

Student Reflections of TIDES: Training in InterDisciplinary and Ethnoecological Studies of Reef Passages

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Abstract

The Training in InterDisciplinary and Ethnoecological Studies of Reef Passages (TIDES) summer school, held at The University of the South Pacific, Fiji, introduced early career researchers (ECRs) from diverse backgrounds to inter- and transdisciplinary research methodologies such as participatory mapping and *talanoa* (story sharing). Fourteen ECRs participated from three Pacific Island institutions, representing five countries and four disciplines. The methodologies in the TIDES summer school contrasted with previous, often siloed training the ECRs experienced. ECRs trained in laboratory-based research and those who specialized in theoretical policy analysis found common ground in interdisciplinary collaboration. For marine scientists, the program highlighted the importance of integrating local and Indigenous knowledge to

contextualize ecological data. For social scientists, mapping emerged both as a spatial method and a medium for informing evidence-based policy, revealing hidden narratives—such as customary closures and traditional fishing grounds—that standard interviews often miss. A defining lesson was the transition from individual academic performance to collective responsibility. Participants recognized that meaningful inter- and transdisciplinary collaboration requires attentive listening, mutual respect, and humility regarding the limitations of their own disciplinary perspectives while contributing their specialized expertise. Informal exchanges over shared meals and mapping sessions proved equally valuable as formal instruction, helping dismantle hierarchies among experts, students, and community members. Participants left the TIDES summer school with strengthened technical skills, broader perspectives, and a commitment to inclusive, bottom-up research that values diverse knowledge systems and supports local engagement.

Keywords

Early career researchers; marine science; Pacific Islands; participatory mapping; social science

1. Introduction

Inter- and transdisciplinary marine research increasingly requires collaboration between natural scientists and social scientists to address complex social-ecological challenges (Cvitanovic et al., 2026). This approach has been recognized as an effective strategy to draw bottom-up and evidence-based solutions towards tackling social-ecological issues around ocean governance, climate crisis, community engagement, and sustainability. Early career researchers (ECRs) here are defined as “anyone including students who consider themselves to be at an early stage in their career” (da Silva, 2021, p. 78). However, ECRs often enter these collaborations facing many challenges while working in an inter- and transdisciplinary circle. ECRs face challenges such as language barriers, disciplinary bias, and preconceived assumptions about methods, expertise, and priorities of other fields. For example, in the social science aspects, integrating marine science, marine law, and environmental science makes work difficult, as integrating new knowledge and agreeing on a single conclusion can be complex and time-consuming.

Furthermore, although marine science disciplines are creating promising initiatives in bridging gaps in marine research, there is still a drawback to these initiatives in terms of biased recognition and insufficient mentorship, which continuously hinders marine research collaboration. Bridging the divide between senior and ECRs, especially in the Pacific, is crucial for fostering a sustainable research culture where tacit knowledge and methodological expertise are passed down effectively (Mangubhai et al., 2025). Creating spaces to debate topics and explore controversial ideas openly would encourage critical thinking and respectful exchange of perspectives. Additionally, ECRs are often hindered from participating in inter- and transdisciplinary training due to limited funding, publishing culture, and restricted supervisory support.

To address these challenges, ECRs call for a system that promotes inclusivity, equity, and collaborative learning across disciplines, and that encourages their participation while ensuring their knowledge is valued. Collaboration with international supervisors can enhance ECRs’ visibility in both learning and research contexts. Such collaborations, particularly in Small Island Developing States, combined with well-structured inter- and transdisciplinary training programs and strong supervisory support, can encourage ECRs to engage more actively and contribute meaningfully to inter—and transdisciplinary discussions.

In response, this commentary draws on ECRs' responses and experiences of participating in the Training in InterDisciplinary and Ethnoecological Studies of Reef Passages (TIDES) summer school. The TIDES summer school follows participatory mapping, focus group discussions, key informant interviews, and role-playing exercises to explore how such methods in inter- and transdisciplinary training can serve as effective tools for overcoming barriers and fostering mutual understanding.

2. Background of TIDES Summer School 2025

The TIDES summer school was conducted for five days, from 8–12 September 2025, in Suva, Fiji, at The University of the South Pacific (USP). This training was part of the project A Sea of Connections: Valuing Reef Passages in the South Pacific Region (SOCPacific2R). The TIDES summer school aimed to encourage and introduce the importance of inter- and transdisciplinary research focused on reef passages. This intensive training program combined practical activities with presentations by the SOCPacific2R team on research ethics, development, and use of Pacific-relevant research methodologies such as *talanoa* (story sharing), the importance of gender equity, and participatory mapping.

The TIDES summer school covered five thematic areas:

1. Collaboration across disciplines and local communities.
2. Integrating local and traditional knowledge with science to strengthen ecological understanding and resource management.
3. Ethical practices, including free, prior and informed consent processes.
4. Gender equality, disability and social inclusion in conservation and research.
5. Participatory approaches, such as community mapping to value diverse perspectives.

Fourteen ECRs participated in the TIDES summer school, representing different institutions and disciplines. Of these, 10 participants were from USP, three from the University of New Caledonia, and one from the CRIOBE, a French research laboratory jointly affiliated with École Pratique des Hautes Études – Université Paris Sciences et Lettres (EPHE-PSL), Centre National de la Recherche Scientifique (CNRS), and Université de Perpignan Via Domitia (UPVD). All participants were enrolled in programs in marine science, social science, environmental anthropology, or environmental management. For all participants' responses, see Supplementary File, Table 1.

3. What Are Some Positive Outcomes of the TIDES Summer School?

3.1. Benefits of Attending the TIDES Summer School as ECRs

Participants unanimously reported that learning about inter- and transdisciplinary research was new and broadened their research perspectives (Figure 1). As ECRs, they began to recognize the value of inter-transdisciplinarity for addressing cross-cutting issues, noting that the TIDES summer school significantly deepened their understanding of the importance of inter- and transdisciplinary collaborations. The participants emphasized collective learning, interdependence, non-hierarchical collaboration, and a safe environment. One participant noted that they “firmly believe effective research is not solely the product of

individual academic expertise, but rather the result of fostering inclusive dialogue and synthesizing knowledge across disciplines with non-academic stakeholders.”

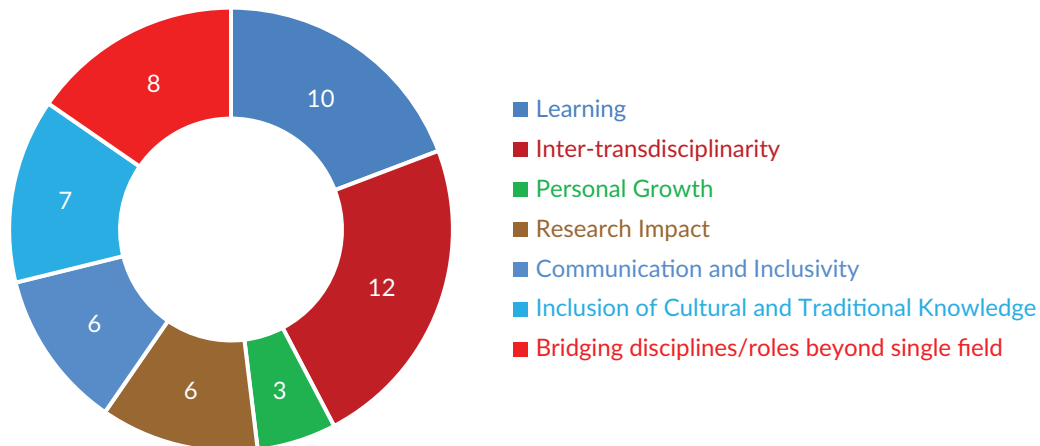


Figure 1. Summary of the key benefits derived from participants in the TIDES summer school, 2025. Note: Each number represents a participant’s response.

The participants noted the value of integrating local, cultural, and Indigenous knowledge systems into developing locally relevant solutions to social issues. One participant explained that such integration strengthens the relevance and effectiveness of research:

This summer school not only helped me become more confident in myself, but it also helped shape or broaden my interest in terms of how traditional knowledge and beliefs play a pivotal role in terms of conservation of our reefs. (Marine science student)

The TIDES summer school created a collaborative environment in which ECRs and senior supervisors built meaningful relationships, learned from one another, acknowledged their differing perspectives, and, importantly, enabled ECRs to feel heard while fostering their personal and professional growth as researchers. The participants enhanced their research skills by drifting away from the “top-down approach.” The top-down approach here refers to power dynamics where supervisors dominate methods and discussions on research, contrasting with a “bottom-up approach,” in which ECRs are equally involved as co-researchers. This shift provided a holistic understanding of developing policies and strengthening connections when working with local communities.

3.2. Participants’ Quotes and Key Take-Home Messages From the TIDES Summer School

Participants were asked how the approaches used in the TIDES summer school were unique to them and what lessons they would apply in future research and studies. The participants noted that the workshop exposed them to inter- and transdisciplinary methods that were “different” and that integrated social and natural sciences in ways they had not previously encountered (Figure 2; Supplementary File, Table 2). They emphasized the importance of incorporating local and Indigenous knowledge, actively engaging communities as research partners, and using ethical, inclusive, and reflexive practical tools—such as participatory mapping, mind mapping, and role-playing exercises—to understand diverse perspectives and social-ecological relationships. These experiences encouraged the participants to move beyond

other majors.” For some, assuming the role of a teacher rather than a learner during group discussions was “nerve-wracking,” as they felt responsible for explaining unfamiliar concepts to their peers. The use of technical terminology, particularly in activities involving marine science and GIS, limited some ECRs’ participation, highlighting gaps in disciplinary expertise and requiring participants with relevant backgrounds to spend additional time explaining concepts to those from other fields. Although participants valued these opportunities for peer-to-peer learning, they also viewed knowledge sharing as a reciprocal process. Those who placed themselves in the vulnerable position of teaching expected the same willingness from others to explain concepts from their own disciplines. This mutual exchange of expertise was considered essential for fostering inter- and transdisciplinary understanding and acknowledging that “every discipline had its limitations.”

Another challenge ECRs faced was “feeling intimidated when surrounded by experts and participants who seemed to be more experienced,” which led them to question their sense of belonging in the TIDES summer school and be unsure if their contributions would be valued. Time constraints were also a major issue. Some participants noted that the content delivered in one week was equivalent to what they might typically learn over an entire semester. Others felt rushed during certain activities and reported not having enough time to fully understand the concepts being taught. Language barriers further constrained participation. Participants communicated in local (*iTaukei*), English, and French languages; however, translating concepts and activities posed challenges for both facilitators and participants. This was particularly evident during group work, where explaining complex technical terms in simple English, French, or *iTaukei* proved to be difficult.

The TIDES summer school introduced ECRs to involve Pacific-centered research through inter- and transdisciplinary approaches, moving beyond educational silos to make their research meaningful. An interesting challenge that participants identified was the need to “unlearn” certain concepts and traditional research methods they had previously learned, such as conventional approaches to conducting interviews and taking field notes. Additionally, from a facilitators’ perspective, assessing participants on their performance right after they completed an exercise was challenging, as ECRs from diverse disciplinary and cultural backgrounds interpreted concepts differently. Consequently, facilitators had to adapt by learning or relearning assessment approaches to ensure they interpreted participants’ reflections fairly.

5. Transformative Impacts of These Challenges

Working within a diverse group highlighted that collaboration is strengthened when members are willing to “practice patience and empathy,” as this helps them understand and navigate differences in disciplines and culture while fostering collaboration and compromise. The participatory mapping and role-playing exercises further supported inter- and transdisciplinary learning by placing participants in the positions of various stakeholders. Participatory mapping encouraged participants to collaboratively visualize marine spaces and resources, identify stakeholders, and explore social-ecological relationships. Grouping marine and social science ECRs to identify areas of interest on a single map allowed participants to gain insight into perspectives that might otherwise be overlooked by either discipline alone. For example, marine science ECRs primarily focused on marine environments, identifying possible ferry routes and habitat distributions, while social science ECRs emphasized areas that might hold cultural value, customary ownership, and livelihood dependencies.

This nuance in mutual understanding of inter- and transdisciplinary research was further explored by the role-playing exercises. By assuming randomly assigned roles, participants were challenged to consider alternative viewpoints, competing priorities, and real-world decision constraints. This experiential learning approach can expose and reduce stereotypes, such as the perception that social scientists focus on qualitative narratives or that marine scientists are concerned solely with biological data. Through this exercise, participants can develop empathy for the challenges faced by different actors and recognize that effective marine management requires integrating multiple perspectives. Working toward a shared goal helped participants appreciate each contribution as analogous to puzzle pieces forming a complete picture. Meaningful contributions across disciplines were facilitated by active listening, openness to abstract ideas, flexibility, and patience for participants to unlearn and relearn disciplinary assumptions.

5.1. Recommendations and Lessons Learned for Future Summer Schools

Building an equitable future for ocean education requires moving beyond the current narratives and passive awareness to dismantling barriers, which creates fragmented approaches for ocean users and learners. Due to the intensive and fast-paced nature of the TIDES summer school, we recognized recommendations made by the participants to improve future training. Some shortcomings of the TIDES summer school were noted, such as the limited promotion of the TIDES summer school across social media platforms. Another shortcoming was the short time period, which placed a lot of pressure on participants to competently perform activities and absorb knowledge within the five days the program was conducted. Participants also recommended that a day should be allocated for in-field learning to experience the discussed keystone spaces, especially in local communities and reef passages where they can experience firsthand techniques to monitor these areas.

Language was also identified as a critical barrier to learning. Therefore, providing a glossary of technical terms available in Pacific languages, English, and/or French could improve the learning experience for participants from non-marine and non-social science backgrounds when learning about qualitative research methods and ecological methods, respectively. Furthermore, flexible modes of participation, such as online and hybrid sessions, can promote more inclusive learning by enabling those who are unable to attend in person but are interested in inter- and transdisciplinary research. Finally, capacity training in writing funding proposals and identifying how and where to access funding was highlighted as an important aspect of learning that should be normalized in all ECR spaces.

6. Conclusion

The TIDES summer school brought together participants from diverse backgrounds and cultures and provided a space for learning from facilitators and each other. In addition to building capacity and enhancing learning through an inter- and transdisciplinary lens, the TIDES summer school made participants appreciate that diversity nurtures growth. The TIDES summer school is aptly summarized by two participants:

Spending time with other Pasifika participants reminded me of our connection to the ocean and our responsibility to care for it. It also showed me how important it is to include local and Indigenous knowledge in ocean research. With these knowledge systems, solutions can become more culturally grounded and effective. (Environmental management student)

It made me realize that true inclusivity cannot be forced; it must be cultivated. However, once cultivated, the most rewarding aspect was bringing together the diverse knowledge and views to achieve the overall aim of the training. It's like a complex puzzle; the challenge is finding where each unique contribution fits. It required the participants to move away from rigid and individualistic ways of working and be more flexible and collaborative. (Marine science student)

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Conflict of Interests

In this article, editorial decisions were undertaken by Christopher Cvitanovic (University of New South Wales), Annette Breckwoldt (Leibniz Centre for Tropical Marine Research), Asha de Vos (Oceanswell/University of Western Australia Oceans Institute), Leonie Dziomba (Leibniz Centre for Tropical Marine Research), Shannon McLaughlin (Wageningen University), Sangeeta Mangubhai (Talanoa Consulting), and Denis Karcher (Royal Swedish Academy of Sciences).

LLMs Disclosure

During the preparation of this work, the author(s) declare they used OpenAI tools, ChatGPT, and Microsoft Copilot to refine grammar only. The author(s) reviewed and edited the content and take full responsibility and ownership of everything written in this manuscript.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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