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Valorizing Biocultural Resources through Experiential Learning: Community-Based Rural Tourism in Southern Ecuador

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Abstract

This article analyzes the valorization of biocultural resources in the Mancomunidad de las Meliponas (Inter-Municipal Association), in southern Ecuador, from a community-based rural tourism perspective, focusing on how a community engagement practicum shapes university students' understanding of these resources and of the entrepreneurial opportunities associated with them. The study focuses on tourism students enrolled in a community engagement academic practice (April–August 2025) that produced technical assets for the Mancomunidad, later presented at the IV International Festival of Native Stingless Bees; some students travelled to the territory and engaged directly with producers and practices related to meliponiculture, while others participated remotely. A qualitative case study design with descriptive support was adopted. Data were collected through two online questionnaires with closed- and open-ended questions, answered at the beginning (n = 22) and at the end (n = 15) of the practice, and were examined through thematic content analysis; the fifthteen post-practice responses were matched with their pre-practice responses, and six of these students had travelled to the territory. This design is grounded in experiential learning, recognizing students as mediators in the construction of knowledge about the stingless bees agro-productive landscape. The results suggest a shift from a descriptive and fragmented understanding of local resources toward a more integrated view that links nature, culture, tourism and sustainability: references to tourism rose from 27% to 87% of answers and references to sustainability/development from 23% to 80%, while references to culture/identity declined. This shift was also observed among students who did not travel and may partly reflect a change in question wording; direct contact with the territory was mainly associated with more place-specific knowledge. The study contributes to understanding the educational dimension of biocultural resource valorization. Its implications for local entrepreneurship and territorial development, framed by the quadruple helix model, are potential rather than demonstrated and require further research that includes community stakeholders

Keywords: Community-based rural tourism, biocultural resources, valorization, experiential learning, Mancomunidad las Meliponas, Ecuador

1. Introduction

In Latin America, the valorization of biocultural resources is of strategic importance for promoting sustainable territorial development, especially in rural contexts that possess significant ecological, cultural, and natural wealth but face limitations in how to sustainably harness this wealth. These resources which encompass geological resources, ancestral knowledge, productive practices, and elements of identity constitute a significant foundation for developing rural and heritage tourism initiatives capable of integrating economic, social, and cultural dimensions in a respectful manner of local values, based on principles of interculturality, knowledge exchange, and rural culture. Even, with an awareness of this diversity and potential, one of the main challenges lies in transforming these resources into

value-added products or services through a collective vision and effort, capable of positioning themselves in broader markets without losing their cultural and territorial essence.

In this context, the Mancomunidad de las Meliponas (Inter-Municipal Association), located in the province of Loja in southern Ecuador within the Bosques de Paz biosphere reserve, represents a significant case study, as it brings together communities that practice meliponiculture—an ancestral, agro-productive practice linked to forest conservation and the production of native bee honey. Despite their potential, these resources have historically faced undervaluation and limitations in their integration into entrepreneurial and commercialization dynamics. However, some interpretive tourism experiences and incipient tourism services have recently been developed.

In response to this, academia, through community engagement initiatives, has taken on a strategic role as both an analyst and a participant in the creation of territorial value. Educational experiences based on experiential learning allow students to interact directly with local stakeholders, understand the sociocultural dynamics of the region, and contribute to the reinterpretation of resources from an applied perspective. The opportunity to experience rural life and learn about local communities provides students with a more concrete understanding of the world that is closer to reality. The goal is for students to participate directly in learning processes and to develop into individuals capable of interpreting, articulating, and promoting the value of local products, always preserving culture and with a perspective of co-creation and giving back.

This article aims to analyze how the valorization of the biocultural resources of the Mancomunidad de las Meliponas (Inter-Municipal Association), facilitated by the participation of tourism students in a community engagement practicum whose outputs were presented in a festival and fair setting, shapes students' understanding of these resources and of their potential for local entrepreneurship and for initiatives that could be scaled up. Accordingly, the study addresses the following research question: how does participation in a community engagement practicum, and in particular direct contact with the territory, change the way students perceive and interpret biocultural resources and their potential for valorization? Likewise, this dynamic is examined from the perspective of sustainability, considering the quadruple helix model as a framework for understanding the articulation of partnerships between academia, the community, the productive sector, and public institutions.

Thus, this research is situated at the intersection of rural tourism, academic training, and territorial development, based on agricultural and agroforestry systems, proposing a perspective in which value creation is not limited to an economic process but rather involves a social construction of conservation, geology, and culture mediated by experience, interaction, and the co-creation of knowledge.

Although the literature on community-based rural tourism, heritage valorization and biocultural resources is extensive, most studies examine these processes from the perspective of communities, governments or visitors, focusing on governance, economic benefits or the risks of cultural commodification (Ruiz-Ballesteros, 2011; Smith, 2011; Cabanilla, 2018). Much less attention has been paid to the educational dimension of valorization, that is, to how future tourism and gastronomy professionals learn to recognize, interpret and assign value to biocultural resources through direct contact with rural communities. Likewise, research on experiential learning in tourism education seldom considers biocultural resources linked to specific agro-productive practices such as

meliponiculture, or the role that inter-municipal associations can play in creating such learning spaces. This study addresses this gap.

From a theoretical standpoint, the study contributes by conceptualizing valorization as a formative process mediated by experience, in which students' perceptions serve as an indicator of how the value of biocultural resources is socially constructed. From a practical standpoint, the case offers insights into universities, inter-municipal associations and local producers seeking to design learning experiences that connect academic training with territorial development.

Section 2 presents the theoretical foundations of the study and the analytical framework derived from them. Section 3 describes the qualitative case study design, the participants, the instruments and the analytical procedure. Section 4 presents the results, Section 5 discusses them considering the literature and acknowledges the study's limitations, and Section 6 presents the conclusions.

2. Literature Review

2.1 Community-based rural tourism: its fundamentals and territorial approach

Community-based tourism offers an alternative approach to conventional tourism, aimed at promoting local development from a participatory, sustainable, and culturally grounded perspective. Unlike traditional models that seek economic maximization, community-based tourism is grounded in the collective management of resources, community participation, and the equitable distribution of benefits derived from tourism activities (Scheyvens, 1999; Cabanilla, 2018; ILO, 2005). In rural areas, this practice becomes more tangible and effective due to its geographical and social organizational dynamics, particularly in the Latin American context, where forms of communal property, peasant economies, and historical territorial structures shape the possibilities for tourism development.

From a conceptual perspective, community-based tourism can be defined as a form of tourism managed by local communities, in which residents play a leading role in the planning, operation, and oversight of activities, integrating their knowledge, cultural practices, and local resources into the creation of authentic tourism experiences (Sarmiento León, 2025; Carrera Bravo et al., 2024; Ruiz-Ballesteros and Hernández Ramírez, 2010; Ruiz-Ballesteros, 2011). This approach highlights tourism not only as an economic activity but also as a social process of association involving power relations, identity construction, and the negotiation of meanings surrounding the territory. Community-based tourism seeks to explore the possibilities of social and local tourism development by placing the community, its knowledge, and its needs at the center.

In this regard, community-based rural tourism must be understood within a broader framework for analyzing rural tourism, which is not a homogeneous category but rather a diverse and contested conceptual field. Contemporary definitions agree in considering rural tourism as an "umbrella term" that encompasses dimensions such as rural location, sustainability, the visitor experience, and community participation, giving rise to multiple typologies such as agritourism, agroecotourism, or agri-food tourism, each with its own emphases (Lane, 2009). Within this framework, community-based rural tourism is distinguished by its normative character, prioritizing local governance, community control, and equity in the distribution of benefits.

In the Latin American rural context, community-based tourism is closely linked to processes of cultural reclamation, territorial defense, and the creation of economic alternatives to extractive models. To support this argument, various studies highlight its potential to

strengthen local autonomy, preserve cultural and natural heritage, and promote more equitable forms of development (Ruiz-Ballesteros, 2011). However, they also warn of risks associated with the romanticization of systems and products, the commodification of culture, the folklorization of rural community practices, and the unequal distribution of benefits if adequate governance mechanisms are lacking.

Regarding heritage, community-based tourism is grounded in the valorization of resources that are not inherently tourist attractions but rather acquire this status through social processes of interpretation and reinterpretation. As argued in contemporary heritage studies, these resources—both tangible and intangible—constitute expressions of collective memory, identity, and relationship with the territory, whose value is not static but socially constructed (Smith, 2011). Within this framework, rural tourism serves to interpret and communicate values with certain characteristics, provided it is developed with a focus on the preservation of and respect for natural resources, participation, and sustainability.

Likewise, rural and community-based tourism can be understood as a cultural ecosystem service, insofar as it generates intangible benefits associated with learning, recreation, identity, and a sense of belonging (Millennium Ecosystem Assessment, 2005; Stålhammar and Pedersen, 2017). This perspective broadens our understanding of tourism beyond its economic dimension, integrating it into an ecological-cultural system where nature and culture are inseparable. As evidenced in rural contexts such as the dry forest of southern Ecuador, collaborative practices linked to biodiversity, such as meliponiculture, generate products and opportunities for narratives, experiences, and knowledge that can be incorporated into tourism proposals with territorial and agricultural value.

In this regard, rural tourism becomes a strategic tool for highlighting the value of biocultural heritage, as it enables communities to conserve their resources while simultaneously expanding in a sustainable manner into new economic and social contexts. But it is also important to understand that the effectiveness of such partnerships depends on the existence of processes of mediation, training, and coordination among the various stakeholders involved, where academia can play a key role in capacity building, interpreting the territory, and developing meaningful proposals (Hernández-Silvera and Ghilardelli, 2023). This coordination, evident in university engagement initiatives, reinforces the idea that rural and community-based tourism is a deliberate process that requires the exchange of knowledge, planning, and collective commitment.

Community-based rural tourism is embedded in multi-activity economies, where families and communities combine various subsistence strategies, using tourism as a complementary means to diversify their income and strengthen their resilience in the face of the agricultural crisis (Ellis, 2000). In this sense, forms such as agrotourism or agroecotourism gain relevance in Latin America by proposing an explicit integration of agriculture, culture, and nature, moving beyond fragmented visions of rural development.

This allows rural and community-based tourism to be recognized as a complex and interdisciplinary approach that integrates economic, cultural, social, and environmental dimensions. Its potential lies in its capacity to transform rural resources into meaningful experiences through co-creation, the strengthening of identities, and the generation of opportunities for sustainable development, provided it is grounded in principles of participation, equity, and respect for biocultural diversity.

2.2 Valorization of rural heritage

The valorization of cultural heritage is understood as a complex process through which rural assets, practices, and landscapes acquire meaning and utility in contemporary contexts, particularly in relation to tourism and gastronomy. Far from being reduced to mere economic valuation, this process involves recognizing rural heritage as a social, historical, and geographical construct, whose significance is shaped by collective memory, cultural practices, and the relationships between communities and ecosystems. Heritage valorization is therefore a complex and strategic process. It is a social and territorial process through which a community recognizes, interprets, manages, and activates certain assets and practices so that they acquire collective meaning, social use, and future potential (Prats, 2005; Daldi Calabró et al., 2025).

From a contemporary perspective, heritage valorization is not merely about "activating" a passive resource; rather, it involves interpreting, reinterpreting, and projecting heritage considering the dynamics of the territory. In this sense, heritage is a living system that integrates natural and cultural, material and immaterial dimensions, the management of which requires an understanding of its biocultural and relational nature. Heritage only acquires meaning when linked to the social practices, local knowledge, and ecological conditions that sustain it, avoiding its isolated or merely instrumental treatment (Troncoso, 2012).

In the field of tourism, value creation involves designing experiences that integrate authenticity, sustainability, and local narratives. This means moving beyond exploitative or folkloristic models by promoting initiatives that respect cultural identity, ecological limits, and community participation. Tourism contributes to territorial development only when it is grounded in heritage conservation and the equitable distribution of benefits, avoiding processes of cultural commodification or external appropriation (UNESCO, 2003; Smith, 2011; Troncoso, 2012; Stålhammar and Pedersen, 2017).

This helps us understand that heritage valorization is an ethical and political process aimed at balancing conservation, use, and development. It involves making decisions about what is made visible, how it is represented, and who participates in its management, recognizing that heritage is also a field of symbolic dispute (Bourdieu, 1990). With this perspective, the challenge lies in generating proposals that utilize heritage and contribute to its care, strengthening, and intergenerational transmission. Complementarily, the agri-food resource allows us to understand how local products, culinary practices, and production systems acquire new meanings through rural tourism, shaping what is called a social metabolism' of food, where both its material and symbolic dimensions are reconfigured. This process is not without tensions, as it involves dynamics of heritage preservation and commodification that must be managed through critical and sustainable approaches.

2.3 Inter-Municipal Associations: Territorial Governance and Coordination for Local Development

Inter-municipal associations (mancomunidades) are a form of territorial organization based on the voluntary association of local governments or communities, aimed at the joint management of resources, services, and development strategies. This model addresses the need to overcome the individual limitations of territories by promoting cooperative frameworks that enable common challenges to be addressed through a coordinated, large-scale approach (Vázquez Barquero, 2007).

From a conceptual perspective, inter-municipal associations can be understood as structures of collaborative governance, in which multiple stakeholders—particularly local

governments, communities, and organizations—coordinate actions to ensure the sustainable use of the region. This type of organization is part of contemporary approaches to productive and territorial development, which recognize that economic and social growth depends on external factors, but also on the capacity of territories to mobilize their own resources, generate networks, and build collective strategies (Alburquerque, 2004; Boisier, 2005).

In Latin America, inter-municipal associations have gained relevance as mechanisms for strengthening local public management and promoting endogenous development processes in rural areas. These experiences enable the coordination of productive, tourism, and conservation initiatives, facilitating the integration of territories with shared cultural and ecological characteristics. In this sense, inter-municipal associations not only optimize resources but also contribute directly to the construction of territorial identity and the generation of economies based on the sustainable use of heritage (Oddone et al., 2016).

In the field of tourism and biocultural resources, inter-municipal associations serve as strategic platforms for promoting rural areas, as they facilitate coordination among local stakeholders and the development of integrated initiatives. The development of initiatives related to natural and cultural heritage requires collective decision-making processes in which narratives, uses, and boundaries of the territory are defined (Troncoso, 2012). In this context, the association acts as a space for mediation that articulates diverse interests, promoting more balanced and sustainable development models.

In this same vein, from the perspectives of innovation and development, inter-municipal associations can be interpreted as territorial expressions of the quadruple helix, as they integrate the participation of public, private, community, and academic actors in the construction of shared solutions (Carayannis and Campbell, 2009). This coordination fosters the co-creation of knowledge, the strengthening of local capacities, and the generation of innovative initiatives with territorial impact.

In terms of sustainability, collaborative efforts enable a more effective response to environmental, social, and economic challenges, as they promote integrated resource management and a more equitable distribution of benefits. According to Villalba Ferreira et al. (2022), intermunicipal cooperation is key to advancing toward sustainable development models, especially in areas with high ecological and cultural diversity.

Thus, inter-municipal associations represent a territorial governance strategy that enables the coordination of actors, resources, and knowledge around common objectives. Their relevance in the context of community-based rural tourism and the valorization of rural heritage lies in their ability to transform isolated initiatives into collective processes, strengthening local development from a sustainable, participatory perspective that preserves territorial identity.

2.4 Sustainability: A Comprehensive Approach and Regional Coordination

The concept of sustainability has evolved from approaches focused on environmental conservation toward broader perspectives that integrate economic, social, cultural, and institutional dimensions. Therefore, sustainability implies the capacity of territories to generate development processes that are viable over time, equitable, and respectful of their biocultural foundation (Brundtland, 1987; Sachs, 2015).

The report 'Our Common Future' by the World Commission on Environment and Development (Brundtland, 1987) provides one of the most influential definitions, stating that

sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. However, contemporary approaches have broadened this vision, emphasizing that sustainability also requires consideration of aspects such as social equity, cultural diversity, and territorial governance (Sachs, 2015).

At the local level, sustainability is closely linked to the ability of local actors to manage their resources in an integrated manner, generate value from them, and develop collective development strategies. What has emerged is a perspective on discussions about sustainability in which sustainable development itself is a dynamic process that depends on the interaction among local actors, institutions, and resources (Vázquez Barquero, 2007).

Consequently, sustainability in the context of rural territorial development and community-based processes must be understood as a process that integrates economic value, cultural identity, and environmental conservation, facilitated by the participation of local stakeholders. From this perspective, initiatives such as those carried out by inter-municipal associations represent organizational strategies and concrete ways to build sustainability from the local level, based on cooperation, identity, and community-based resource management.

2.5 Biocultural resources and the interplay between nature, culture, and territory

The concept of biocultural resources stems from the understanding that biological diversity and cultural diversity are interdependent components of socio-ecological systems. Thus, biocultural resources encompass the set of natural elements, traditional knowledge, productive practices, and cultural expressions that have historically developed in each territory, shaping forms of relationship between communities and their environment (Toledo and Barrera-Bassols, 2008). They can be understood as complex systems rich in meaning, integrating ecological, symbolic, and social dimensions. As Toledo and Barrera-Bassols (2008) point out, traditional knowledge constitutes a form of 'biocultural memory,' in which productive practices, worldviews, and strategies for adapting to the environment—transmitted from generation to generation—are articulated.

In the field of rural development, the recognition of biocultural resources implies a shift in approach, moving from an extractive mindset to one of comprehensive valuation of the territory, in which resources gain significance not only for their economic utility but also for their capacity to sustain identities, knowledge, and ways of life. This approach aligns with endogenous development perspectives, which emphasize the importance of local capacities, culture, and institutions as the foundations of development (Vázquez Barquero, 2007).

Biocultural resources are closely linked to cultural ecosystem services, understood as the intangible benefits that people derive from ecosystems, such as a sense of belonging, cultural identity, recreation, and knowledge (Millennium Ecosystem Assessment, 2005). These services are important in rural tourism contexts, where the visitor's experience is largely shaped by interaction with practices, narratives, and environments that reflect the relationship between community and nature.

From a complementary perspective, it is evident that the valorization of rural biocultural resources can serve as a fundamental strategy for sustainable development, as it enables the generation of economic income without compromising the integrity of ecosystems or the continuity of cultural practices (Berkes, 2012). Initiatives based on local biodiversity, such as the production of native honey by the Mancomunidad de las Meliponas (Inter-Municipal

Association), are examples of how biocultural resources can be integrated into productive, tourism, and culinary initiatives that reflect local identity.

However, it is also important to recognize that rural biocultural resources require governance frameworks that promote participation, cooperation, and the co-creation of knowledge.

2.6 Experiential learning and the educational dimension of valorization

Experiential learning theory holds that knowledge is created through the transformation of experience, in a cycle that combines concrete experience, reflective observation, abstract conceptualization and active experimentation (Kolb, 1984). Complementarily, the situated learning approach argues that learning is inseparable from the social practices and communities in which it takes place, and that learners gradually acquire a community's knowledge through legitimate peripheral participation (Lave and Wenger, 1991). In tourism and gastronomy education, these approaches support pedagogical strategies such as field visits, community engagement projects and participation in local events, in which students interact with producers and territories rather than learning about them only in the classroom (Hernández-Silvera and Ghilardelli, 2023).

From this perspective, the valorization of biocultural resources can also be understood as a learning process. Because the value of heritage is socially constructed (Prats, 2005; Smith, 2011), the way future professionals perceive and interpret local resources shapes the narratives, products and experiences they will later be able to design. Students are thus not only recipients of knowledge but also potential mediators between communities, markets and visitors. However, limited attention has been paid to how this mediating capacity is formed, and to whether direct contact with biocultural practices changes students' understanding of the relationships between nature, culture, tourism and sustainability.

2.7 Synthesis and analytical framework

Taken together, the literature reviewed suggests that the valorization of biocultural resources through community-based rural tourism involves at least six interrelated dimensions: the ecological basis of resources (nature/ecosystem); their symbolic and identity content (culture/identity); the recognition of the territory as a source of value (value of the territory); the tourism activity through which resources are interpreted and communicated (rural tourism); the development and sustainability goals associated with their use (sustainability/development); and the protection of the resources themselves (conservation). These dimensions draw, respectively, on the literature on biocultural resources and cultural ecosystem services (Millennium Ecosystem Assessment, 2005; Toledo and Barrera-Bassols, 2008), heritage valorization (Prats, 2005; Smith, 2011), community-based rural tourism (Lane, 2009; Ruiz-Ballesteros, 2011) and territorial sustainability (Vázquez Barquero, 2007; Sachs, 2015). They were used as sensitizing categories in the thematic analysis described in Section 3, which examines whether, and how, students' understanding moves from an isolated view of these dimensions toward an integrated one after a situated learning experience.

3. Methodology

3.1 Research design and context

Given that the objective of this research is to analyze how the valorization of rural biocultural resources in the Mancomunidad de las Meliponas, facilitated by the participation of tourism students in a community engagement practicum with the Mancomunidad, shapes students' understanding of local initiatives and of proposals with the potential for scaling up, a qualitative approach was adopted, aimed at analyzing the processes of promoting biocultural resources based on a learning experience in a real-world context. A case study

design (Yin, 2018) was employed, focusing on Practicum 3 (Community Service) of the Tourism program at the Universidad Técnica Particular de Loja (UTPL), a community engagement course carried out during the April–August 2025 academic period, whose outputs were presented at the 4th International Festival of Native Stingless Bees (28–29 November 2025), organized in collaboration with the Mancomunidad de las Meliponas (Inter-Municipal Association), and other organizations in the province of Loja (Ecuador).

During the practicum, students worked in groups on technical materials for the Mancomunidad: a manual of tourism routes to Puyango (e.g., Loja–Alamor, Machala–Puyango and Piura–Puyango), a manual of tour-guiding techniques, a manual for the identification and use of tourism resources, and recipes based on native stingless bee honey. These materials were shared with the local community through training sessions on the valorization of native bee honey and through the presentation of the guiding and tourism resource manuals. Students who were able to travel took part in one or two field visits to Puyango during the term, which included a visit to a meliponiculture farm]; the remaining students took part in the practicum remotely.

The practicum outputs were later presented at the 4th International Festival of Native Stingless Bees, held on 28–29 November 2025, where the project team and some of the students took part in the fair with an immersive space featuring native plants, local producers, art and cooking. Because the festival took place after the post-practicum questionnaire (20–27 August 2025), the data analyzed in this study reflect the practicum experience, including the field visits, and not participation in the festival itself.

3.2 Participants and sampling

The sample was purposive and consisted of the students enrolled in the practicum; those who travelled to the territory interacted directly with local stakeholders (Hernández-Silvera and Ghilardelli, 2023). The design is grounded in the experiential and situated learning approaches discussed in Section 2.6 (Kolb, 1984; Lave and Wenger, 1991).

Twenty-two students completed the questionnaire administered at the beginning of the practicum (pre-phase) and 15 completed the questionnaire administered at the end (post-phase); the remaining seven did not complete the second questionnaire. Both questionnaires were answered with the students' institutional e-mail, which made it possible to match all 15 post-phase responses with the corresponding pre-phase responses. For the analysis and the reporting of results, each student was assigned a pseudonymous code (S01–S22).

The students lived in ten different provinces of Ecuador and two lived abroad; only three resided in Loja Province. Participation in the field activities therefore depended on students' ability to travel. At the beginning of the practicum, 15 students stated that they could travel to Puyango and seven that they could not. At the end, six of the 15 post-phase students reported having travelled to Puyango (four once and two twice), and nine reported that they had not. The post-phase thus comprises two subgroups, students who travelled (n = 6) and students who took part remotely (n = 9), which allows an exploratory comparison of the role of direct contact with the territory. The characteristics of the participants are summarized in Table 1.

Table 1 - Characteristics of the participants in each phase and post-phase subgroup

Characteristic	Pre-phase (n = 22)	Post-phase (n = 15)	Post: travelled (n = 6)	Post: did not travel (n = 9)
Gender: female / male	15 / 7	9 / 6	2 / 4	7 / 2
Age, mean (range)	27.5 (20–55)	28.5 (21–54)	32.5 (21–54)	25.8 (21–32)
Residence: Loja / other provinces / abroad	3 / 17 / 2	3 / 11 / 1	3 / 3 / 0	0 / 8 / 1
Self-identified ethnicity: mestizo	22	15	6	9
Stated ability to travel at the start: yes / no	15 / 7	11 / 4	6 / 0	5 / 4
Field visits to Puyango: none / one / two	—	9 / 4 / 2	0 / 4 / 2	9 / 0 / 0

Source: Authors' own elaboration based on the closed-ended questions of the questionnaires. Age as reported in each questionnaire. The questionnaires did not record academic program or semester.

3.3 Instruments and data collection

Data were collected through two online questionnaires administered at the beginning (13 April to 8 May 2025) and at the end (20 to 27 August 2025) of the practicum. Both included closed-ended questions on place of residence, age, gender and ethnicity, and on travel to Puyango (stated ability to travel in the pre-phase; number of visits made in the post-phase), as well as four open-ended questions (Appendix A): (1) three phrases that come to mind when hearing the term "cultural ecosystem services"; (2) the extent to which the knowledge acquired would be (pre-phase) or was (post-phase) applicable to the student's academic, professional and personal life; (3) the student's perception of the learning outcome of the practicum; and (4) the skills or knowledge the student could contribute to (pre-phase) or developed in (post-phase) the community engagement project.

The wording of the first open-ended question differed between phases: in the post-phase questionnaire it referred to "cultural ecosystem services and sustainable development through tourism." Because this addition may have prompted references to tourism and sustainability, it is taken into account when interpreting the results (Sections 4 and 5.1). All post-phase students answered the four open-ended questions, whereas in the pre-phase question 3 was answered by 20 of the 22 students and question 4 by only seven.

The study is based exclusively on these two questionnaires. Producers, community members, local authorities and other stakeholders took part in the field activities and training sessions but were not interviewed or surveyed; their perspectives therefore entered the study only indirectly, through the students' accounts.

3.4 Data analysis

To conduct an in-depth analysis, thematic content analysis was used (Braun and Clarke, 2006), enabling the identification of categories related to value creation, territorial identity, and entrepreneurial potential. This approach treats perception as an indicator of value creation processes in educational and territorial contexts.

The comparative analysis focused on the first open-ended question, which addressed students' understanding of cultural ecosystem services and was formulated in similar terms in both phases; the answers to the other three questions were used qualitatively to understand how students perceived their learning. The analysis followed the six phases proposed by Braun and Clarke (2006): familiarization with the data, generation of initial codes, search for themes, review of themes, definition and naming of themes, and reporting. A combined deductive–inductive approach was used: six sensitizing categories were derived

from the literature (Section 2.7), and their definitions were refined while reading the responses. The categories and coding criteria are presented in Table 2.

The unit of analysis was each student's answer, which generally consisted of three phrases. An answer could be assigned to more than one category when it referred to more than one dimension (multiple coding). The frequency of each category was calculated as the number of students whose answer contained at least one reference to that category, divided by the number of students in the corresponding group. Three comparisons were made: (a) pre-phase (n = 22) versus post-phase (n = 15); (b) a paired pre–post comparison of the 15 students who answered both questionnaires; and (c) within this paired sample, students who travelled (n = 6) versus those who did not (n = 9). Given the small size of the groups, frequencies are reported as descriptive indicators and no statistical tests were applied. The coding matrix is available as supplementary material.

Table 2 - Analytical categories and coding criteria

Category	Definition and coding criterion
Nature/ecosystem	References to natural elements, landscapes, biodiversity or ecosystem functions and benefits (e.g., forests, water, native bees, pollination, provisioning or regulating services).
Culture/identity	References to traditions, ancestral knowledge, heritage, spirituality, art, community identity or sense of belonging.
Value of the territory	Recognition of local resources as a source of value or benefit (cultural, experiential or economic), including their use as the basis for products or proposals.
Rural tourism	References to tourism activities, products or experiences, including rural, community-based or sustainable tourism.
Sustainability/development	References to sustainability, local or economic development, community well-being or quality of life.
Conservation	References to the protection, preservation, care or responsible use of natural and cultural resources.

Source: Authors' own elaboration based on the coding process.

3.5 Ethical considerations

The questionnaires were administered as part of the regular activities of the practicum, and answering them had no effect on students' grades. Specific informed consent for the research use of the responses was not obtained at the time of data collection. To protect the participants, the data were fully anonymized before the analysis: names, e-mail addresses and telephone numbers were removed; e-mail addresses were used only to match the two questionnaires and were then replaced by pseudonymous codes (S01–S22); and the results are reported only in aggregate form or through short quotations that do not allow individual students to be identified.

4. Results

The initial analysis focused on characterizing student participation and comparing the periods before and after the practicum. Twenty-two students answered the pre-phase questionnaire and 15 the post-phase questionnaire; of the latter, six had travelled to Puyango and nine had taken part remotely (Table 1).

Travelling to the territory was associated with place of residence and prior availability: the three students living in Loja Province travelled, whereas none of the four post-phase students who had stated at the outset that they could not travel did so. The two post-phase subgroups also differed in age and gender composition (Table 1), which must be considered when comparing them.

Although the instruments did not include structured quantitative scales to measure variables such as perception or evaluation, the data provide a descriptive foundation regarding participation and the context of the experience.

The analysis of open-ended responses related to the understanding of cultural ecosystem services was conducted using a thematic content analysis approach with category quantification (Braun and Clarke, 2006). This process allowed us to identify patterns in students' perceptions and compare their evolution between the pre- and post-practicum phases. As described in Section 3.4, the responses were coded into six analytical categories: nature/ecosystem, culture/identity, value of the territory, rural tourism, sustainability/development, and conservation. Table 3 shows their distribution in both phases with representative quotations, and Table 4 presents the paired comparison by subgroup.

Table 3 - Distribution of analytical categories before and after the practicum, with representative quotations

Category	Pre-phase n (%) (n = 22)	Post-phase n (%) (n = 15)	Representative pre-phase quotation	Representative post-phase quotation
Nature/ecosystem	19 (86%)	14 (93%)	"Air is the breeze of life. Trees are like the lungs of the Earth. Water is the source of life." (S11)	"Sustainability. Native pollination." (S11, travelled)
Culture/identity	16 (73%)	8 (53%)	"Cultural identity, heritage and community service." (S03)	"Tourism connects me with culture and nature." (S01, travelled)
Value of the territory	12 (55%)	9 (60%)	"The recreational and tourism value that ecosystems offer, such as natural parks and reserves." (S04)	"Tourism products. Puyango hospitality. Nature and culture." (S15, travelled)
Rural tourism	6 (27%)	13 (87%)	"Tourism in ecological reserves." (S07)	"Integration of communities into the country's tourism development." (S07, travelled)
Sustainability/development	5 (23%)	12 (80%)	"Nature, culture, sustainability." (S21)	"A model that balances economic growth with environmental preservation." (S16, travelled)
Conservation	5 (23%)	6 (40%)	"Natural landscapes are a cultural heritage that we must preserve." (S13)	"Landscapes tell stories that we must protect." (S01, travelled)

Note: n = number of students whose answer contained at least one reference to the category; percentages are calculated on the number of students in each phase. Answers could be coded in more than one category, so percentages do not add up to 100%. Quotations were translated from Spanish by the authors; codes identify students (S01–S22). Source: Authors' own elaboration.

Table 4 - Paired pre–post comparison of the 15 students who answered both questionnaires, by subgroup

Category	Paired sample (n = 15) pre → post	Travelled (n = 6) pre → post	Did not travel (n = 9) pre → post
Nature/ecosystem	12 (80%) → 14 (93%)	5 (83%) → 6 (100%)	7 (78%) → 8 (89%)
Culture/identity	12 (80%) → 8 (53%)	5 (83%) → 3 (50%)	7 (78%) → 5 (56%)
Value of the territory	8 (53%) → 9 (60%)	3 (50%) → 3 (50%)	5 (56%) → 6 (67%)
Rural tourism	5 (33%) → 13 (87%)	4 (67%) → 5 (83%)	1 (11%) → 8 (89%)
Sustainability/development	4 (27%) → 12 (80%)	3 (50%) → 4 (67%)	1 (11%) → 8 (89%)
Conservation	4 (27%) → 6 (40%)	1 (17%) → 3 (50%)	3 (33%) → 3 (33%)

Note: n (%) of students in each subgroup whose answer contained at least one reference to the category. Given the small size of the subgroups, the comparison is exploratory. Source: Authors' own elaboration.

In the preliminary phase, responses focused primarily on the categories of nature and culture, revealing a predominantly descriptive and fragmented understanding (19 and 16 of the 22 answers, respectively; Table 3). Students associated cultural ecosystem services with isolated elements of the environment, such as landscapes, natural resources, or cultural expressions, with little reference to processes of integration, use, or promotion of these resources. References to tourism appeared in only six of the 22 answers, and references to sustainability or development in five.

In contrast, the post-phase answers show a noticeable change in their conceptual structure. References to tourism appeared in 13 of the 15 answers and references to sustainability/development in 12; conservation became somewhat more frequent (from 23% to 40%), while references to culture/identity became less frequent (from 73% to 53%) (Table 3). The paired comparison of the 15 students who answered both questionnaires shows the same pattern (Table 4). The seven students who did not complete the second questionnaire did not differ from the others in a way that could explain these results: in the pre-phase, they referred to tourism and to sustainability/development even less often (one of seven in each case) than the 15 students who completed both questionnaires (five and four of 15, respectively). Including them in the pre-phase total therefore slightly accentuates the change observed at group level, which is why the paired comparison (Table 4) is taken as the main reference. Students begin to integrate biocultural resources into a systemic framework, recognizing their potential to generate tourism and culinary experiences, promote local development, and contribute to the sustainability of the region.

The comparison between subgroups qualifies this result (Table 4). The increase in references to tourism and to sustainability/development was concentrated among students who did not travel (from one to eight of nine students in both categories), whereas among those who travelled these categories were already frequent before the practicum (four and three of six) and changed little (to five and four). Conversely, references to conservation increased only among those who travelled (from one to three of six), and references to culture/identity decreased in both subgroups. Two factors may explain this pattern: the practicum as a whole, in which all students, whether or not they travelled, worked on tourism proposals for the Mancomunidad; and the change in the wording of the first question, which in the post-phase explicitly mentioned sustainable development and tourism. The general shift therefore cannot be attributed to the field experience alone.

What distinguished the students who travelled was rather the content of their answers. Only they included place-specific references in their phrases, such as "Puyango hospitality" (S15) or "native pollination" (S11), and in the other open-ended questions they explicitly linked

their learning to the field visits: one student stated that the practicum had made it possible to connect theory with field practice "during the visit to the farm in Puyango" (S16), and another that the two field trips had provided knowledge about stingless bee honey in both the tourism and the culinary fields (S15). Students who did not travel also referred to meliponiculture and native bees, but mainly in relation to the research and design tasks carried out remotely, such as the planning of tourism routes (S14) or the design of interpretive panels (S05).

In our interpretation, this shift from a fragmented understanding toward an integrated perspective reflects a process of reinterpreting the value of territorial resources in which the practicum experience as a whole, and not only direct contact with the territory, appears to play an important role. While in the initial phase students tended to describe cultural ecosystem services in general or isolated terms, working on proposals for the community, and for some students direct interaction with producers, appears to have allowed a more complex reconfiguration of these meanings. In the subsequent phase, students not only recognize the existence of these resources but also interpret them as elements integrated within social, cultural, and economic systems.

This shift is reflected in statements such as "Cultural ecosystem services strengthen local identity in tourism" or "Sustainable tourism depends on preserving culture and nature" (S14, did not travel), which suggest a more relational understanding of the components of the region. Ideas related to development and sustainability also emerge, such as "a model that balances economic growth with environmental preservation" and "authentic experiences that enrich tourism and promote development in harmony with nature" (S16, travelled). We interpret these statements as indicating that students are beginning to recognize biocultural resources not only as descriptive elements but as strategic assets for territorial development using the agricultural landscape and geological heritage.

Similarly, a greater focus on practical application and social impact is observed, evidenced by comments such as "through tourism, culture and nature are preserved" (S05) or "improving the community's quality of life" and "community-based tourism" (S09), both from students who did not travel. These types of responses suggest that the experience allowed students to understand the relationship between valorization, sustainability, and community well-being.

5. Discussion

Taken together, these findings are consistent with the idea that experiential learning not only expands conceptual knowledge but can also change the way students interpret the territory, facilitating the transition toward an integrated vision in which resources are viewed as the foundation for value creation, sustainable development, and entrepreneurship rooted in local identity.

In relation to the study's objective, the results suggest that the valorization of biocultural resources, mediated by community engagement and tourism experiences, can strengthen students' understanding of the entrepreneurial potential of these resources. Although the research does not evaluate direct economic outcomes, it identifies changes in students' perceptions that may constitute prerequisites for the development of initiatives with a territorial identity.

Following the experience, students begin to link local resources with specific opportunities for tourism and culinary development, moving beyond a purely descriptive perspective. This is reflected in statements such as "cultural heritage drives responsible tourism experiences"

(S14) and "through tourism, culture and nature are preserved" (S05), which demonstrate an understanding of tourism not only as an economic activity but also as a mechanism for valorization and sustainability. Likewise, notions associated with the social impact of entrepreneurship stand out, such as "improving the community's quality of life" (S09), indicating a broadening of the focus toward collective dimensions of development.

Similarly, a growing link between valorization and sustainability is observed, expressed in statements such as "valuing cultural ecosystem services is essential for sustainability" or "the conservation of the biosphere and culture is necessary for the development of sustainable tourism" (S05). These responses suggest that students not only recognize the value of resources but are beginning to understand the conditions necessary for their responsible use and their long-term viability.

The findings suggest that experiential learning can act as a catalyst in the development of cognitive and evaluative skills, enabling students to identify relationships between resources, territory, community, and creativity in order to design culinary and tourism proposals. This process may be relevant for shaping territorial entrepreneurship, as it involves a shift from a passive perception of resources to an active vision, in which these resources are conceived as the basis for generating innovative, value-added proposals.

Overall, the results suggest that value creation, when mediated by educational processes in real-world contexts, not only contributes to an understanding of the territory but can also help students identify opportunities for sustainable entrepreneurship aligned with cultural identity and local rural dynamics.

The experience analyzed appears to have broadened the students' knowledge and changed the way they interpret the landscape of the region, integrating cultural, conservation, and economic dimensions. This finding reinforces the idea that educational processes based on direct interaction with communities can play a key role in building value and fostering capacity for local, resource-based rural entrepreneurship.

These findings can be related to the literature in three ways. First, they are consistent with experiential and situated learning theory (Kolb, 1984; Lave and Wenger, 1991), but they suggest that the relevant experience is broader than the field visit. Students who took part remotely also worked on concrete proposals for a real community, and their answers changed at least as much as those of the students who travelled. Direct contact with the territory, in turn, seems to add situated, place-specific knowledge about Puyango, its producers and its native pollinators, in line with the idea that learning is anchored in the practices and places where it occurs (Lave and Wenger, 1991). The case thus extends this literature by distinguishing two components of experiential learning in community engagement: project-based work, which appears to shape students' conceptual vocabulary, and on-site contact, which appears to anchor that vocabulary in a specific territory.

Second, the results support the view that the value of heritage and biocultural resources is socially constructed rather than intrinsic (Prats, 2005; Toledo and Barrera-Bassols, 2008; Smith, 2011). Students did not simply discover a pre-existing value; their interpretation of meliponiculture and the local landscape changed as they worked with, and in some cases visited, the people and practices that sustain them. In this sense, the study adds an educational dimension to the understanding of valorization: future professionals are themselves part of the process through which value is attributed. The relational way in which students described cultural ecosystem services after the practicum is also in line with studies

showing that the value of these services is expressed through experiences and relationships rather than as isolated attributes of the environment (Stålhammar and Pedersen, 2017).

Third, the results qualify some of the more optimistic accounts of community-based tourism. The post-phase answers were predominantly positive and did not mention the risks identified in the literature, such as the commodification or folklorization of culture and the unequal distribution of benefits (Ruiz-Ballesteros and Hernández-Ramírez, 2010; Ruiz-Ballesteros, 2011). This suggests that a single practicum may foster an appreciative view of the territory, but not necessarily a critical one; incorporating explicit reflection on these tensions could strengthen future learning designs. Likewise, the decline in references to culture/identity suggests that, as students adopted the vocabulary of tourism and sustainability, the symbolic dimension of biocultural resources may have lost prominence. Finally, although the practicum and the subsequent festival brought together academia, local governments, producers and the community, consistent with the quadruple helix model (Carayannis and Campbell, 2009), the present data do not allow conclusions about whether this collaboration produced specific outcomes in terms of governance, entrepreneurship or sustainability; they show only that it created conditions for the learning experience analyzed.

It is also important to distinguish between students' awareness of entrepreneurial opportunities and evidence of actual entrepreneurial or economic outcomes. This study documents the former: at the end of the practicum, students more frequently linked local resources with tourism and, in some cases, culinary proposals. It does not measure the creation of businesses, commercialization, income or community outcomes. The contribution of this type of educational experience to strengthening local entrepreneurship should therefore be understood as a potential implication rather than a demonstrated impact.

5.1 Limitations and future research

This study has several limitations. First, the groups were small (22 and 15 students; 6 and 9 in the post-phase subgroups) and seven students did not answer the second questionnaire, so the results are descriptive and exploratory. Second, the wording of the first open-ended question changed between phases, which may have contributed to the increase in references to tourism and sustainability. Third, the subgroups were not formed at random: travelling depended on place of residence and availability, and those who travelled were older and more often men, which limits the comparison between them. Fourth, the results are based on students' self-reported perceptions, which may be influenced by social desirability and do not show whether the changes persist over time. Fifth, although the coding was carried out independently by two researchers, the categories involve interpretive judgments. Sixth, both questionnaires were administered before the 4th International Festival of Native Stingless Bees, so the study does not capture the effect of participating in that event. Seventh, the perspectives of producers, community members, local authorities and other stakeholders were not collected, so the study cannot assess how the community valued the students' participation. Eighth, the study did not measure economic, entrepreneurial or sustainability outcomes. Finally, as a single case study, its findings are not statistically generalizable, although they may be analytically transferable to similar contexts (Yin, 2018).

Future research could use identical questions in both phases, add a measurement after events such as the festival and a follow-up some months later; compare students who travel and those who participate remotely with larger groups; follow the implementation of the proposals generated; incorporate the perspectives of producers, community members and

local authorities; and assess the economic, social, cultural and environmental outcomes of tourism initiatives linked to meliponiculture.

6. Conclusions

The study concludes that the valorization of rural biocultural resources, when mediated by community engagement and community-based rural tourism experiences, can be an effective educational process for building students' capacity to interpret territorial resources, a necessary although not sufficient condition for sustainable territorial development. Based on an analysis of student perceptions, a shift was observed in how local resources are understood, moving from a descriptive and fragmented view toward an integrated interpretation that brings together nature, culture, tourism, and sustainability.

In this regard, the community engagement practicum, which combined group work on technical materials for the Mancomunidad, training sessions with the community and, for some of the students, field visits to the territory, served as an important educational tool, allowing students to reframe biocultural resources as assets with economic, cultural, and social value. The increase in references to tourism and sustainability was observed among students who took part remotely as well as among those who travelled, whereas direct contact with the territory was mainly associated with more place-specific knowledge. This process not only expanded conceptual knowledge but also appears to have strengthened students' ability to identify opportunities and imagine entrepreneurial alternatives linked to territorial identity based on rural resources such as native honey and cultural and natural interpretive practices.

The results suggest that incorporating approaches such as community-based rural tourism and sustainability contributes to an understanding of more balanced development models, in which the valorization of resources is closely linked to their conservation and the well-being of communities. Within this framework, coordination among stakeholders, a hallmark of the quadruple helix model and of inter-municipal associations, appears to be a key condition for creating learning spaces of this kind, although its effects on governance and entrepreneurship were not assessed in this study.

Furthermore, the study suggests that student perception, when based on direct experiences, can be a useful indicator for analyzing ecosystem valuation processes in educational contexts. This reinforces the importance of integrating experiential methodologies into university education, especially in fields related to tourism, gastronomy, and local development.

The main contribution of the study lies in the educational dimension of biocultural resource valorization: it shows how a community engagement practicum can change the way future tourism professionals understand the value of biocultural resources, and it suggests that project-based work and on-site contact with the territory play complementary roles in this process. The limitations of the study and the corresponding lines of future research are discussed in Section 5.1. Finally, the findings suggest that "valorization"—understood as a formative, social, and territorial process—may constitute a solid foundation for the future creation of sustainable initiatives with a local identity.

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APPENDIX A. QUESTIONS OF THE PRE- AND POST-PRACTICUM QUESTIONNAIRES

Both questionnaires were administered in Spanish; the questions are translated here by the authors.

A.1 Closed-ended questions (both phases): place of residence (province); age; gender; ethnicity.
A.2 Travel to the territory. Pre-phase: "Could you travel to Loja Province?" (I live near Loja and can travel to Puyango more than once on the scheduled dates / I can and want to travel to Puyango, Loja, at least once during the term on the scheduled dates / I will definitely not be able to travel to Puyango, Loja, this term). Post-phase: "Were you able to travel to Puyango – Mancomunidad Las Meliponas?" (No / Yes, once / Yes, twice).
A.3 Open-ended question 1. Pre-phase: "Write three phrases that come to mind when you hear 'cultural ecosystem services'." Post-phase: "Write three phrases that come to mind when you hear 'cultural ecosystem services' and sustainable development through tourism."
A.4 Open-ended question 2. Pre-phase: "To what extent do you think the knowledge acquired during this exercise will be applicable to your future academic or professional life?" Post-phase: "To what extent do you think the knowledge acquired during this exercise is applicable to your academic, professional and personal life?"
A.5 Open-ended question 3. Pre-phase: "Write your perception of the learning outcome of this practicum (it is not necessary to state the official one; only your perception)." Post-phase: "Write your perception of the learning outcome achieved in this practicum."
A.6 Open-ended question 4. Pre-phase: "Describe the specific skills or knowledge you can contribute to the community engagement project." Post-phase: "Describe the specific skills or knowledge you developed in the community engagement project."

AUTHORS' CONTRIBUTIONS (CREDIT)

Methodology, IWR; validation, IWR, DS-SA, VRO; resources, IWR, DS-SA; writing—original draft preparation, IWR; conceptualization, DS-SA; investigation, DS-SA; data curation, DS-SA; supervision, VRO.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available upon reasonable request.

ETHICS STATEMENT

Specific informed consent for the research use of the questionnaire responses was not obtained at the time of data collection. However, all data were fully anonymized before analysis, and participants cannot be identified from the reported results.

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