



The value of facilitation in interdisciplinary socio-environmental team research

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Abstract

We propose that facilitation can be used as a research method to improve the collaborative synthesis of interdisciplinary teams' socio-environmental work. As described in this communication, our approach to facilitation adapts to teams' practical and conceptual needs as their research develops. Our synthetic practice of facilitating interdisciplinary meetings at the US National Socio-Environmental Synthesis Center (SESYNC) further emphasizes the importance of process, intentionality, and advance preparation. By combining facilitation fundamentals with research skills, it is possible to create the conditions for effective interdisciplinary integration.

Keywords Interdisciplinary integration · Facilitation · Team science · Collaboration · Synthesis

1 Introduction

Researchers and synthesis centers worldwide are developing approaches for transdisciplinary and collaborative work and forming increasingly international teams in response to complex problems (e.g., Baron et al. 2017; Laursen et al. 2021; Oyalowo 2021; Wagner et al. 2017). To integrate diverse forms of knowledge, groups work to establish clear communication (Salazar et al. 2012, p. 528; see also Lanier et al. 2018, pp. 1026–1027) as they define and co-develop research problems (NAS 2005, p. 21). While common goals and effective integration are interdisciplinary and transdisciplinary ideals, in the reality of collaborative work, every individual has their own stake. Different viewpoints can be overtly or implicitly silenced (Brister 2016; Viseu 2015); not everyone has the same comfort level expressing their perspectives; and apparent agreements may not, in fact, represent consensus.

The presence of a facilitator during interdisciplinary meetings can help groups acknowledge differences and navigate the disagreements that may arise over the course of collaborative work (Kaner et al. 2014; Lanier et al. 2018; Moirano et al. 2020, p. 11; Mourik et al. 2017; Schwarz

2002). For groups studying complex socio-environmental problems ranging from conservation in Japan (Kondo et al. 2021) to crop disease in sub-Saharan Africa (Tafesse et al. 2020), there is rarely one clear starting point or solution—and the final outcomes are often unknown (see Norris et al. 2016). Amidst this uncertainty, facilitators can help groups plan and structure meetings to provide a setting that is conducive to resolving many of the interpersonal and conceptual challenges of interdisciplinarity (e.g., Brown et al. 2015; Campbell 2005; O'Rourke and Crowley 2013).

The US National Socio-Environmental Synthesis Center (SESYNC) in Annapolis, Maryland was designed to support teams of natural and social scientists, environmental managers, and policymakers examining problems at the interface of humans and the environment (Palmer et al. 2016).¹ Over the

¹ SESYNC's mission is “fostering synthetic, actionable science related to the structure, functioning, and sustainability of socio-environmental systems” (<https://www.sesync.org/>). Since opening in 2011, SESYNC has hosted almost 4500 individuals from 75 countries with 23% of participants originating from outside of the USA. To date, the Center has supported 160 multi-meeting synthesis projects and 80 individual workshops. In total SESYNC has hosted approximately 650 individual meetings of teams composed of academic researchers, members of government and nongovernmental organizations and the private sector. About 25% of participants have come from outside academia. Academic participants have included all career stages from doctoral students to senior scholars. SESYNC is unique for the high level of disciplinary diversity among attendees. In aggregate the distribution of disciplines as reported by team members was 30% life sciences, 27% social sciences, 14% geosciences,

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past decade, these interdisciplinary teams have been meeting in person—and, since the pandemic, entirely online—to conduct synthetic socio-environmental research.² The Center has developed a set of practices to help teams overcome the challenges of this work, including research facilitation (*ibid.*). More than a form of support, we propose that teams can use facilitation as a method to create the conditions for innovative and collaborative forms of synthesis.

2 Facilitation as a synthesis method

Interdisciplinary socio-environmental teamwork involves the synthesis of multiple viewpoints, theories, and methods (Eigenbrode et al. 2007, p. 56; Jewitt and Görgens 2000; Laursen et al. 2021; NAS 2005, p. 27; Norris et al. 2016). For many researchers participating in collaborations, the challenges of interdisciplinary teamwork are seen as barriers to research (see Bennett et al. 2018, p. 46), rather than as integral parts of the research process. In part, this may be a result of a specific vision of what research is, and where it can take place: for many scientists, synthesis research means working with datasets; people are ancillary. Consequently, team meetings are often seen as places to discuss research that happens elsewhere, rather than as places where research takes place. Furthermore, the social and organizational dimensions of collaborative research—the process dimensions—are often undervalued.

We see the work that takes place during synthesis meetings, from negotiating conceptual frameworks to determining analytical pathways for data analysis, as collaborative research in action. Facilitators can help teams bridge multiple disciplines by asking team members to define key terms, by tracking emerging themes in complex discussions (Kaner et al. 2014, p. 63), and by designing prompts to encourage team members to think together about their research—and what productive collaborations mean. In these settings, where the goal is integrating distinct lines of research into new scientific findings, facilitation can function as a synthesis method that allows teams to enhance their use of collaborative meetings.³ Unlike other synthesis methods

emphasizing the integration of quantitative or qualitative data (e.g., Alexander et al. 2020), facilitation prioritizes group dynamics, the importance of process, and designing sessions to achieve specific outcomes. Like other synthesis methods though, facilitation requires adaptability, flexibility, and creativity to meet changing needs. It also requires consideration, attention, and time to realize its potential to enhance the outcomes of interdisciplinary teamwork.⁴

While the fundamentals of facilitation apply for research teams, a distinct suite of skills and knowledge, described in part below, can further strengthen the likelihood of success in interdisciplinary research contexts.

3 Intentional interactions

There are multiple pathways toward interdisciplinary synthesis, and each research team determines their own approach. Facilitators ensure that whatever approach teams take is highly intentional. For example, facilitators can help team leads think through the plan for their meeting, from making sure that participants will have the opportunity to listen, speak, and think in different ways to discussing the timing of breaks. Facilitators can also help teams view agendas as purposeful research documents—guides to the synthesis that will take place during a meeting. One way we frame this is by asking team leads: what can this group—and only this group—achieve together? What needs to happen during the amount of time you have in order to get there?

Facilitated meeting design can thus help teams shift their use of and thoughts about agendas from a list of the *what* of a meeting to a tool for brainstorming and communicating the *how* and *why* of the meeting (Parker 2018, pp. 20–21). Stating the purpose and ideal outcomes of a meeting, and of each session on the agenda, is an exercise in intentionality. This helps teams assess how different sessions relate to one another and to their overall research goals, building toward a more coherent whole. By working with a facilitator, teams can design interactions that maximize their diversity, strengths, and the potential for both integration and innovation.

During meetings, facilitators also encourage interdisciplinary team members to intentionally integrate their respective theories, perspectives, data, and analytical approaches so

Footnote 1 (continued)

7% economics, 6% computer science and engineering, 5% policy, 3% public health, 3% humanities, and 5% other.

² For more on socio-environmental synthesis as an approach that integrates diverse theories, methods, and datasets across disciplines and geographic locations, see, for example Wei et al. (2015, p. 42) and <https://www.sesync.org/glossary/socio-environmental-synthesis>.

³ Within a synthesis research context and focus, facilitation joins many other meeting methods designed to achieve interdisciplinary integration (e.g. O'Rourke and Crowley 2013; Pearce 2020; Pohl 2020).

⁴ Teams can benefit from multiple options for facilitation, including working with a trained external facilitator or a “facilitative leader” on the team (see Schwarz et al. 2005, p. 28). For further discussion of interdisciplinary facilitation practices based on our work at SESYNC, including weighing different facilitation options, see *Facilitating Interdisciplinary Meetings: A Practical Guide* (Graef et al. 2021). For additional information on strategies to address facilitation challenges, see, for example, Schwarz (2002) and Kaner et al. (2014).

that new forms of socio-environmental research may emerge. Facilitators can guide this process through the development of a shared conceptual framework, for example. During facilitated discussions, teams can explore the boundaries of their research, what key concepts mean to different members of the team, and connections and disconnections between disciplines. Whether a diagram or a narrative statement, the framework becomes an essential entry point to discussions about hypotheses, question formulation, analytical strategies, and ultimately how to collaborate as a diverse team. This further serves as a collective reference point that teams and facilitators return to as projects adapt and progress.

4 An adaptive approach

Facilitation as a research method adapts to meet a team's needs during different stages of research. While facilitated discussions at the earlier stages of a collaboration may center around defining the central research problem or a group's conceptual framework (see Miles and Huberman 1994, p. 18), facilitated discussions toward the end of a group's trajectory may center around the specifics of task completion and accountability, rather than on the big picture of a study.

Facilitation also adapts to the trajectory of each meeting and session. At times during meetings, the facilitator's most important role is to sequence and manage discussions (see Graef et al. 2021, p. 11). At other times, the facilitator needs to become a neutral but active questioner who can catalyze dialogue and build consensus (ibid.). In facilitating, the intent is not to direct the team to a predetermined outcome. Rather, facilitators can help team members understand each other in different ways as they co-develop their own outcomes.

There is no singular approach to working with teams—the degree and mode of interactions vary. In our work, we may interact extensively with a group to develop an agenda, but not be present during the meeting itself. We may be present to facilitate discussions during one or two specific targeted sessions, or for an entire meeting. Or we may spend time as an observer (ibid., p. 27) who can then reflect on process and outcomes in debriefing sessions with team leads or the entire team.

5 Codifying collaborations

Facilitation can help teams work to integrate not only diverse forms of knowledge and information, but also the perspectives and values of the people who create it. To foster trust and the exchange of ideas, many teams work to define and establish a shared way of doing and being (Bennett et al. 2018, p. 57). For some teams at SESYNC, team

agreements act as a co-produced social contract that guides group culture, interactions, and expectations. The process of developing a team agreement can help teams codify their vision—logistical, social, and intellectual—for a productive collaboration.

In guiding discussions that lead to a team agreement, a facilitator will begin by prompting individuals to reflect on what they both want and need from a set of collaborators. Team members' responses may take the form of practical ground rules, such as guidelines for email response times. Responses may also describe guiding principles for collaboration, such as prioritizing listening over speaking. A facilitator will then encourage team members to think critically about what they are able and willing to give to their team, and to share this with the group.

In such discussions, facilitators can draw attention to any expectations that are not in alignment among team members, along with any conflicting priorities that emerge. Ultimately, by striving for consensus, groups can work to avoid miscommunications by defining and documenting clear project roles, feasible timelines, and fair divisions of labor. The presence of a facilitator in these discussions can help teams examine topics that are often avoided at the early stages of collaborative work. Many groups are unlikely to initiate uncomfortable discussions on their own, instead waiting until they become urgent—or conflicts arise.

6 Facilitation as a research practice

As we describe in *Facilitating Interdisciplinary Meetings: A Practical Guide* (Graef et al. 2021), effective facilitation takes practice and a commitment to honing fundamental skills. In our practice, acknowledging facilitation as a research method creates additional opportunities to incorporate our research strengths. As socio-ecological “scholar-practitioners” (Xiang 2019, p. 7), each of us draws from our own disciplinary training in anthropology, geography, and marine sciences in our work with interdisciplinary teams.

In different ways, our training makes us attuned to social observation and power dynamics during meetings, issues of scale and conceptual linkages between natural and social sciences, and the importance of process and careful preparation. Our preparatory process includes reading teams' research proposals and relevant literature; meeting with team leads to discuss meeting goals and group dynamics; and learning about meeting participants' expertise. This approach to facilitation is, itself, a synthesis process—one that integrates diverse backgrounds with information about teams and the complex socio-environmental problems they are studying.

In the best sense, facilitation is a synthetic research method that serves the needs of interdisciplinary teams. Just

as other methods require time, thought, and training to be done well, facilitation does not happen easily. By combining facilitation fundamentals with research skills, interdisciplinary facilitators can help teams work together in ways that they might not do otherwise. As a result, teams can achieve research outcomes that more fully integrate their unique configurations of disciplines and dispositions.

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Declarations

Conflict of interest The authors have no conflicts of interest to declare that are relevant to the content of this article.

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