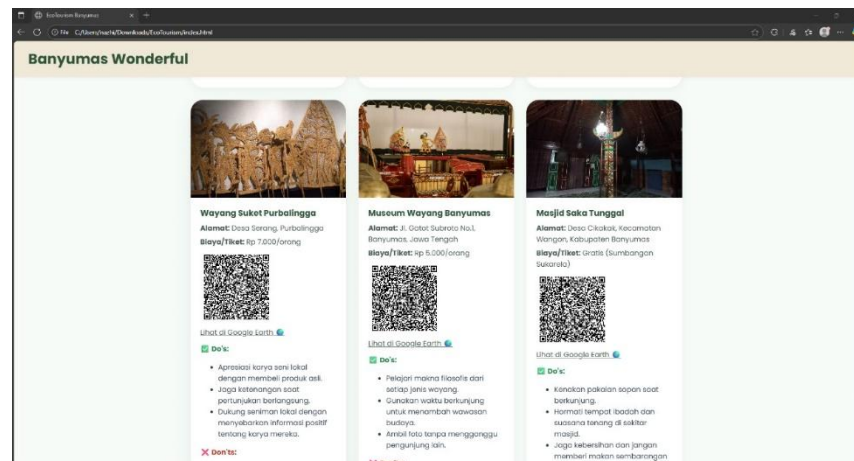
Figure 2. Video of Local Food Sustainability in Banyumas

The third project output was a website developed to promote environmental awareness and cultural heritage in Banyumas. Observation of the website showed that it was designed with structured menus, visual elements, and interactive features such as images, audio, and videos. The website consisted of several sections highlighting cultural and environmental topics.

One section introduced *Kenthongan*, a traditional wooden percussion instrument, supported by audio recordings and visual explanations of its cultural function. Another part focused on *Lengger* dance, showing videos of performances and giving information about its history and cultural importance. The website also had a virtual tour of Museum BRI in Purwokerto, which showed exhibits about the history and growth of the area.

There were also sections on *Wayang Suket*, which showed how to make puppets out of natural grass, and *Masjid Saka Tunggal*, which talked about its history and architectural features. The Museum Wayang Banyumas section talked about traditional puppet collections and why they are important to culture.

There was also a "Visit Banyumas" section on the website that had travel tips, links to local businesses and initiatives, and information about eco-friendly tourism. With interactive navigation, users could easily explore cultural and environmental content together. Using digital technology to share information, students showed Banyumas as a place where cultural heritage and environmental awareness are closely linked.



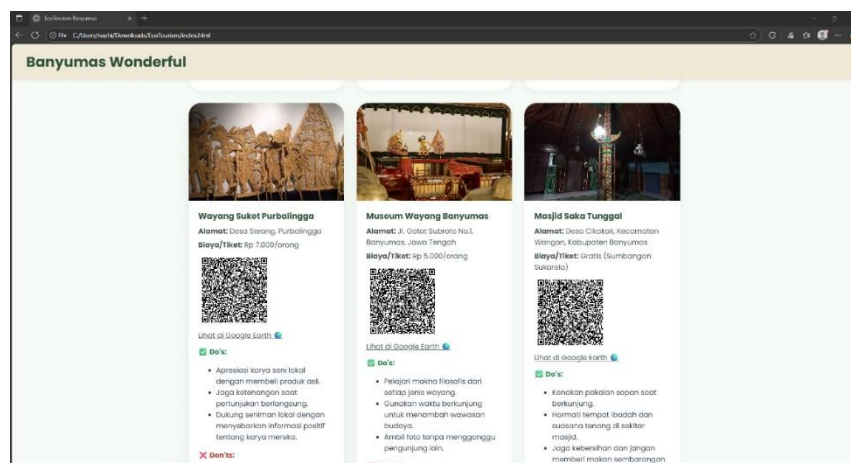


Figure 3. Website of Eco-Cultural and *Kenthongan*

Discussion

The findings indicate that the integration of Technology Project-Based Learning (TPBL) in the English for Tourism course was systematically grounded at both curricular and instructional levels (Adnan, 2025; Charfaoui, 2024; Ding, 2022; Napu, 2024). The curriculum mapping and outcome alignment show that TPBL was embedded within existing learning outcomes and course objectives, ensuring coherence between innovation and institutional standards (Erfanian, 2024; Ma, 2024; Purnomo, 2025; Viñán-Ludeña, 2022). This means that integrating TPBL isn't just about bringing in new ideas; it's also about making sure that they fit in with the existing curriculum so that they improve it instead of breaking it (Thomas, 2000; Mishra & Koehler, 2006).

The alignment of learning outcomes with TPBL dimensions shows that language use and media creation were already well covered in the curriculum, but sustainability awareness was not as clear (Carvalho, 2023; Mir, 2024; Sánchez-Ancajima, 2023). This finding reinforces the assertion that sustainability in language education is frequently regarded implicitly rather than as a fundamental instructional goal (Weaver, 2006). In this case, though, TPBL gave people a way to put sustainability ideas like ecotourism ethics and conservation front and center, making them more visible and useful in the classroom. This change is part of a larger trend in education where sustainability can be built into hands-on, project-based learning, making it more useful for real-world problems (Al-Malki, 2022; Kiliç, 2024; Ma, 2024; Zhang, 2024).

The finding TPBL's place in the RPS shows once again that tourism-related topics are a great way to learn through projects and technology (Baena, 2024; Nowak, 2024; Wani, 2025). English for Specific Purposes (ESP) courses, especially those focused on tourism, naturally prioritize practical communication and genuine tasks, aligning closely with TPBL principles (Trilling & Fadel, 2009). The findings indicate that TPBL can be effortlessly

incorporated into the current curriculum by shifting the focus of topics towards problem-based and project-oriented activities, without necessitating significant. This change in direction suggests that effective TPBL integration can be accomplished with minimal curriculum modification by emphasizing student-led, real-world projects (Rahman, 2025; Suanpang, 2024).

The TPBL implementation framework, which has phases for planning, design, implementation, and evaluation, is based on well-known models of experiential and reflective learning. This structure aligns with Dewey (1938) "learning by doing" principle and (Kolb, 1984) experiential learning cycle, in which learners engage in experience, reflection, conceptualization, and application. The framework provided scaffolding that helped students integrate language skills, technology, and sustainability content, enabling them to engage in a more holistic and contextual learning process. This pedagogical scaffolding was critical in supporting students' transition from theory to practice, making their learning experiences more authentic and aligned with professional contexts (Giampieri, 2022; Seraphin, 2023).

The application of TPBL in classroom practice demonstrated that students' engagement and learning depth increased as instruction shifted from text-based activities to authentic, locally grounded projects (Akdemir, 2023). The findings indicate that students became more engaged when projects connected them to local, real-world ecotourism issues. Consistent with social constructivist theory, collaborative project work enabled students to co-construct knowledge through interaction and shared problem-solving (Barnes, 2024; Gulyas, 2023; Namtapi, 2022). The inclusion of authentic ecotourism issues enhanced contextual learning, highlighting the function of English as a medium for social advocacy and environmental discourse, sharpening its traditional role as a purely academic field (Darmawati, 2023; Santoso, 2024).

The evaluation phase, which included feedback from peers and stakeholders, made reflective learning and authenticity even better. This approach aligns with Schön's (1983) concept of reflective practice and Hsu (2025) notion of authentic assessment, where evaluation mirrors real-world expectations and professional standards. It was very important for students to get feedback from people outside of school to help them understand how useful their projects were in real life. This process of evaluating over and over again not only helped students improve their work, but it also connected what they learned in class to what they did in the community, making the projects more meaningful and useful in the local

Finally, the students' project outputs demonstrate the efficacy of TPBL in amalgamating language acquisition, digital literacy, and sustainability consciousness. The production of e-brochures, videos, and websites reflects 21st-century learning

competencies, including creativity, collaboration, critical thinking, and digital ethics (Laskar, 2022; Seraphin, 2023). These results support the idea that TPBL can turn English for Tourism classes into tools for long-term education, allowing students to be active participants in community-based tourism development and caring for the environment. Nevertheless, further research is necessary to examine the lasting impacts of these outputs on local tourism (Sugiharti et al., 2020; Suprapti et al., 2019; Tan et al., 2024).

CONCLUSION

This study concludes that the integration of Technology Project-Based Learning (TPBL) in the English for Tourism course provides a potentially effective approach for supporting contextual and experiential learning in higher education. The model connected language instruction with making digital media and local ecotourism, which gave students more chances to be involved in the learning process. The results indicate that students were capable of enhancing their language proficiency as well as fostering critical thinking, creativity, and awareness of environmental and local concerns.

The study also indicates that Banyumas has considerable potential for ecotourism development, but there are still some problems, including limited digital promotion and coordination among stakeholders. Within this context, the implementation of TPBL enabled students to produce media outputs such as videos, digital brochures, and websites that reflect local tourism assets. More research is needed to find out how these products affect tourism development as a whole, but the results show that they can help make local ecotourism more visible at first.

Furthermore, this study suggests that TPBL can be considered as an alternative pedagogical approach that aligns with the principles of sustainability-oriented education. The integration of technology, language learning, and local context demonstrates its relevance to broader educational goals, including those related to quality education and sustainable communities. However, the findings are limited to a specific institutional context, and further research is needed to examine the long-term impact and wider applicability of this approach in different settings.

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their valuable insights and collaboration during the data collection process. Their contributions greatly enriched the findings and practical relevance of this research.

DECLARATION OF AI AND AI-ASSISTED TECHNOLOGIES

In developing this work, the authors utilized ChatGPT to support information retrieval, along with DeepL (V.24.4.3) to enhance linguistic accuracy and readability. The authors have carefully reviewed, revised, and refined the content as necessary and take full responsibility for the final manuscript.

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