Región Científica

e-ISSN: 2954-6168
Región Científica. 2024. 3(2), 2024297
doi: 10.58763/rc2024297

Strengthening rural identity through design thinking and its contribution to the SDGS

El fortalecimiento de la identidad rural a través del design thinking y su aporte a los ODS

Jasleidy Astrid Prada Segura[1], Samir Alveiro Medina Roncancio[2], José Samuel González Contreras[2]

ABSTRACT

The transformation of rural contexts calls for innovative strategies combining endogenous and exogenous factors to achieve sustainable management of resources and sustainable growth. Furthermore, this integration must respond to the communities' cultural identity and ancestral knowledge, consider their perspectives, and project the role of the next generations. A sequential mixed study was conducted aimed at diagnosing the sociodemographic, conceptual, and practical elements necessary to implement a design thinking methodology with the objective of strengthening rural identity in Colombia. The results indicate that raising awareness among young people and encouraging their training as transformative leaders capable of energizing design thinking processes is necessary. In addition, principles are offered for the adequate development of said training and the design of a methodology. The findings allowed us to conclude that participatory and community-centered approaches could be the most suitable for strengthening identity and the subsequent rural transformation.

Keywords: cultural identity, education for sustainable development, environmental education, project design.

JEL Classification: I0, I21, I31

RESUMEN

La transformación de los contextos rurales reclama estrategias innovadoras que combinen factores endógenos y exógenos, de cara a lograr una gestión sostenible de los recursos y el crecimiento sostenible. Además, esta integración debe responder a la identidad cultural y los saberes ancestrales de las comunidades, tomar en consideración sus perspectivas y proyectar el papel de las próximas generaciones. Se condujo un estudio mixto secuencial dirigido al diagnóstico de los elementos sociodemográficos, conceptuales y prácticos necesarios para implementar una metodología de design thinking, con el objetivo de fortalecer la identidad rural en Colombia. Los resultados indican que es preciso sensibilizar a los jóvenes y propiciar su entrenamiento como líderes transformadores capaces de dinamizar procesos de design thinking. Además, se ofrecen principios para el adecuado desarrollo de dicho entrenamiento y del diseño de una metodología. Los hallazgos permitieron concluir que enfoques participativos y centrados en las comunidades podrían resultar los más aptos para el fortalecimiento de la identidad y la consiguiente transformación rural.

Palabras clave: educación ambiental, educación para el desarrollo sostenible, diseño de proyecto, identidad cultural.

Clasificación JEL: I0, I21, I31

Received: 20-02-2024 **Revised:** 10-05-2024 **Accepted:** 15-06-2024 **Published:** 01-07-2024

Editor: Carlos Alberto Gómez Cano

[1]Corporación Unificada Nacional de Educación Superior. Bogotá, Colombia.

[2]Servicio Nacional de Aprendizaje. Bogotá, Colombia.

Cite as: Prada, J., Medina, S. y González, J. (2024). El fortalecimiento de la identidad rural a través del design thinking y su aporte a los ODS. Región Científica, 3(2), 2024297. https://doi.org/10.58763/rc2024297

INTRODUCTION

Promoting sustainable development in rural contexts constitutes an international challenge, which is further exacerbated in the Global South as a result of historical shortcomings, the effects of unequal neoliberalism, colonialist approaches, and other social ills rooted in the region's social fabric (Marchant et al., 2021; Postigo et al., 2024). Furthermore, in rural settings, even in settings with adequate socioeconomic and infrastructural development, the impact of climate change

and the challenges that led to the establishment of the Sustainable Development Goals (SDGs) and their various agendas tend to be more pronounced (Mills-Novoa et al., 2023).

Therefore, to address rural development from a sustainable perspective, it is necessary to incorporate the different dimensions that determine it into the discussion. These include governance, political will and public policies, implementation programs, natural resources, and decision-making (Laakso et al., 2021; Naumann & Rudolph, 2020; Zang et al., 2020).

However, even with the appropriate resources and support from social actors, local and regional culture, the social imaginaries of the peasantry, and the way these are represented in the world play a crucial role when considering rural transformation processes (Banerjee et al., 2023). This is due to the awareness and consequent joint understanding of problems and solutions, while education and social capital regulate the dynamics of knowledge transfer and the introduction of changes (Fahmi & Sari, 2020; Z. Ma et al., 2023). Therefore, transforming the rural context is, to a large extent, transforming the social fabric, especially if we take into consideration the effects of the sustained introduction of capitalist models based on extractivism and Western worldviews.

In this regard, the literature highlights various initiatives and strategies based on different theories, diagnoses, and the SDGs themselves. In conjunction with the growing prevalence of technology and the aforementioned factors, a significant number of studies focus on the alignment of components across development dimensions to support social change (X. Ma et al., 2021). Prominent examples include social media, the design of helix models for the integration of 4.0 and 5.0 technologies (Baldo et al., 2023), process automation and the creation of products oriented toward markets and supply chains (Barbier, 2020), and the subsidizing of joint projects to encourage innovation.

Along these lines, the methodology known as "Design Thinking" allows for a comprehensive approach to the challenges associated with a given process. Although its definition is controversial, it provides a flexible theoretical framework and a set of stages and procedures that facilitate the delimitation of a problem based on the projected outcome. In this regard, although the literature points out the lack of a robust theory or its reproducing nature of structural hierarchies, design thinking has been strongly associated with promoting innovation, celebrated for its ease of implementation in contexts with poorly or unprepared subjects, and its role in organizational change.

Furthermore, another important strength is its adaptability and compatibility with different methodologies and approaches, which favors the effectiveness and efficiency of programs with more general or more specific approaches (Hoolohan & Browne, 2020; Nakata & Hwang, 2020). The texts consulted highlight the STEM approach, gamification, digital transformation, and medical education, among others (Nishant et al., 2022; Simeon et al., 2022).

Based on these assessments, it is clear that design thinking presents multiple opportunities outside the design field and outside of conventional organizational and government structures (Davelaar, 2021). Therefore, it is assumed that a properly structured and operationalized design thinking methodology, flexibly guided and oriented toward the diversity of factors that influence rural development, will strengthen peasant identity in Colombia, in line with the SDGs, and comprehensively adapt it.

In order to achieve this purpose, it is recognized that this methodology must be based on the active participation of peasant communities, ensuring their inclusion and empowerment in the design process, ensuring proper alignment with the principles set forth in the SDGs, and promoting equity and equal opportunities (Trivelli & Morel, 2021). In line with what has already been stated, the process must begin with an adequate characterization of environmental, social, cultural, and identity conditions so as to also contribute to heritage preservation based on their needs and worldview configurations.

As a result of these assessments, there is a need to strengthen education and innovative methodologies aimed at developing the identity of young people with an agricultural vocation, as well as to link efforts to generate employment and improve economic conditions. Specifically, the phenomenon of agricultural development must be addressed from the perspective of migration processes, the consequences of conflict, socio-technological backwardness, and the emergence of new social trends that contradict the worldview in these contexts (Acosta & Fold, 2022). Consequently, an adequate diagnosis of the variables must be taken into account in the methodology. In reviewing these needs, the question arises: How can we develop a methodology for strengthening rural and peasant identity, from the educational perspective, that promotes Colombian rural production, taking design thinking and its contribution to the SDGs as a reference?

METHODOLOGY

Research Approach

A mixed exploratory and descriptive study was designed, with a strategy based on sequential quantitative and qualitative approaches, drawing on various studies with a similar rationale (Chiarini & Kumar, 2022; McIlfatrick et al., 2021). In the first phase, a questionnaire was administered to collect relevant sociodemographic data, as well as an adequate description of the sample to provide the basis for generalizing the results and support the design of the design thinking methodology to strengthen rural identity.

In the second phase, a generic qualitative study was implemented based on participant observation, interviews with key participants, a focus group, and content analysis to synthesize the main findings. The qualitative data obtained and analyzed were used to gain a greater depth of knowledge, understand key participants' opinions on rural identity and proposals for strengthening it, and facilitate the researchers' own constructions.

Sample profile and sampling strategy

A two-phase sampling strategy was implemented. In the first phase, STATS 2.0 software was used to calculate the sample, with a 95% sample size from a population of 1,976 students representing the entire SENA enrollment. It was taken into consideration that, although most students were not victims of displacement or lived in rural areas, diversity of opinions and avenues for integration are two of the characteristics of design thinking exercises; therefore, no auxiliary filters were introduced.

In the second phase, a purposive sample was chosen based on a similar perspective, guided by leaders in research and the advice of specialists from the institution's secretariat. The final sample consisted of 12 diverse and inclusive participants and oriented toward individuals with developing capacities for critical thinking and the transformation of reality.

Data collection and analysis

In the first phase, a mixed-method questionnaire was designed, predominantly targeting quantitative data but with open-ended questions to link the indicator to a possible development and implementation of the design thinking methodology. In the second phase, participant observation and individual and group semi-structured interviews were used; focus groups were also used to discuss the main results and perspectives.

Data analysis in the first phase was consistent with the approach, with frequency analysis being the primary tool. In the second phase, content analysis was used, for which all interviews, reports, and interview notes were transcribed (Braun & Clarke, 2022). These textual data were exported to ATLAS.ti 9 software, where they were processed to gain a better understanding of the main needs in the design of a design thinking methodology and the recurring themes in the debate (Antony et al., 2023).

Ethical principles

In accordance with research ethics, before beginning the study, a draft of the methodological design was submitted to the competent authorities of the institution for approval (Moriña, 2021; Taquette & Borges, 2022). Subsequently, the sample was identified (applied to both phases), and informed consent was provided. Likewise, the confidentiality of the data and the identity of the participants were guaranteed at all times, and the partial and final results were offered.

RESULTS

The main findings are presented below by phase, with the added benefit of offering a guided discussion in the presentation of the results of the second phase. This approach was chosen to facilitate the comparison between the empirical data and the literature reviewed.

Phase 1

The study began with the need to generally characterize the first 2023 offering. Initial field surveys revealed that 1,976 apprentices entered the Administrative Management Center (CGA) training process. In developing a

design thinking methodology, it was deemed appropriate to identify different sociodemographic aspects that would facilitate later identification of needs and experiences.

The first variable selected was social status, defined as 1 = peasants, 2 = displaced, and 3 = none. This variable was crucial from the pre-design and analysis of the literature, not only due to the purpose and context of the methodology but also due to the history of the Colombian conflict and its effects on the rural environment. The results were:

Table 1.
Social status

Social Status	No.
Displaced	154
Peasant	42
None	1780
Total	1976

Source: own elaboration

From the above, it is evident that of the total population that entered the CGA in the first quarter of 2023, 90% did not fall into any of the aforementioned social conditions. However, 8% identified themselves as Displaced due to violence in their place of residence, and 2% identified themselves as Peasants. Therefore, it was established that the research sample would be those apprentices identified as Displaced and Peasants, representing 10% of the total population, equivalent to 196 apprentices. These apprentices were selected as the significant sample, coinciding with the estimated 96% confidence level result.

Following this decision, the questionnaire composed of four indicators analyzed below was administered. The first indicator was ethnic group, which is key to properly designing a design thinking methodology due to the historical invisibility of ethnic and racial diversity in the Colombian countryside.

Table 2.
Ethnic Group

Ethnic Group	No.
Afro-Colombian	22
Indigenous	13
None	157
Palenquero	1
Raizal	3
Total	196

Source: own elaboration

In relation to the above, it is important to highlight that Colombia is home to different ethnic groups, such as Afro-Colombians, Indigenous, Palenqueros, and Raizales. These groups have different customs, cosmogonic beliefs, and ancestral knowledge, which means that it will be important to consider these aspects in the sample analysis. Table 2 shows that 80% of the sample does not identify with any of the ethnic groups; 11% is Afro-Colombian; 7% identifies as Indigenous; 2% as Raizal; and 0.5% as Palenquero.

The second indicator corresponded to gender identity, a crucial indicator not only in terms of inclusion and diversity as crucial factors in the design thinking methodology but also for achieving a better understanding of the target population.

Identifying gender is crucial to building an inclusive environment. The data confirms the representative role of women in the transformation of society and in the design that is aspired to be achieved in that society. Likewise, the need to create a friendly and inclusive environment so that LGBTI groups can actively participate was observed. Regarding gender identity, 76% of the sample was women, 22% identified as men, and 2% belonged to the LGBTI community.

Table 3.
Group according to gender identity

Gender	No.
Man	44
Woman	148
LGBTI	4
Total	196

Source: own elaboration

The third indicator was socioeconomic status, crucial for adapting the conditions and demands of design thinking to potential participants. This knowledge is vital for better understanding the social fabric and cultural capital represented in the group.

Table 4.
Socioeconomic stratum

Socioeconomic stratum	No.
Estratum 1	76
Estratum 2	85
Estratum 3	31
Estratum 4	4
Total	196

Source: own elaboration

Regarding socioeconomic stratum, a layered classification was developed to categorize public services according to the location of their residences. Strata 1, 2, 3, and 4 were identified in the selected sample, where it was observed that the majority of the sample corresponds to stratum 2%, at 43%, followed by stratum 1 at 39%; then stratum 3 at 16%, and a minority of 2% for stratum 4. The latter is the highest stratum in the sample, where the highest price is paid for public services. From the above, it can be concluded that the majority of apprentices reside in strata 1 and 2, considered the lowest and recipients of the largest amount of public aid.

Tabla 5.
Age group

Age Range	No.
Between 14 and 17 years old	50
Between 18 and 28 years old	123
Between 29 and 35 years old	19
Between 36 and 45 years old	4
Total	196

Source: own elaboration

It is important to identify the sample's age range, as one of the major problems in rural Colombia is the aging of the peasant population. Therefore, it is necessary to identify the age range and percentage of young people who can be encouraged and supported in their return to the countryside. Thus, it was observed that 63% of the sample was between 18 and 28 years old, people of suitable ages, based on their sociopsychological and physical maturity, to pursue a profession in rural settings. Meanwhile, 25% were between 14 and 17 years old or younger than 18. This implies that they must request permission from their guardians from the Ministry of Labor to work, which would pose a greater challenge given their lack of a clear life plan and purpose. It was also observed that 10% of the sample was between 29 and 35 years old, and 2% between 36 and 45 years old, from which it can be concluded that 88% of the sample is the young population between 14 and 28 years old, ideal for working towards strengthening rural identity.

Phase 2

The second phase began with the observation of school dynamics and interviews with leaders, primarily related to the analysis of rural identity in the context of their educational policies. This procedure yielded results indicative of the importance placed on returning to the Colombian countryside, strengthening social actors in these contexts, and the role of students in introducing new knowledge for sustainable development.

However, the lack of a methodological approach was also recognized, which would allow not only to raise student awareness but also to construct proposals based on their experiences, with the SDG system as a guide. In this sense, the interviews with students yielded similar results: while they recognized the problems affecting rurality as a sociocultural and physical space, they did not directly associate them with solutions. This last aspect indicated a poorly structured rural identity among the participants. This is a critical aspect, as in addition to strengthening their identity, it also involves preparing them to act as leaders aimed at transforming the identity of future generations (Guáqueta-Solórzano & Postigo, 2022; Manosalvas et al., 2023).

Regarding design thinking, the initial interviews revealed a marked lack of familiarity with the methodology and associated experiences. However, this result was assessed as positive, as it showed an appropriate distinction of the participants in relation to the incorporation of this type of knowledge, although the answers were directed towards the basic and practical aspects and not to the fundamentals of design thinking. In order to alleviate these difficulties, focus groups were designed where, in addition to gathering information and presenting partial results, the rudiments of design thinking were offered as a preparatory strategy to evaluate the relevance of the methodology and the determining needs of its possible application.

In these groups, it was found that, when properly grounded in a system of objectives (SDGs in this case), design thinking progressively establishes itself as a "new language for innovation" and team dynamics. To this end, according to the researchers' assessment and content analysis, two basic dimensions must be articulated from the very conception: commitment and diversity.

This orientation should allow for the generation of new proposals, which participants identified as the main challenge when "creating" solutions, as personal experience is often favored over the "unverifiable" criteria of others. From this result, it was concluded that for a design thinking-based methodology to work, it must materialize as a holistic mental and group process that begins with empathy and leads to an understanding of the other's position and proposal (Pande & Bharathi, 2020).

By analyzing the person-context and rural-peasant interaction, an iterative and intuitive structure, partially oriented toward the user/peasant themselves, was established as an ideal framework. In this scenario, it was appreciated that leaders must provide the dynamic element of relationships and a way, critical in most cases, to communicate plans and proposals and interact with actors external to the communities or the locality, a vital result since the shortcomings of projects aimed at the SDG system are associated with inadequate integration between local and external, based on cultural, educational and infrastructural issues that hinder the use of inactive ones (Fabiano et al., 2021; Fernández-Llamazares & Virtanen, 2020; Tym, 2024).

Triangulation in the literature revealed that classic procedural methods, based on rational models, lose relevance and effectiveness in contexts where the cognitive, affective, and worldview foundations differ and influence the representation of the expected outcome. A frequently discussed example in the focus groups was the different understandings of economic growth, development, and the centrality of markets for peasant management and their daily lives. Another example addressed was climate change and its effects, as it causes such drastic and continuous changes that it is impossible for indigenous/rural communities to maintain a stable lifestyle or make sense of their ancestral knowledge in a radically different context (Mardero et al., 2023; Ramirez & Inga, 2022).

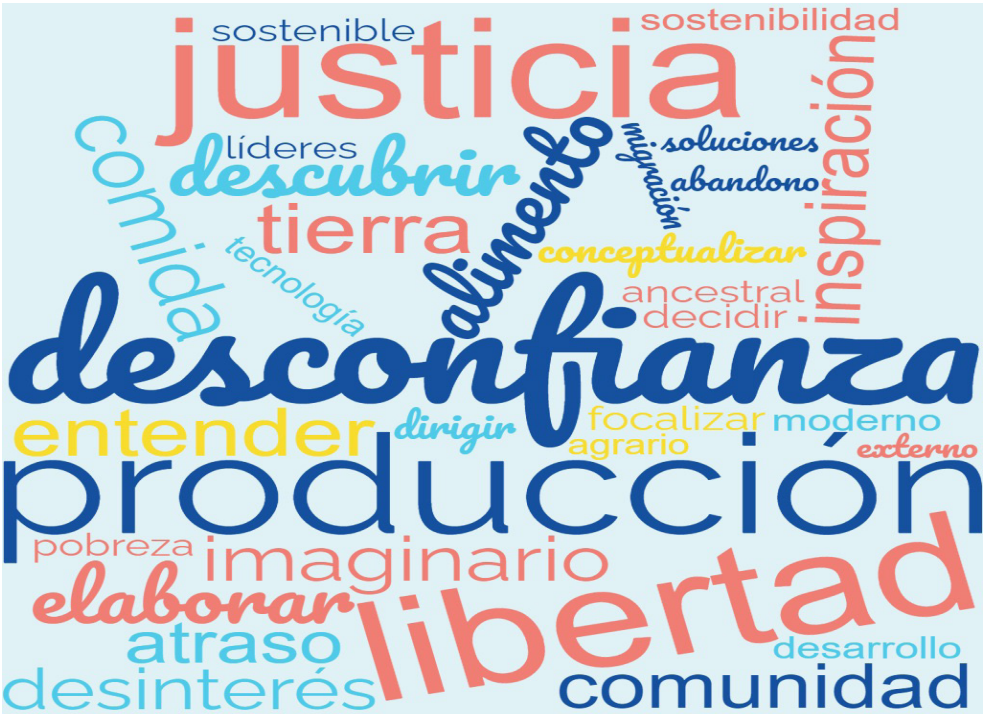
In this sense, towards the final phase of the research, participants agreed that design thinking could represent a revolution in the design of sustainable solutions for the Colombian rural context. While this would entail a strategic renewal and include a more conceptual design compared to what researchers and the literature consider the most common remedial and reactive style, it would strengthen the introduction of a more practical approach and promote more functional work by people; it would enhance the active participation of stakeholders in connection with community interests; and it would advance proposals based on empathy and mutual respect.

Among the most frequently used terms when analyzing the challenges were two: those related to the need for progress and those related to historical and socio-geographical foundations. The content analysis revealed a marked

distrust in the Colombian countryside's ability to adopt and integrate new technologies, aspects that were based on ills such as corruption, the lack of interest of authorities or companies regarding the real well-being of Indigenous people or rural communities recently formed by the introduction of settlers.

Among the positive terms associated with the role of the transformational leader were discover, focus, elaborate, understand, conceptualize, direct, and decide. These guiding verbs qualify how teaching how to conduct design thinking processes could contribute to long-term sustainable development.

Figure 1.
Content analysis word map



Source: own elaboration using WordCloud
Note: the figure appears in its original language.

DISCUSSION

Based on the results obtained, it is important to highlight that the traditional rural model was, at least in general terms, sustainable in the past but currently does not adequately respond to challenges generated from outside the ecosystem and community space. As the literature indicates, traditional models based on ancestral knowledge and relatively low external input are at the limits of their functional capabilities, hence the need for well-designed integration (López-Quiñones et al., 2023). Among the most notable factors, at least from a sustainability perspective, are the tensions generated by the dominant modern agri-food system when imported, limited material competition, the impact of large farms and production intensity, and the effects on the land and the daily lives of its inhabitants (Mills-Novoa et al., 2023).

Therefore, strategies based on design thinking will favor the design of territorial occupation modes, especially in rural areas, consistent with Colombia's historical process, in a way that addresses the complex configuration of cultural, historical, and physiographic factors that demand a functional rural model. The implementation of this model would favor the rescue of ancestral heritage and better represent the appropriate use of natural resources (soils, climates, waters) (Zhang et al., 2021). In addition, it would address the population's production needs, mainly those diagnosed by the authors and contrasted in the literature. This group includes needs for food, the production and consumption of raw materials for clothing, the manufacture of tools and implements, as well as the reactivation of associated cultural processes (Zhang et al., 2024).

Finally, the main principles for designing a design thinking methodology aimed at strengthening rural identity are defined:

Design thinking can be used to strengthen rural identity by creating innovative solutions focused on community needs, attracting external leaders, and raising awareness among new generations about the importance of rural environments and the preservation of ancestral heritage.

When applying this approach, design projects must be based on respect for and the promotion of culture, with its rural traditions and values, without disregarding new trends and the influence of external/global factors, so that the strengthening of the identity of rural areas occurs in this convergence.

When using it, the emphasis should be on identifying opportunities to improve the quality of life in rural areas, promoting sustainable development with the help of various social and government actors, and including the preservation of local identity on the agenda.

Ultimately, an approach that involves the community in the design process while ensuring that the proposed solutions are relevant and meaningful to their vision of themselves, but through the dialogue of knowledge and practices in the face of the introduction of new knowledge and technology.

CONCLUSIONS

By identifying the need within the context of innovation and sustainable development in the agricultural sector, the aim was to establish the foundations for developing a methodology to strengthen rural and peasant identity. Data analysis aimed to identify the keys to promoting Colombian rural production through design thinking processes and its contribution to the SDGs.

It was evident that, as an innovative component, the design proposal to strengthen peasant identity stands out but must be based on a diagnosis. This diagnosis must provide sufficient data to promote innovation and foster creativity, gathering the needs of entrepreneurs and small producers.

The expected impact is to rescue rural and peasant identity, favoring the reactivation of rural production through clean and sustainable production. It will also instill in participants the necessary environmental and social responsibility, enabling farmers to become more competitive, grow economically and socially, generate new jobs, and improve the quality of life for themselves, their families, and their collaborators.

REFERENCES

Acosta, N., y Fold, N. (2022). The coloniality of power on the green frontier: Commodities and violent territorialisation in Colombia's Amazon. Geoforum, 128, 192–201. https://doi.org/10.1016/j.geoforum.2021.11.025

Antony, J., Sony, M., y McDermott, O. (2023). Conceptualizing Industry 4.0 readiness model dimensions: An exploratory sequential mixed-method study. The TQM Journal, 35(2), 577–596. https://doi.org/10.1108/TQM-06-2021-0180

Baldo, E., Mahlmann, L., Hackenhaar, A., ... y Witczak, M. (2023). Integration of Industry 4.0 technologies with Education 4.0: Advantages for improvements in learning. Interactive Technology and Smart Education, 20(2), 271–287. https://doi.org/10.1108/ITSE-11-2021-0201

Banerjee, S., Dos Santos, L., y Hulgård, L. (2023). >Intersectional knowledge as rural social innovation. Journal of Rural Studies, 99, 252–261. https://doi.org/10.1016/j.jrurstud.2021.04.007

Barbier, E. (2020). Is green rural transformation possible in developing countries? World Development, 131, 104955. https://doi.org/10.1016/j.worlddev.2020.104955

Bartoloni, S., Calò, E., Marinelli, L., ... y Gregori, G. (2022). Towards designing society 5.0 solutions: The new Quintuple Helix - Design Thinking approach to technology. Technovation, 113, 102413. https://doi.org/10.1016/j.technovation.2021.102413

Braun, V., y Clarke, V. (2022). Conceptual and design thinking for thematic analysis. Qualitative Psychology, 9(1), 3–26. https://doi.org/10.1037/qup0000196

Chiarini, A., y Kumar, M. (2022). What is Quality 4.0? An exploratory sequential mixed methods study of Italian

manufacturing companies. International Journal of Production Research, 60(16), 4890–4910. https://doi.org/10.1080/00207543.2021.1942285

Davelaar, D. (2021). Transformation for sustainability: A deep leverage points approach. Sustainability Science, 16(3), 727–747. https://doi.org/10.1007/s11625-020-00872-0

Fabiano, E., Schulz, C., y Martín, M. (2021). Wetland spirits and indigenous knowledge: Implications for the conservation of wetlands in the Peruvian Amazon. Current Research in Environmental Sustainability, 3, 100107. https://doi.org/10.1016/j.crsust.2021.100107

Fahmi, F., y Sari, I. (2020). Rural transformation, digitalisation and subjective wellbeing: A case study from Indonesia. Habitat International, 98, 102150. https://doi.org/10.1016/j.habitatint.2020.102150

Fernández-Llamazares, Á., y Virtanen, P. (2020). Game masters and Amazonian Indigenous views on sustainability. Current Opinion in Environmental Sustainability, 43, 21–27. https://doi.org/10.1016/j.cosust.2020.01.004

Guáqueta-Solórzano, V., y Postigo, J. (2022). Indigenous perceptions and adaptive responses to the impacts of climate variability in the Sierra Nevada de Santa Marta, Colombia. Frontiers in Climate, 4, 910294. https://doi.org/10.3389/fclim.2022.910294

Hoolohan, C., y Browne, A. (2020). Design thinking for practice-based intervention: Co-producing the change points toolkit to unlock (un)sustainable practices. Design Studies, 67, 102–132. https://doi.org/10.1016/j.destud.2019.12.002

Laakso, S., Aro, R., Heiskanen, E., y Kaljonen, M. (2021). Reconfigurations in sustainability transitions: A systematic and critical review. Sustainability: Science, Practice and Policy, 17(1), 15–31. https://doi.org/10.1080/15487733.2020.1836921

López-Quiñones, A., Martinez-Lopez, M., Moreno, C., ... y Flores-Reyes, E. (2023). Ancestral Computing for Sustainability: Centering Indigenous Epistemologies in Researching Computer Science Education. TechTrends, 67(3), 435–445. https://doi.org/10.1007/s11528-022-00820-y

Ma, X., Wang, R., Dai, M., y Ou, Y. (2021). The influence of culture on the sustainable livelihoods of households in rural tourism destinations. Journal of Sustainable Tourism, 29(8), 1235–1252. https://doi.org/10.1080/09669582.2020.1826497

Ma, Z., Ran, R., y Xu, D. (2023). The Effect of Peasants Differentiation on Peasants' Willingness and Behavior Transformation of Land Transfer: Evidence from Sichuan Province, China. Land, 12(2), 338. https://doi.org/10.3390/land12020338

Manosalvas, R., Hoogesteger, J., y Boelens, R. (2023). Imaginaries of place in territorialization processes: Transforming the Oyacachi páramos through nature conservation and water transfers in the Ecuadorian highlands. Environment and Planning C: Politics and Space, 41(5), 1010–1028. https://doi.org/10.1177/23996544231168050

Marchant, C., Rodríguez, P., Morales-Salinas, L., Paz, L., y Ortega, L. (2021). Practices and Strategies for Adaptation to Climate Variability in Family Farming. An Analysis of Cases of Rural Communities in the Andes Mountains of Colombia and Chile. Agriculture, 11(11), 1096. https://doi.org/10.3390/agriculture11111096

Mardero, S., Schmook, B., Calmé, S., ... y Castelar, J. (2023). Traditional knowledge for climate change adaptation in Mesoamerica: A systematic review. Social Sciences & Humanities Open, 7(1), 100473. https://doi.org/10.1016/j.ssaho.2023.100473

McIlfatrick, S., Slater, P., Beck, E., ... y Hasson, F. (2021). Examining public knowledge, attitudes and perceptions towards palliative care: A mixed method sequential study. BMC Palliative Care, 20(1), 44. https://doi.org/10.1186/s12904-021-00730-5

Mills-Novoa, M., Boelens, R., Hoogesteger, J., y Vos, J. (2023). Resisting, leveraging, and reworking climate change adaptation projects from below: Placing adaptation in Ecuador's agrarian struggle. The Journal of Peasant Studies, 50(6), 2283–2311. https://doi.org/10.1080/03066150.2022.2144252

Moriña, A. (2021). When people matter: The ethics of qualitative research in the health and social sciences. Health & Social Care in the Community, 29(5), 1559–1565. https://doi.org/10.1111/hsc.13221

Nakata, C., y Hwang, J. (2020). Design thinking for innovation: Composition, consequence, and contingency. Journal of Business Research, 118, 117–128. https://doi.org/10.1016/j.jbusres.2020.06.038

Naumann, M., y Rudolph, D. (2020). Conceptualizing rural energy transitions: Energizing rural studies, ruralizing energy research. Journal of Rural Studies, 73, 97–104. https://doi.org/10.1016/j.jrurstud.2019.12.011

Nishant, R., Kennedy, M., y Corbett, J. (2020). Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. International Journal of Information Management, 53, 102104. https://doi.org/10.1016/j.ijinfomgt.2020.102104

Pande, M., y Bharathi, S. (2020). Theoretical foundations of design thinking – A constructivism learning approach to design thinking. Thinking Skills and Creativity, 36, 100637. https://doi.org/10.1016/j.tsc.2020.100637

Postigo, J., Guáqueta-Solórzano, V., Castañeda, E., y Ortiz-Guerrero, C. (2024). Adaptive Responses and Resilience of Small Livestock Producers to Climate Variability in the Cruz Verde-Sumapaz Páramo, Colombia. Land, 13(4), 499. https://doi.org/10.3390/land13040499

Ramirez, A., y Inga, E. (2022). Educational Innovation in Adult Learning Considering Digital Transformation for Social Inclusion. Education Sciences, 12(12), 882. https://doi.org/10.3390/educsci12120882

Schmidt, M., Ikpeng, Y., Kayabi, T., ... y Adams, C. (2021). Indigenous Knowledge and Forest Succession Management in the Brazilian Amazon: Contributions to Reforestation of Degraded Areas. Frontiers in Forests and Global Change, 4, 605925. https://doi.org/10.3389/ffgc.2021.605925

Simeon, M., Samsudin, M., y Yakob, N. (2022). Effect of design thinking approach on students' achievement in some selected physics concepts in the context of STEM learning. International Journal of Technology and Design Education, 32(1), 185–212. https://doi.org/10.1007/s10798-020-09601-1

Taquette, S., y Borges, L. (2022). Ethical Dilemmas in Qualitative Research: A Critical Literature Review. International Journal of Qualitative Methods, 21, 160940692210787. https://doi.org/10.1177/16094069221078731

Trivelli, C., y Morel, J. (2021). Rural Youth Inclusion, Empowerment, and Participation. The Journal of Development Studies, 57(4), 635–649. https://doi.org/10.1080/00220388.2020.1808194

Tym, C. (2024). Indigenous Knowledge and Ontological Difference? Ontological Pluralism, Secular Public Reason, and Knowledge between Indigenous Amazonia and the West. Comparative Studies in Society and History, 66(2), 267–293. https://doi.org/10.1017/S0010417523000440

Zang, Y., Liu, Y., Yang, Y., Woods, M., y Fois, F. (2020). Rural decline or restructuring? Implications for sustainability transitions in rural China. Land Use Policy, 94, 104531. https://doi.org/10.1016/j.landusepol.2020.104531

Zhang, F., Ayoungman, F., y Islam, S. (2024). Institutional Capital, Ancestral Hall, and the Reshaping of Ancient Rule: An Empirical Analysis of the New Energy of Chinese Heritage Elements in Rural Revitalization. Journal of the Knowledge Economy, 15(1), 2726–2760. https://doi.org/10.1007/s13132-023-01243-7

FINANCING
None.

CONFLICT OF INTEREST STATEMENT
None.

AUTHORSHIP CONTRIBUTION

Conceptualization: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Data curation: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Formal Analysis: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Research: Samir Albeiro Medina Roncancio, José Samuel González Contreras and Jasleidy Astrid Prada Segura.
Methodology: Jasleidy Astrid Prada Segura.
Project Management: Samir Albeiro Medina Roncancio, José Samuel González Contreras and Jasleidy Astrid Prada Segura.
Resources: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Software: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Supervision: Jasleidy Astrid Prada Segura.
Validación: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Visualization: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Writing – original draft: Samir Albeiro Medina Roncancio and José Samuel González Contreras.
Writing - proofreading and editing: Jasleidy Astrid Prada Segura, Samir Albeiro Medina Roncancio and José Samuel González Contreras.