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ABSTRACT

Capacity strengthening activities – be that in the form of courses, workshops, seminars – have become embedded in research projects as a requirement for funding and as a means for researchers to demonstrate positive societal impacts. We apply qualitative research techniques including interviews, questionnaires and observations to scrutinise and document an international capacity strengthening course aimed at informing and supporting environmental management practice and policy in the Philippines. We appraise power gradients and dynamics between course instructors and participants from different cultures and geographical locations in the design and delivery of this course. We identify five key factors that course instructors should consider as part of their pedagogy: (i) active learning, (ii) knowledge scaffolding and consolidation, and (iii) situated learning, as well as being attuned to (iv) the language dynamics and (v) expertise and networking within the room when teaching the course. Practical efforts to address these issues require that instructors work with participants to co-produce knowledge, rather than assuming epistemic authority and imposing knowledge. This entails reflexive and adaptable practices before, during and after the course. It is recommended that such practices should be central to projects that include capacity strengthening activities, whether delivered locally or internationally.

Introduction and rationale for this study

Over the last decade, university-based researchers have been increasingly required to ensure – and provide evidence for – the societal impacts of their research (Fryirs et al., 2019a) working to transfer the knowledge garnered from academic research to communities, practitioners and/or industry as part of the "ambidexterity" of the contemporary university (Sengupta & Ray, 2017). In many places, research and development policy now

includes the requirement to deliver knowledge transfer activities as part of the research remit (UKRI, 2017b). However, there is a remarkable paucity of case studies that document the design, delivery and outcomes of such activities, and it is even rarer to find examples where these activities have been formally scrutinised or findings incorporated into research reporting and policy (Durose et al., 2018).

While encouraged and expected, capacity strengthening is multifaceted and rarely defined (UKRI, 2017b). These activities often take the form of workshops, seminars, training events and courses (hereafter, referred to as "courses"). Central to the impactful role of the contemporary university, capacity strengthening is, ostensibly, a way to make research less extractive and more applicable in practice (Grieve & Mitchell, 2020). Unfortunately, however, many of these activities have been "added on" to research projects with experts "helicoptered" in to deliver them (Adame, 2021) or can sit "in tension" with the demands of research (Grieve & Mitchell, 2020, p. 522) rather than these activities being co-produced, integrated and delivered within the project itself and designed as genuine capacity strengthening activities. This is particularly evident in projects delivered in the Global South by researchers from the Global North where the power geometries inherent within the practice of transferring knowledge are often obscured. Policy developed around delivering these types of capacity strengthening activities may serve to re-inscribe asymmetrical power geometries in knowledge transfer and exchange. Inevitably, multiple agendas may be at play in such deliberations, with marked variability in intent, design and target audiences in exercises concerned with scientifically-framed materials relative to plural, embodied and culturally-framed knowledges (e.g. Díaz et al., 2015; Hill et al., 2020; Smith et al., 2016).

This paper presents findings from a critical, qualitative research appraisal of the conduct (design, delivery and response) of an international capacity strengthening short course that taught Stage 1 of the River Styles Framework to a group of river professionals in-place in the Philippines in November 2019 (hereafter referred to as *Short Course*). Utilising the *Short Course* as a case study, we sketch out an equitable agenda for capacity strengthening courses, one rooted in inclusive knowledge *coproduction* rather than simply knowledge *transfer*. We use this experience to promote a capacity strengthening agenda which challenges, rather than reproduces historical and contemporary power gradients between the Global North and Global South (Mbembe, 2016) and provide insights that could be embedded in research policy.

The study is reported from the collective perspective of those who undertook independent qualitative research on the conduct of the course, the co-ordinators of the research collaboration and those who delivered the course. We explore the geographies of power and the politics of knowledge production that operate across different scales of capacity strengthening, recognising the ways global circulations of power can filter down and create local entanglements of power within the space of the course itself, arguing that such reflection on the modes of knowledge diffusion is critical against the backdrop of decolonising knowledge production (Laing, 2021; Mbembe, 2016; Radcliffe, 2017; Radcliffe & Radhuber, 2020; Smith, 2013). Rather than proposing wholesale abandonment of firmly held epistemologies, we offer a more realistic "nudging [for] further reflection on knowledge production, [and . . .] relations of power" (Radcliffe & Radhuber, 2020, p. 2), particularly for those disciplines and researchers new to wider debates around decolonising (Mbembe, 2016; Radcliffe, 2017; Radcliffe & Radhuber, 2020; Smith, 2013).

This paper begins by examining the concept of international capacity strengthening within the research policy and impact agenda (e.g. Organisation for Economic Cooperation and Development (OECD), 2009; Fryirs et al., 2019a, Grieve & Mitchell, 2020), before looking at issues around education, critical pedagogy and knowledge production on water resource and river management issues and fluvial geomorphology more specifically. After discussing the issues of flood and erosion risk in the Philippines, we introduce the *Short Course*, its philosophy and approach, and the details of its delivery. Results of structured observations and participant interviews are presented to highlight several mechanisms that researchers can apply in considering the role of power dynamics in the delivery of capacity strengthening courses. In doing so, we seek to advance academic and policy debates to support more inclusive and coproduced approaches to the capacity strengthening agenda.

International research policy, capacity strengthening and environmental pedagogy

Capacity strengthening and global challenges research funding

The UK's aid and research funding policy has been transformed since the launch of the Global Challenges Research Fund (GCRF). This £1.5 billion scheme contributes towards the UK Government's 0.7% (now 0.5%) commitment to aid spending, with Official Development Assistance (ODA) money delivered through the major UK Research Councils. GCRF funding is aimed at fulfilling a dual mandate as part of the UK Government's Development agenda, namely to "meet the moral obligation of the world's poorest and also support our national interest" (UKRI, 2017b, p. 2) all the while ensuring "value for money" (Ibid, p. 3) for British taxpayers. This approach aligns with the wider UK Aid agenda within which GCRF sits, policies which unapologetically prioritise the UK national interest in spending overseas (for critique of this see Sharp et al., 2010).

The GCRF has a deliberate policy agenda to widen the scope of UK researchers working in the Global South, seeking to create a programme that "includes participation of researchers who may not previously have considered the applicability of their work to development issues" (UKRI, 2017b, p. 3). However, such an open invite to a highly lucrative funding pot has been read by some as creating "a scramble to set up projects in the Global South" (Noxolo, 2017, p. 343). While GCRF calls for "forging strong and enduring partnerships", the strategy ultimately echoes the tone of the current UK aid policy, striving to position the UK as world leaders by stressing the "world class research [and] UK research excellence" (UKRI, 2017b, p. 3). This sets the tone for a policy agenda that Noxolo (2017, p. 343) describes as "disturbingly colonial", viewing "knowledge as something to be extracted and applied" and concerns by Grieve and Mitchell (2020, p. 515) around whether GCRF engenders genuine "meaningful and equitable research partnerships". Noxolo (2017, p. 343), recognises that this "re-colonisation of UK research" comes at a time when concerted efforts are taking place to destabilise entrenched power geometries between Global North and South and decolonise knowledges (Mbembe, 2015); the university (Mbembe, 2016); geography (Esson et al., 2017; Radcliffe, 2017; Radcliffe & Radhuber, 2020); the curriculum (Daigle & Sundberg, 2017); and the practice of "doing" our work (Barker & Pickerill, 2020).

If the first priority area of GCRF involves the inclusion of researchers previously unaccustomed to working in the Global South, the second is to "strengthen capacity for research innovation and knowledge exchange in the UK and developing countries" (UKRI, 2017b, p. 3, emphasis original). Rarely explicitly defined, capacity strengthening, or capacity building, seeks broadly to "strengthen and broaden skills and expertise to address specific challenges of developing regions and countries" (UKRI, 2017a, p. 2) and has become a familiar feature of current funding policy within and beyond GCRF (Grieve & Mitchell, 2020), and embedded within the wider impact agenda (. Fryirs et al., 2019a).

A commitment to capacity strengthening has become a common requirement for large funding applications (as was the case for the NERC-PCIEERD Philippines grant that funded a geomorphological research project that involved some of authors of this paper), as well as an avenue for specific small pots of money for particular capacity strengthening activities (as was the case for the SFC-GCRF grant which funded the *Short Course* under analysis). Despite the current ubiquity of capacity strengthening activities in academia and funding policy, the concept has rarely been unpacked (see for exception in the area of health, Carvalho et al., 2019; Franzen et al., 2017; Tulloch-Reid et al., 2018). We are concerned that research policy surrounding associated with the capacity strengthening agenda runs the very real risk of an uncritical transfer of knowledge from the Global North to the Global South and reinforcement of existing power gradients (Noxolo, 2017).

Critical (environmental) pedagogies

The need for environmental education that informs people about their risks and vulnerability to natural hazards, enacts climate adaptation, and enables people to live harmoniously and sustainably with the world around them has never been greater (Amri et al., 2018; United Nations Office for Disaster Risk Assessment, 2015). The ecopedagogy movement promotes environmental literacy and encourages environmental action as a means of tackling environmental crises (Kahn, 2010). Such work draws on established traditions of critical pedagogy in which power structures, languages, colonial legacies, inclusivity and individual empowerment are central concerns (Freire, 2005; hooks, 2003). Emphasis has been increasingly placed on the opening-up of knowledge production, valuation and sharing within the contexts of sustainability, disaster risk reduction, and climate change (Balay-As et al., 2018; Temper & Del Bene, 2016; Trumble, 2019; Turnhout, 2018). In terms of academic contributions, this constitutes a move away from "linear" knowledge production models (in which academia deals only with one-directional transfers of knowledge to actors engaged in implementation) towards non-linear models in which relevant knowledge can be produced, or co-produced, by any kind of actor or actors with their own valued perspectives on a given problem (Adame, 2021; Durose et al., 2018; Weichselgartner & Truffer, 2015). This is central to the emerging field of Critical Physical Geography which seeks to "bring much needed attention to the issues of power relations" (Gillett et al., 2018, p. 519) while recognising that "most landscapes are now shaped by human actions and structural inequalities around race, gender, and class [and] structural power relations incorporate and draw on the materiality of nature, creating inextricably eco-social systems" (Lave et al., 2018, p. 5). This approach, in which knowledge can be co-produced through collaborations between a range of stakeholders

including scientists, practitioners, communities, indigenous peoples etc., is vital for producing information that is understandable and actionable by different kinds of people with different capacities to influence practice, behaviour and policy (Klenk et al., 2017; Weichselgartner & Pigeon, 2015).

Within the fields of geomorphology and river management, debates have emerged around the politics of river classification (Tadaki et al., 2014) and assertions of "river health" (Blue, 2018). These debates feed into an increasingly critical geomorphic pedagogy, which promotes approaches to education and knowledge exchange that are inclusive, reflective and collaborative (Blue & Brierley, 2016; Lave et al., 2018; Mould et al., 2018; Tadaki et al., 2015). A more expansive pedagogy engages with a range of actors and mediums of engagement, including the emotional connections between people, place, language and culture (Brierley, 2020; Marcus, 2021; Reis & Roth, 2009; Tadaki et al., 2012).

Most attention on the practice of teaching of geomorphology (and geography and geology) has been conducted in the context of university undergraduate programmes (e.g. Fryirs, 2022). Such work has highlighted, for instance, the importance of fieldwork for developing engagement, imagination, interpretation and problem solving, amongst other things (Allen, 2014; Almeida, 2013; Brierley & Fryirs, 2014; Brierley et al., 2021; Dunphy & Spellman, 2009; Fuller et al., 2006; Glass, 2015; Inkpen & Wilson, 2013). It is widely acknowledged that students can have a range of preferred learning styles, which impacts on the effectiveness of different teaching methods for individuals and groups (Gomez-Heras & McCabe, 2014; Maguire et al., 2001). The most effective engagement occurs through active, "hands-on" exercises rather than lectures or other "top-down" modes of communication (Adame, 2021; Brierley, 2009; Fryirs, 2022). As such, educators have increasingly sought to challenge "routinized" education practices and focus on "learner-centred" education (Allen & Lukinbeal, 2011, p. 243) and the scaffolded co-production of knowledge. In terms of river management, meaningful applications of scientific practice must build upon direct collaboration between researchers, stakeholders and decision makers (Rogers, 2006). McGreavy et al. (2016, p. 271) and effectively use a range of active, collaborative and situated learning activities to build "practical, real-world wisdom" and form "collaborations that matter" among stakeholders, communities and other adult learners. We argue that situating the coproduction of knowledge at the centre of capacity strengthening activities is vital both for the success of the capacity strengthening or professional development courses and the environmental management practice and policy that may follow (Nature Editorial, 2018).

Context

River management in the Philippines

Globally, the Philippines is one of the countries most affected by extreme weather (Eckstein et al., 2019) and like many other countries, river management is beset with challenges posed by flood risk, human population growth, climate change, sediment erosion and deposition, channel change, enhanced rates of sediment supply from landslides triggered by tectonic and storm events, sand and gravel resource needs, flow regime modification from hydropower development and the legacy of past management

decisions (e.g. Boothroyd et al., 2021; Catane et al., 2012; Dingle et al., 2019; Gob et al., 2016; Gran et al., 2011). Annual population growth of 1.6% (average 2010 to 2015; United Nations, 2019) is placing further pressure on floodplains that are often already heavily developed for agriculture, industry and settlement. Approximately 40% (43 million) of the Philippine population live on land with a 1% chance of inundation in a given year (Smith et al., 2019). Flooding events significantly impact on lives, the environment and the economy: Tropical Storm Sendong 2011, impacted 1.1 million families and caused 2,546 deaths and US$48 M of damage, half due to damaged roads and bridges (National Disaster Risk Reduction and Management Council (NDRRMC), 2012). It is predicted that climate change will increase the frequency and magnitude of flood events and the impacts are likely to be more widespread (Alfieri et al., 2017; Eccles et al., 2019; Tolentino et al., 2016). In the Philippines, however, consideration and use of geomorphology as a key science to inform river, sediment and flood management is in its infancy (Brierley & Fryirs, 2009, 2005; Brierley et al., 2013; Fryirs et al., 2021; Gurnell et al., 2016).

I

The river styles framework and short course

The *River Styles Framework* (Figure 1) provides a coherent, carefully structured approach that synthesises geomorphic understandings of rivers as a baseline to support place-based, catchment-specific river management applications (Brierley & Fryirs, 2005; Fryirs et al., 2021; Fryirs et al., 2019b; Kasprak et al., 2016). As the approach is generic and open-ended, principles and procedures can be applied in any fluvial setting. New variants of river can be added as required (e.g. Fryirs & Brierley, 2018), and new technologies and big

4 River management applications
Focuses on transparent decision making and vision setting.

3 River recovery potential
Analyses what the river could be like, which sets realistic expectations and helps to determine what is achievable, and over what time frame.

2 Geomorphic river condition
Situated in the context of what the river is, relative to what is expected.

1 River character and behaviour
Focuses on the character and behaviour as it is, not how it was.

Figure 1. The scaffolded stages of the River Styles Framework.

datasets can be "plugged in" to support geomorphologically-informed interpretations of riverscapes (Fryirs et al., 2018). Critically, the *Framework* is a learning tool that supports consistent geomorphic analyses and interpretations of rivers at the catchment scale. Applications of the Framework have been co-developed with a wide range of practitioners in various parts of the world (e.g. Brierley et al., 2011; Fryirs et al., 2019a; Fryirs et al., 2021; Marçal et al., 2017).

The *River Styles Short Course* has been running as a professional development offering since 2000 (Fryirs et al., 2019b). It was developed, and is run by, two academics who have spent most of their careers based in Australia and New Zealand – countries geographically in the Southern Hemisphere but lassoed into the Global North in the drawing of the Brandt Line and its economic ordering of the world. The *Short Course* focusses on training in Stage 1 (Figure 1) along with an overview of Stages 2, 3 and 4. The structure and pedagogic approach of the course is designed to build foundation skills in the geomorphic analysis of rivers, emphasising explicitly that it is not possible to train a geomorphologist in a week. Rather, overarching aims of the course raise awareness of river issues, highlighting diversity, encouraging critical thinking and interpretation, and making connections and networks in the room.

The *Short Course* integrates presentation and practical class exercises, field-based and remote sensing interpretation skills (Figure 2). Analyses and interpretations are conducted in-place using local examples and knowledge. Day 1 is structured as a workshop to introduce key principles and foundation understanding of fluvial geomorphology. On Days 2 and 3, Stage One of the *River Styles Framework* is introduced and practiced, using local examples. The remainder of the course uses local examples in practical exercises
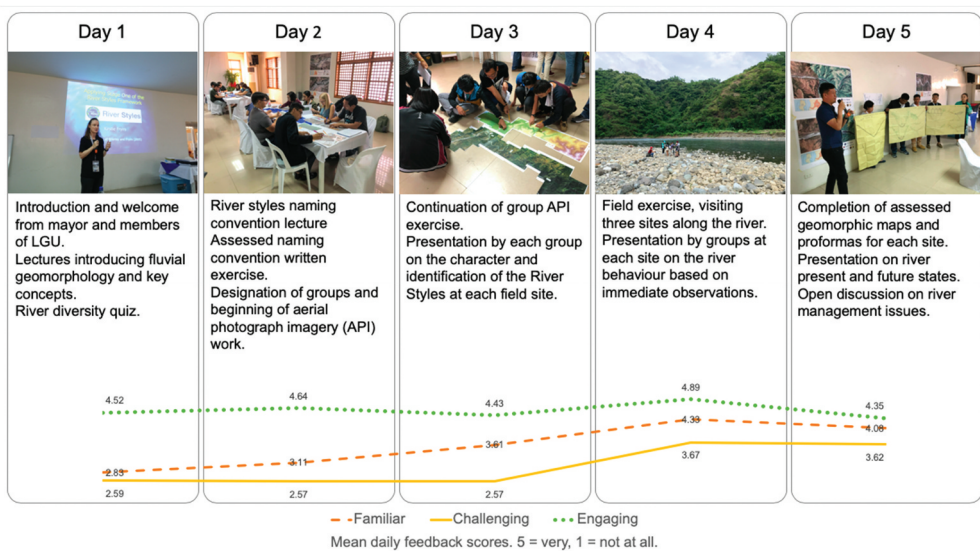
Figure 2. Overview of the structure of the five-day River Styles *Short Course*. Responses to three questions in the '5-minute' feedback forms are summarised. Participants were asked to use Likert rating scales to answer the following: "How familiar was the material covered today (1= familiar; 5 = unfamiliar)"; "How challenging did you find the day (1 = easy; 5 = difficult)"; and "Overall, how engaging did you find the day (1 = engaging; 5= dull)"?.

that include identifying and naming *River Styles*, geomorphic mapping and identification of geomorphic units and interpretation of river behaviour for 4 local river reaches (Fryirs & Brierley, 2013). Day 4 is spent in the field, undertaking more detailed field-based analysis of local river reach character and behaviour. At the start of Day 5 groups undertake analysis of river evolution and forecasting, building upon earlier exercises conducted in both the classroom and the field. This is followed by an overview of Stages 2, 3 and 4 of the *River Styles Framework*, and a discussion session on the application of geomorphic principles learnt on the course to river management issues in the wider area. Key messages emphasise the imperative to recognise, explain and manage rivers on the basis of how they adjust and evolve, meaningfully appraising their similarities and differences to support reliable transfer of understandings and management applications from one situation to another (Brierley et al., 2013). To acknowledge the learning undertaken and provide a level of professionalism to the course, three pieces of work are handed in, all based on the active learning and fieldwork exercises conducted on the course.

The *Short Course* was held in Vintar, Ilocos Norte, Philippines. Vintar is situated on the Bislak River, which was the subject of several exercises and the field work (Figure 3). Twenty-six participants were Filipinos along with three researchers from the University of Glasgow of different nationalities. Filipino participants were selectively invited by a local organiser from the University of the Philippines on the basis of either their professional role (relating to river management) or connection to the wider NERC-PCIEERD research project (more discussion of this in section 4.5). As such, participants were primarily drawn from national institutions concerned with river management, geohazards and environmental research.

Methods: data collection and analysis

A mixed-method, qualitative approach was applied to assess the conduct of the *Short Course* and reflections upon it. All participants on the *Short Course* were given the option of having their experiences and opinions included in the research. Information about the nature of the research and relevant consent forms were circulated ahead of the course. Volunteers had to actively opt-in to be included as research participants.

One week prior to the commencement of the course, a questionnaire was circulated electronically among participants, employing a mixture of open and closed questions. During the course, short "5-minute" feedback forms were circulated and returned anonymously at the end of each day to ascertain participants' views on how familiar, challenging and engaging the content had been on that day. This daily feedback provided continuous insight into fluctuating or developing attitudes towards the course. Two weeks after the course, a second electronic questionnaire was sent to participants. This was designed to capture reflections on the learning process, changes to participants' understanding of river geomorphology and management issues, and the ways in which the material from the course had since been applied.

The course was taught by two instructors. Two human geographers, attended for the duration of the course to conduct interviews and an innovative form of structured observation throughout. To support the latter, an observation workbook was developed, following a review of diverse observation methodologies (Cotton et al., 2010; Dunkley &
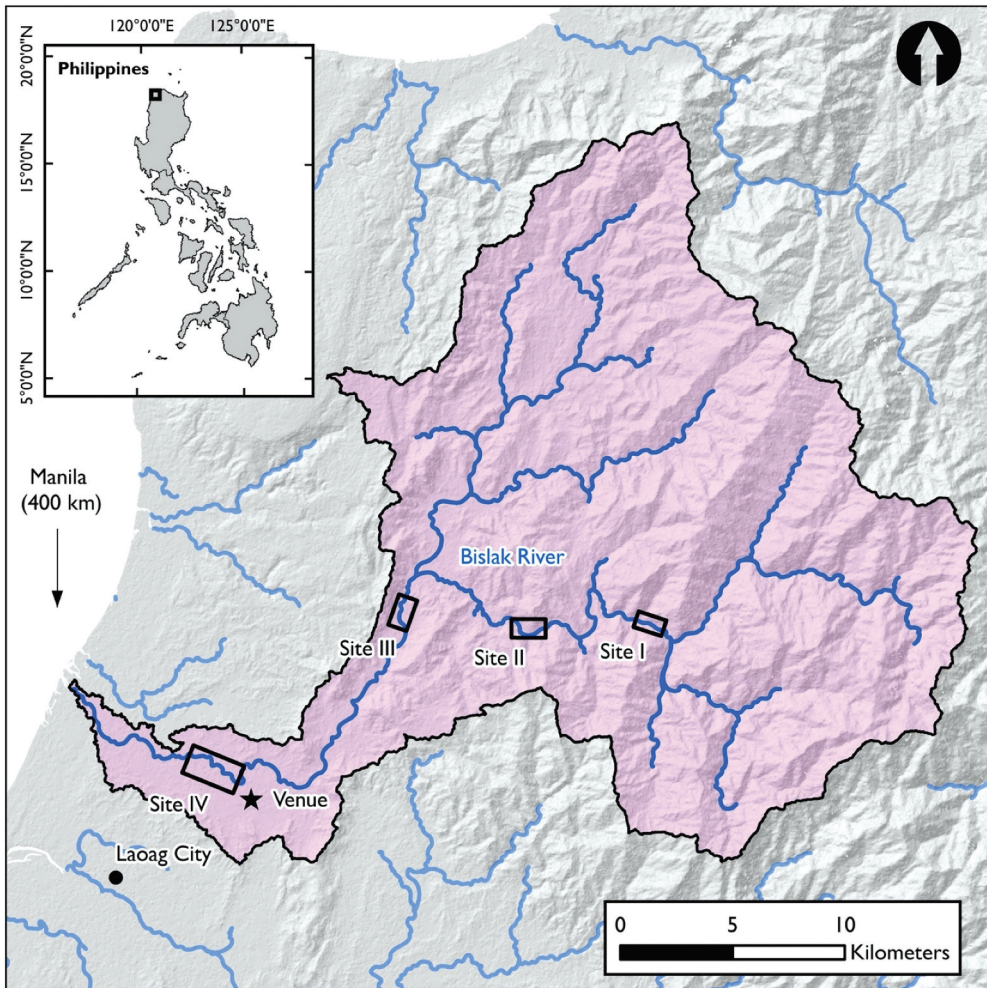
Figure 3. Bislak River catchment (Philippines) showing the venue of the River Styles *Short Course* in Vintar (starred) and the field sites that participants visited.

Smith, 2016; Jolley et al., 2019; Liu & Maitlis, 2012; McKechnie, 2012; O'Leary, 2014; Shekhar et al., 2015; Wragg, 2012). This approach allowed observations to be readily located in time (Croll, 2011), whilst also establishing a consistent set of observation criteria including i) the nature of the work being undertaken, ii) progress on task, iii) engagement in the room, and iv) peer dynamics. During breaks and social time in the evenings, informal conversations were held with many participants, and, where relevant, notes were taken afterwards. Conversations also helped minimise the reactivity of participants to the observation process (Croll, 2011).

Participants were invited to be interviewed in the evenings, either individually or in small groups (<5) as they preferred; 19 were interviewed. Group interviews allowed participants to develop their ideas by interacting with one another (Dunkley & Smith, 2016, p. 21), though some felt more comfortable being interviewed alone. Conversations were semi-structured, ensuring "topics and issues to be covered are specified in advance"

but with the flexibility to "vary the wording of the questions and the sequence in which the questions are tackled" (Kitchin & Tate 2000, p. 214). Interviews were recorded and then transcribed.

Data analysis involved a thematic analysis of observational notes, transcriptions, and questionnaire responses. Following Strauss (1987) discussion on thematic coding, a coding scheme was developed utilising descriptive codes (or categories) driven by participants' own words. This process groups together multiple reflections on key aspects of the course – such as group activities, language barriers, participant mix, thoughts on fieldwork – to find commonalities and emerging themes across different participant's experiences. These descriptive codes where then overlain with analytic codes driven by conceptual ideas and theoretical debates within academic literatures detailed in Section 2.1 and 2.2 (including power dynamics with language; pedagogic advantages of active learning; inclusive knowledge production praxis) (Cope, 2016). The same coding scheme was applied to all forms of data collected, allowing triangulation of our results between data derived from interviews, observations and questionnaires and to connect these data to key aspects of debates within the literature. This iterative process ultimately allowed for the sorting of more granular themes that have become five key factors in the results and discussion that follows.

Results

There are five key factors that we argue work to reduce international power gradients, and in doing so provide a capacity strengthening course that successfully co-produces knowledge. Three factors are direct (relating to the content and design of the course itself): active learning, situated learning, and knowledge consolidation; whilst two are indirect (relating to factors that course organisers should be attuned and attentive to): language dynamics, and expertise and networking (Figure 4).

Active learning

The *River Styles Framework* employs an open-ended philosophy in teaching fluvial geomorphology concepts: through adopting **active learning** activities [**Factor 1; factors hereafter referred to in square brackets**] that are intended to "build across learning and cognition styles" (Instructor 1 - Interview). Participants are encouraged to take ownership of their own learning. Rather than enforce prescriptive categorisation of river types, the course seeks to provide a "scaffold" from which participants can make their own decisions, with the aim that people "start asking the right questions" rather than repeat back set answers (Instructor 1 - Interview). This, we argue, is vital in dispersing authority within the classroom and facilitating co-production of knowledge by drawing on the wider expertise within the room. By breaking down traditional lecture instruction, the physical domination of space that creates an authoritative hierarchy and an "ideology of authority" between learners and instructors dissipates (Brigstocke, 2020, p. 7) and a noticeable change of atmosphere occurs within the room. During the lectures on Day 1, instructors stood at the front as learners sat and passively listened, but as active learning activities took over during Day 2–5 a more casual and livelier environment emerged as learners stood, moved
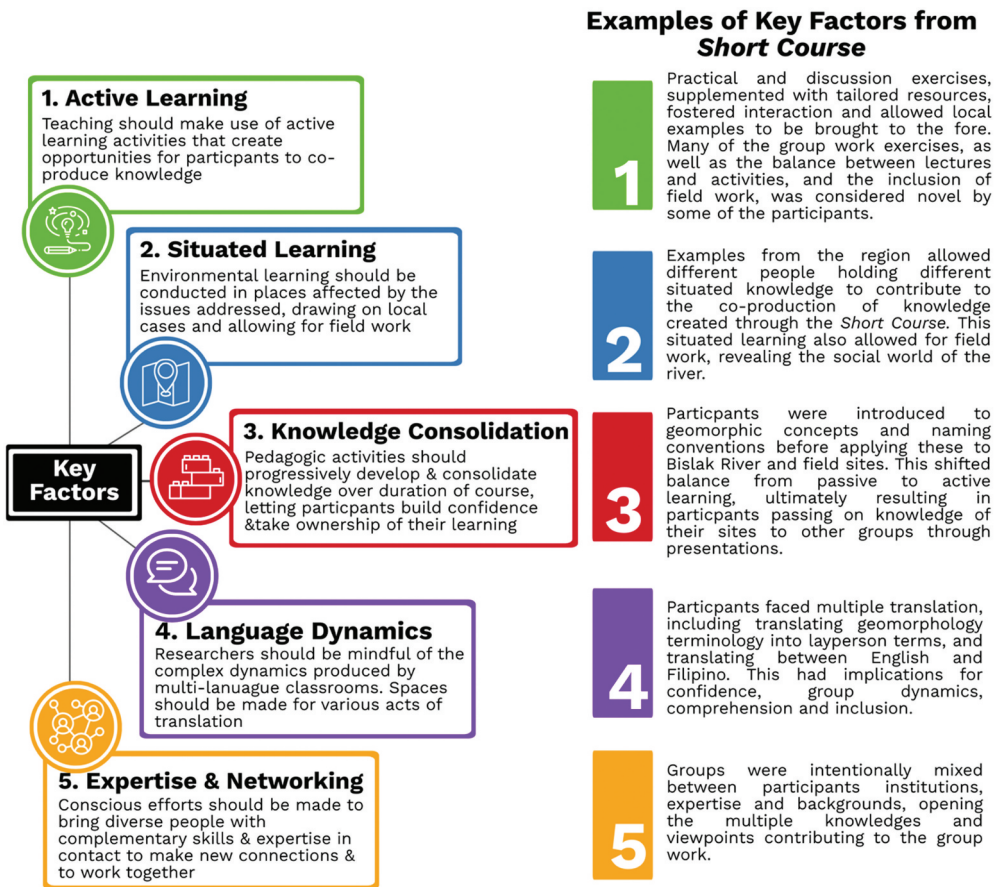
Examples of Key Factors from *Short Course*

1. Active Learning
Teaching should make use of active learning activities that create opportunities for participants to co-produce knowledge

1 Practical and discussion exercises, supplemented with tailored resources, fostered interaction and allowed local examples to be brought to the fore. Many of the group work exercises, as well as the balance between lectures and activities, and the inclusion of field work, was considered novel by some of the participants.

2. Situated Learning
Environmental learning should be conducted in places affected by the issues addressed, drawing on local cases and allowing for field work

2 Examples from the region allowed different people holding different situated knowledge to contribute to the co-production of knowledge created through the *Short Course*. This situated learning also allowed for field work, revealing the social world of the river.

Key Factors

3. Knowledge Consolidation
Pedagogic activities should progressively develop & consolidate knowledge over duration of course, letting particpants build confidence &take ownership of their learning

3 Participants were introduced to geomorphic concepts and naming conventions before applying these to Bislak River and field sites. This shifted balance from passive to active learning, ultimately resulting in participants passing on knowledge of their sites to other groups through presentations.

4. Language Dynamics
Researchers should be mindful of the complex dynamics produced by multi-lanuague classrooms. Spaces should be made for various acts of translation

4 Participants faced multiple translation, including translating geomorphology terminology into layperson terms, and translating between English and Filipino. This had implications for confidence, group dynamics, comprehension and inclusion.

5. Expertise & Networking
Conscious efforts should be made to bring diverse people with complementary skills & expertise in contact to make new connections & to work together

5 Groups were intentionally mixed between participants institutions, expertise and backgrounds, opening the multiple knowledges and viewpoints contributing to the group work.

Figure 4. Introduction of key factors with examples from the *Short Course*.

around, huddled over maps and talked to each other as they collectively and actively worked to solve problems and further enhance their knowledge (see images, Figure 2).

The active learning approach adopted by the course instructors was considered a departure from typical university settings in the Philippines, where normally there is a "detachment between the lecturer and the audience" (John – Interview (all names are pseudonyms)). The "intimacy" of the instructors was a "refreshing" contrast. Participants were encouraged to engage and ask questions, although this was limited to some extent by time constraints and the reticence of some of the participants (a point returned to below). The group work intrinsic to the active learning approach created an opportunity to overcome such reticence by asking questions within groups, rather than of the instructors, as one interview noted:

> "I have this feeling of I'm afraid to say something because I might get judged on the basis that I don't even know what I'm going to say, but I'm really grateful for my groupmates even though I tend to say a lot of . . . in the Philippines we call them 'bubble questions', or simply stupid questions". (Ryan – Interview)

Another participant stated the group work provided an opportunity to "catch up with the lecture [content], so having my groupmates, getting all their input was helpful for me" and that through group work "we can share knowledge among ourselves" (Mariel – Interview). This "sharing of knowledge" suggests the success of the scaffolding approach to learning that does not seek to enforce instructor knowledge on learners. Mariel noting she learnt equally from instructors and fellow learners, while Ryan noted he learnt more from his groupmates.

Furthermore, the more open nature of the *River Styles Framework* successfully reduced the power gradient between instructors and participants. The instructors where not arbiters of knowledge, a point noted and appreciated by participants. As Mariel stated: "I think it is worth mention that that's what I like about [the instructors] that they're not saying, 'you are wrong'". Participants found this "fluid approach" provides a space for them to challenge the teachers and bring their own experience – and indeed expertise – into exercises. The *Framework*, one participant explained, "readily accepts almost all of our answers . . . with justification!" (Rosa). Another emphasised the conceptual importance of uncertainty – "if, what a powerful word" (Angel) – meaning that classifications assigned by the instructors were not prescriptive, and that participants were empowered to contest and debate answers by drawing on their own interpretation and experience.

The shift to **active learning [1]** productively reduced power gradients in a number of ways: the move away from lecture-based learning was a spatial manifestation of the dispersal of an authoritative power, which was continued by the underpinning philosophy of the *Framework* where participants did not feel there was a single correct answer. Finally, the *Framework* allowed for learning between participants and not simply from instructors creating a sharing of **expertise [5]** within the groups.

Situated learning

A key strength of the *Short Course* was its opportunity for **situated learning [2]**. The course took place in the river catchment where research is taking place, and a wide range of examples were used throughout the week that were drawn from other locations in the Philippines. Carvalho et al. (2019) argue that the local context of participants is often overlooked in capacity strengthening courses which undermines a participants' experience. The geographical tailoring of each *Short Course* is undoubtedly labour-intensive, but Instructor 1 stated they are "pedantic about [including] local examples" (Instructor 1 – Interview). Situated learning is deliberately built into the course to reduce power gradients within the room by using the expertise of participants who know "their" rivers much better than the instructors. This served to reveal and respect the social world of the river, openly recognising and respecting situated knowledge of several participants, reframing notions of expert knowledge

Interviewees appreciated the inclusion of Philippine examples: for those new to geomorphology the familiarity of the setting provided a foundation to build their knowledge and ensured "the memory is better retained" (Jessa – Interview). One participant noted the utility of the Philippine examples by reflecting on the first day when international examples were used in order to cover a range of River Styles not present in the Philippines. Comparing this, one interviewee noted: "[On Day One] the examples they

gave out were from Australia, New Zealand and during these examples, I found it hard because, first of all, I'm not even familiar with what I'm looking at. Second, I'm also unfamiliar with what you're teaching, so they're kind of both unfamiliar" (Ryan – Interview).

While the instructors possessed a knowledge of geomorphology, the situated knowledge of those in the room ensured that their expert knowledge of the area was both valued and valuable. Indeed, many of the participants who had no geomorphological background were on the course because of their role in local government in Vintar. This ensured they could contribute to the co-production of knowledge of the river, despite being the least familiar with fluvial geomorphology.

The value of this situated knowledge was highlighted by a participant who had travelled from Manila who noted of the Bislak-based participants "it's their local setting, they know the situation here . . . they can translate it better to me, to some-thing I can understand at the local setting . . . they can give examples of, for example in this province they do this kind of practice, they have this kind of culture . . . so it gets me to understand it more". On the other hand, those with personal knowledge of the rivers then learnt more about the management of "their" river, heightening the potential for positive political impact. One participant felt that "Because people would, especially those from the local government, they would be able to see 'ah, this is our river, I know this bend, I've been here'. So, it adds more value for them to be able to see their own".

Using and focusing on local examples also allowed for **active learning [1]** both within the classroom and in the field. Both instructors stated they would "never run a course without fieldwork" (Instructor 2 – Interview). As with the discussion exercises, site visits were loosely structured, giving participants freedom to control their own learning in the field and to spark those "aha!" moments where theoretical understanding falls into place (Harden, 2013, 34). Groups were invited to "wander around" (Instructor 2, field note-book, 14/11/19) and update their site maps and classifications with their observations, giving participants responsibility for their own learning.

When in the field, some participants took the opportunity to interact with residents living along the river, recognising that they "know what's going on here" (Jerome – Interview). One participant took the time to explain to onlookers at Site II what the participants were doing, assuaging their fears that the group were interested in mining, while this concern itself exposing participants to the concerns of riparian residents. Participants broadly agreed that engaging with affected communities was important for building and understanding about flood events and recognised the role of local memory for recording water levels, flood duration, and comparing with past events. Interaction with locals also influenced the completion of some of the exercises, with one group able to distinguish between a terrace and a floodplain based on "accounts from the locals . . . if we talk to the people experiencing what's happening here we will get the correct under-standing" (Jerome - Interview). Baker et al. (2019, p. 289) argue that ecologists "routinely 'write out' local people and communities" stating that in doing so "science tells only a partial story that disregards – and therefore silences – local and indigenous knowledge-[s]". Situated learning ensured local populations were not "written out", but rather contributed to the co-production of knowledge about the river.

Knowledge consolidation

The *Short Course* builds upon and **consolidates knowledge [3]** over its 5-day duration. Key concepts are introduced in the first stage, then rehearsed during individual and group exercises, before being used in the field, and later reflected upon in discussion and presentation exercises. Interweaved with **active learning [1]**, this kind of consolidation allowed participants to grow in confidence and competence, and gradually take ownership of their learning through the course.

Central to the *River Styles Framework* is the use of a systematic, interpretation-based naming convention that has been deliberately designed to be flexible and open-ended, allowing for identification of River Styles in any given place (Fryirs & Brierley, 2018). In the process of learning the procedures for interpretation (visualised in a procedural tree), and then having a method to assign a name to the River Style, most participants were exposed to an entirely new geomorphic lexicon. Even those with a geomorphic background found the terminology, and some of the concepts, entirely new. Many participants stated that they enjoyed this process, particularly its logical basis for interpretation, and identification of repeated patterns, similarities and differences. Several stated this was when the message of the course began to "click" and they felt themselves "improving" (end-of-day questionnaire).

We found that knowledge consolidation was central to building confidence amongst participants, as Mariel noted:

> "[Each activity was] next level of difficulty, because the first one they ask us to name the rivers, but you can see the delineation . . . so they delineated it for us. Then the next exercise is there are no delineations . . . you map the thing yourself, and then they hand you this zoomed out photo which you try to identify. So I guess it was good because first you're trying to see if you could apply the lesson, so the first exercise . . . you gain a bit of confidence, "I can do this thing". And then they ask you to map the geomorphic units, and I'm like "eh, I can still do this", but it's not as easy as I thought it was."
>
> *(Mariel - Interview)*

Here we see the way in which knowledge consolidation allows the course to become more challenging while maintaining an active learning approach where participants become more independent in their learning. As demonstrated in Figure 2, the end-of-day questionnaires show that "familiarity with content" ranking increased as the week progressed, but so too did the "challenge with content".

This scaffolding is a deliberate pedagogy on the part of the course designers and instructors. While active learning is taking place, the instructors continually regulate their input, starting with more guided instruction and demonstration and eventually either remove themselves from the group discussions or become "part-time" group member themselves, co-producing the knowledge together (after all the instructors are visitors to this place and have as much to learn about it as any other participant). Our observations noted that both instructors are constantly attuned to the class and embracing the messiness intrinsic to critical engaged pedagogy, stepping up only to provide guidance or participate in mutual exchange of ideas rather than prescriptively instruct or "correct".

When completing exercises later in the course, participants regularly made reference to lecture slides and reading material to name features or confirm definitions, and some were able to see how the naming system fitted into the open-ended philosophy of the *Framework*: "[C]ompound" one person remarked, "that answers all" (Observation book, 13/11/19). Others found that the field visits, during which they verified classifications made from aerial photography in the classroom, revealed the extent to which their understanding had been expanded by the acquisition of new terms:

> "Rosa: we wouldn't know what to look for in the field if the field was done first . . . for us it's just water
>
> John: it's just rocks! [laughter]
>
> R: so yeah, the lecture should be done first.
>
> Emma (interviewer): so when you went today it wasn't just water and just rocks?
>
> R: no no, we were like "ah, geomorphic units!"
>
> J: [pointing] turbulent flow, laminar flow
>
> R: riffle, riffle, riffle, pool . . . no, it's rapids now" *(Group Interview)*

Thus, despite the large number of terms and concepts introduced, equipping participants with the language to consistently and clearly describe the landforms they see enhanced their engagement with the river and provided a common language with which to work.

There may be a temptation to attempt to cover too much material within short capacity strengthening courses. In this instance, the material delivered early in the course was, according to instructors, deliberately overwhelming (to ensure there is a clear message that geomorphology cannot be learnt in a week), by covering less ground (i.e. only Stage 1 of the *River Styles Framework*), and doing so in more detail, familiarity with material is built, consolidation of knowledge can occur, and confidence gained. Come the end of the *Short Course* this allowed students to present their own analysis to one another; becoming their own authors in the knowledge process.

Language dynamics

In the Philippines, English remains widely spoken as an "official" language of administration. The endurance of English is an artefact of the US occupation of the country and a reminder of the long shadow of colonial history under which international research and, by extension, capacity strengthening activities, take place Furthermore, the Philippine national language also has its own history tied to complex politics of post-colonial national building (Tupas, 2015). Tagalog[1] was named the national Philippine language in 1935 as the most dominant Philippine language, which was renamed to Pilipino (1959) in a bid to move beyond perceptions of Tagalog-imperialism and unify the nation around one indigenous language, before a further renaming to Filipino in 1973. Here then, Tupas (2015, p. 593) argues that "if Filipino has a sociolinguistic basis, it would then have to be drawn primarily from Tagalog-based Pilipino, as well as from other languages which the language would come in contact with". Owing to historic and

contemporary relations with power, we argue it is vital for **language dynamics [4]** to be considered during the delivery of capacity strengthening workshops.

While working on the *Short Course*, participants faced complex and multifaceted language dynamics: English to Filipino/Tagalog[2] comprehension; Filipino/Tagalog to English coursework; mixed language groups and intra-group translation; multiple indigenous Philippine languages; unfamiliar geomorphological lexicon; and metaphorical communication. The overwhelming majority of Filipino participants considered Filipino their first language,[3] while English was primarily used in the job of almost half of all participants.[4] Owing to the presence of 3 non-Filipino participants in the workshop, 3 out of 4 groups contained non-Filipino speakers,[5] factors which collectively gave rise to important linguistic dynamics.

The course material was delivered in English, as is the common "medium of instruction" (Rosa – Interview) for scientific subjects in Filipino universities – a legacy of the influence of the American occupation on the education system (Tupas, 2015). For some participants, however, this delivery in English proved a challenge:

> "as a result of [lectures being in English] sometimes you still have to process. Like for example when [the instructor] talks about something, I'm still translating, because maybe it's the difference in accent, I'm still translating the thought, and then [they are] already on to some new idea." (Jasmine – Interview)

Many admitted that Filipinos often struggle to feel confident communicating in English: "some of the participants are afraid of using English because they can't make a straight sentence" (Rosa – Interview); "Tagalog is where we feel comfortable" (Jerome, Observation book, 13/11/19). Asked after the course about benefits and limitations of courses like the *Short Course* being run internationally, one participant suggested that that the "language barrier between participants and foreign facilitators" may have been a limiting factor "because it is not easy for most locals to express ideas in English" (Post-course questionnaire).

Active learning [1] as a pedagogical practice has been discussed, but here we return to consider its role of active learning in facilitating more inclusive linguistic practice during workshops. Once lectures gave way to group work, we observed that the language of the classroom quickly changed from English to Tagalog – or a hybrid language which participants dubbed "Taglish" (Observation book, 13/11/19). These group exercises became an important opportunity for the lecture ideas to be translated and participants to enter a more informal conversation. Ryan discussed the shift between the formality of English and informality of Filipino noting:

> "English is like a switch that, when you speak English, you become a lot more formal. And when you speak Filipino you become … informal. Like a lot. You don't speak English in casual conversations. We use it as something formal." (Ryan – Interview)

hooks (2003, p. 44) notes that "conversation is the central pedagogy of the democratic educator. Talking to share information to exchange ideas … affirms … that knowledge can be shared in diverse modes of speech". Creating space for such linguistic diversity ensured the valuing of contribution of all participants, regardless of their comfort with English. Here then, we argue capacity strengthening activities must create space and time for non-English discussion to take place.

This approach may mean a loss of value for those who cannot take part in Filipino discussion, both in terms of those running the course and for fellow participants. However, on the *Short Course* this was negotiated within groups. In the groups containing non-Filipino speakers this often meant translation was required. "When we get the idea first, we speak in Tagalog", explained Angel, "then we will translate it to our groupmates in English". These acts of translation were integral to the operation of mixed-language groups, often with implications for the physical orientation of the group's workspace:

> Emily is standing back from the table while her group lean in and talk animatedly in Filipino. Adrian stands with her and translates what they're saying. (Observation book, 13/11/19)

More confident English speakers were often tasked with this translator role, serving as a "medium" for what their less confident groupmates wished to say and bringing non-Filipino group members into conversation.

In giving over space for non-English discussion, those running the course also give over their authority and opportunity to further their own knowledge production in favour of what is best for participants. In the final exercise, groups were tasked with discussing a series of local river management issues and recording their thoughts (by implication, in English) on paper under relevant headings. The groups became very animated in discussion. Most of this talking was in Filipino, with occasional forays into English for inclusion of their English-only groupmates. Compared to the extensive and animated discussion, little made it on to the page. Among the researchers in the room, all of whom were English speakers, there was no opportunity to understand these discussions or transcribe them (Observation book, 15/11/19). While this could be framed as knowledge lost in the gaps between language, it can also be framed as knowledge produced and retained by, and for, the course participants. Many participants reflected on the importance of that final day discussion, by thinking how they might tackle some of the challenges within their country. These discussions, in whatever language, could only have occurred with the capacity strengthening work that had been undertaken during the week and being aware that knowledge cannot always be produced for, or be known by, those facilitating the course. Both instructors felt that in some ways their "job was done" as soon as knowledge was being co-produced and used (in multiple languages) to discuss deeply the implications of what they had learnt for river management in the Philippines.

Expertise and networking

The course brought together individuals from different skillsets, backgrounds and professional affiliations, a combination which was widely cited as a positive aspect of the course. Decisions about who was invited were made by in-country partners. We suggest this is best practice given their knowledge of the institutional landscape and the opportunity to inform practice and policy change. Participants were broadly split between those working directly on, or affiliated to, the NERC- PCIEERD funded project ($n = 17$) and representatives from local and national government agencies ($n = 10$). Each group was then created to ensure a spread of different backgrounds, positions and agency affiliations within each group. This diversity

within the course, and in each group, ensured a range of expertise and viewpoints contributed to the co-production of knowledge and provided important and unique opportunities for networking.

The diversity and dynamism of the groups was roundly appreciated by the participants: "it's definitely better than working with people from the same field" (Jessa – Interview). Some felt that this group diversity explicitly reflected the underlying philosophy of the *River Styles Framework*:

> "It's actually a good mix, because in our group we have a biologist, we have a geographer, a geologist . . . In the *River Styles* approach they want it to be holistic, right? They're trying to look at a river not only as a river, but in a catchment scale, so when you're looking at it that way you have to sort of blur the boundaries between disciplines". (Angel – Interview)

The range of expertise and roles meant different people took different things from the course. For those working on the NERC- PCIEERD project, many of whom where in more junior positions, the course provided an opportunity to learn more and develop new skills while getting "a birds eye view of what we are doing in small pockets" (Rosa – Interview). Being able to contextualise their contribution to the broader vision of the NERC- PCIEERD project was empowering, as Ryan reflected:

> "It finally dawned on me that, as we moved along with the lecture, these kinds of data, these kinds of work that we do for these kinds of projects, are actually very useful not only for us but also for the local community, because we got the chance to talk to the mayor and they were able to explain to us all of the different situations that they were facing with regards to the river. And again it was a sweet moment for me; like 'really, I can help?'" (Ryan – Interview)

Conversation was not only one way, as participants engaged in research relished the opportunity to engage with key policy stakeholders. Mary argued that, for effective river management, "we need people to know, especially our local government units, the local managers, to understand the dynamics of the system", and the course provided a platform for this. Another participant suggested that the *Short Course* would help officials understand and embrace fluvial research going on in their area, and give a more guided approach to their policies:

> "[the officials] being there and attending the workshop and being able to be given the technical background and knowledge of what the [research] team are doing it gives value to them. Like, 'ah, this project helps our local government' . . . it makes it personal to them". (Nicole - Interview)

These sentiments were echoed by a participant from the local government:

> "It is important that we are here, because [. . .] I can write about this, and then I can tell the mayor perhaps, or the local leaders, and then, having been on the course already, I can say I've learned a bit about it so when [research] material comes in I can maybe help interpret it for the mayor, or even perhaps the local people, so they may understand it a little bit . . . how do you call it, laymanise some of the terms there". (John - Interview)

Beyond the messaging and geomorphic training, by bringing together people from diverse agencies, the course served as an important networking opportunity for participants and a chance to open up dialogue about river management issues with relevant individuals. "This workshop", Christian suggested, became "the common ground for all

of us to communicate between our expertise and objectives", while another participant noted "I like the fact we now have an established network with members of the group" (end-of-day questionnaire).

Many participants stated that they had made professional connections that they planned to continue and develop further in the future. The diversity of participant backgrounds, and the careful mixing across groups, greatly facilitated this exchange. Many of those whose jobs did not directly relate to river management, for whom the course held no practical relevance, benefitted from an increased visibility of understanding of others' work. For example, participants from the national monitoring agency, responsible for allocating research funding, were able to put names to faces and develop relationships with people conducting research: "we can actually visualise and experience what they're doing" (Rosa – Interview).

Much of this was culminated in the final day discussion of "real" and "important" issues" (End-of-day questionnaire) such as gravel extraction, flood risk and Philippine river management practice. In this discussion, which one participant referred to as "geofantasizing" (End-of-day questionnaire), participants with their different expertise and roles discussed "the way forward" (End-of-day questionnaire). Despite it being the last activity of five intensive days, these discussions remained lively and energised – hooks remind us that the "academy is not paradise, but learning is a place where paradise can be created. The classroom with all its limitations remains a location of possibility" (hooks, 1994, p. 207). The *Short Course* ended on an air of optimism and hope for tackling river management issues in the Philippines, akin to Ryan's "sweet moment" when he felt he played a productive role in his country's future.

Discussion and concluding comments

As Stilgoe et al. (2013, p. 1568) critically explores, "[s]cience has always been conventionally invoked by policy as emancipatory. This has allowed scientists and innovators considerable freedom from political accountability". We argue that this philosophy should be extended to the practice of capacity strengthening, recognising key roles of multiple arbiters of knowledge. This requires better consideration of the ways in which knowledge exchanges interact with social, political and cultural environments, tasking researchers to reflect and positively respond to more equitable models of knowledge exchange that facilitate co-production of knowledge. To achieve this, capacity strengthening courses, embedded within the wider research impact agenda and policy, must remain open to "novel social, economic and ecological possibilities that cannot be predicted or anticipated beforehand" (Carvalho et al., 2019, p. 1624). We also need to consider more carefully what success and impact looks like for capacity strengthening exercises, and how we go about measuring that success or impact (Durose et al., 2018; Fryirs et al., 2019a). The *Short Course* evaluated here highlights one response to the global push for holistic river catchment management that brings together stakeholders to develop sustainable solutions. The aim of the *Short Course* was never to train a fluvial geomorphologist in a week, but through the process of collaboratively learning and discussion, participants were allowed to learn, build strong personal and professional connections, and generate a sense of empowerment that they can make a contribution too, or influence, river

management in the Philippines. Inevitably, analysis of river management practices in the months and years to come, will be required to appraise the success with which such courses strengthen capacity, improve outcomes on the ground, and associated implications for land and water management and research policy. Nonetheless, activities and engagement remain ongoing including specific to this project, a three-day workshop on "Making space for Philippine rivers" (Tolentino et al., 2023) held in March 2023 to continue the process of learning and discussion that was started during the *Short Course.*

Based on findings presented here, we argue the need to carefully consider not just the impact of any particular course *per se*, but how to conduct capacity strengthening activities with the aim to influence. By extension, such activities can become part of what should be a wider effort to redress power dynamics in international research and pedagogy, where researchers from the Global North willingly give up epistemic authority of knowledge production which "attributes truth only to the Western way of knowledge production" (Mbembe, 2015, p. 32) and work to more co-operatively, and in-place, apply practices which actively co-produce knowledge (Marcus, 2021). Writing in relation to capacity strengthening in context of health research and applications, Carvalho et al. (2019, p. 1624) conclude that a postcolonial methodology for capacity strengthening must reconfigure the traditional asymmetry "between epistemological status of participants and course convenors" in ways where expertise and knowledge of participants is symmetrical to that of convenors. As well as working to reduce power gradients, such an approach is in line with critical pedagogy, and the attentiveness of active and inclusive pedagogic practice that draws on knowledge from diverse sources (Brigstocke, 2020; Lave et al., 2018). Essentially, such practices embrace a plural knowledges lens (Howitt & Suchet-Pearson, 2003).

While we have explored these key factors in relation to capacity strengthening courses specifically, the same factors are relevant across a range of pedagogical settings. Fryirs (2022), for example, discusses the importance of active learning [1] and scaffolded knowledge consolidation [3] to learning within the tertiary education system. While the expansion of International Branch Campus (IBC) and associated Transnational Education (TNE) – where teaching takes place in a country other than the awarding institution – requires careful pedagogic consideration to navigate language dynamics [4], encourage situated learning [2] and recognise diverse expertise [5] in ways which ensure IBCs and TNE do not reproduce coloniality (Clarke, 2021). Capacity strengthening activities such as the *Short Course* documented here have, we argue, received too little research attention and acknowledgement in academic practice, and by extension research policy. Courses should never just be a line on a grant application or packaged simply as "outreach" or "extension" activities. We seek to encourage future researchers engaging in international education to be critical in their approach and to be responsive to the needs of their participants. This course was delivered in a pre-COVID world but in a COVID-normal world both challenges and opportunities have been created. On the one hand, online delivery of courses has been transformed forever, heightening the risk of standardised, global delivery of education that removes place, and the interaction between participants and between participants and instructors from the process, which is the antithesis of capacity strengthening activities, particularly in environmental sciences, where place, people and culture matter (Marcus, 2021). At the same time, a halt and

reset to Global North "helicopter" model may positively alter the power relations by increasing the autonomy of in-country research partners.[6]

Drawing on our observation and engagement with participants in the Philippines, we offer five direct and indirect actions (outlined in Figure 3) that instructors can take to strengthen their practices, while also suggesting a series of reflective questions (presented in Figure 5) that they might ask themselves before embarking on the design and teaching of such courses (see Glass, 2015). This includes questions that designers and instructors can consider in efforts to enact (i) active learning, (ii) situated learning (iii) knowledge consolidation in the design of their course, and how they can be attuned to (iv) the language dynamics and (v) expertise and networking within the room when teaching the course.

On the *Short Course*, the opportunity for participants to be involved in an **Active learning [1]** and **Situated learning [2]** environment, both in the classroom and in the field, helped embed the river within the social world it inhabits. King and Tadaki (2018, p. 77) note that the methodological choices of how scientists study the environment have political as well as scientific implications, potentially narrowing

Reflective Questions

Active Learning
1
How can material be taught in an active way?
What form does higher education / professional training normally take in the country in question?

Situated Learning
2
Can the course be hosted near areas affected / studied?
What local examples can be used?
What are the local priorities in terms of environmental management / learning?

Knowledge Consolidation
3
How can participants take increasing ownership over their learning over the duration of the course or activity?
What pre-existing levels of expertise / understanding / experience is there among the participants?

Language Dynamics
4
What language is the course being delivered in? Is this the same as the language participants converse in?
What spaces can be created to allow for translation and non-English conversation?

Expertise & Networking
5
What relationships (personal or institutional) are important for furthering environmental protection / management in-country?
How can different people expertise be valued and included?

Figure 5. Reflective questions for educators delivering capacity strengthening courses in international context.

"the range of what is considered legitimate knowledge or an acceptable perspective on an issue, thus reinforcing particular knowledge-power dynamics relating to the environment". They note, for instance, the ways that analytical practices in remote sensing, numerical modelling, and laboratory experimentation "abstract researchers and research from the material and historical context of the landscape they are studying" (King & Tadaki, 2018, p. 77). In contrast to the abstracted landscape "known" in the classroom through satellite images, participants were confronted with the social world of the river through the citizens who live alongside it, with consequence for how the river was understood. Fieldwork, then offered "the condition in which a shift to understanding can happen, recognsing that understanding is not solely cognitive (Couper, 2023 p. 10) Writing in the context of local knowledge in climate adaption, Klenk et al. (2017, p. 2) note that local knowledge is frequently "extracted" in ways which "breaks the ties that bind local knowledge to local governance arrangements and sociotechnical practices and may foreclose options for locally appropriate and effective adaptation". On the *Short Course* in this study, the situated learning afforded by fieldwork allowed these ties to remain, with local government arrangements hearing first hand concerns and impacts of local communities.

As **Active learning [1]** and **Knowledge consolidation [3]** are mutually supportive, effective pedagogic practices carefully introduce new ideas in ways that recurrently resituate understandings within an approach to collective learning. In this instance, a wide range of exercises and interactions integrated concerns for passive learning within a structured (scaffolded) approach to course design and delivery. In this way, a critical engaged pedagogy approach "emphasises mutual participation [of students and teachers] because it is a movement of ideas, exchanges by everyone" (hooks, 2010, p. 22) that "highlights the importance of independent thinking and each student finding his or her [sic.] voice" (ibid). On the *Short Course*, this played out physically in the room, as course instructors transitioned from positions of authority at the front of the room, to being embedded within the room as the course progressed. Becoming more distant or part of a group embraces a pedagogic approach advocated by critical physical geography wherein teaching can be considered to be as "messy, open-ended, contingent, and coevolutionary as the river and policy systems [under] . . . study" (Gillett et al., 2018, p. 520).

Language is often wielded as a weapon of subjugation in colonial projects and remains in an entangled relationship with power, both within the postcolonial context at an international scale (Fanon, 1963; Fanon, 2008 [1967], Flores-Rodríguez, 2012; Tupas, 2015) and at the more intimate scale within classrooms (hooks, 2003). During colonialism, language became a "sign of an imposed aesthetic" (Flores-Rodríguez, 2012, p. 29) and maintained "systematic structures of oppression, violence and inclusion" (Flores-Rodríguez, 2012, p. 29). Fanon (1963, p. 222) calls for "the colonized to reject the language which is borrowed from a stranger in his [sic.] country" as an emancipatory tactic in the anticolonial movement, which is reflective within the complex politics of defining a national language of the Philippines (Tupas, 2015). For an international capacity strengthening course to work, the instructors must be cognisant of the **Language dynamics [4]** of the room and to create space and time for these dynamics to operate, within groups, across the class and between participants and instructors, so that shared learning and co-production of knowledge can take place. Standing back, and allowing time for interaction and reflection, supported this process on the *Short Course*.

Although the participants on the course were selected to attend, the opportunity for sharing of expertise, knowledge and networking will be a lasting legacy of the *Short Course*, and one that cannot be easily measured. During the course, the breadth of **Expertise and networking [5]** opportunities also helped facilitate wider buy in to the course itself and the discussions about implications for practice, which Ika and Donnelly (2017) consider a key condition for successful capacity building activities. In this instance, stakeholders reflected positively upon the opportunity to build professional relationships and develop new approaches to their work – in terms of content and practices.

Prospectively, lessons learnt from the design and teaching of international capacity strengthening activities such as the *River Styles Short Course* can help to shift the perception of "outreach" and "delivery" as something that happens at the end of a research project, to a core activity that is built into and resourced within a research project. We contend that such practices in performative action research must become more visible, and recognised within, academic discourse, workload and research policy. This not only leads to better outcomes for stakeholders from both the Global North and the Global South, but improves global citizenship in the co-production and use of knowledge more generally. In particular, we would encourage other researchers to share their experiences of, and approaches to, capacity strengthening to develop best practices and policy across disciplines. While the focus here has been on fluvial geomorphology, the findings of this research, and our hopes for future action, can be applied to a broad range of international pedagogies and become central to capacity strengthening research policy and reporting within universities and funding agencies.

Notes

1. Of interesting note for this paper, Tagalog is derived from "tagailog" translating to "river dweller" or "citizen of the river" demonstrating the central importance of rivers to many in the Philippines.
2. As detailed in text, the complex history of naming the Philippine language is reflected in the coming and going in terminology between Filipino and Tagalog. Many participants referred to Tagalog but used Filipino which may itself be an act of self-translation done on behalf of English speaking researchers.
3. Of the 20 Filipino participants who answered the pre-course survey, 15 considered Filipino ; (which was the language term used in the survey form) their first language, with a further four favouring other Philippine languages (Ilocanoloco, Visayan and Kapampangan). Only one said that English was their favoured language.
4. 13 used English, six used Filipino, and one a mixture of both.
5. Across the four groups, the language profile was as follows: one group was entirely Filipino; two contained an English-only participant; and one group contained a participant whose first language was neither English nor Filipino, but who spoke English as a second language. This latter group was also joined by the participant with English and some Filipino.
6. Thanks to anonymous reviewer for encouraging us to think around this. One author was involved in a delivery of international capacity building training which had to pivot to online during Covid – the shift in mode of delivery increased the role of our in-country research collaborators and decreased our role as out-country research collaborators in ultimately positive ways. This remains anecdotal at this point, but we would encourage further analysis on this.

Disclosure statement

Brierley and Fryirs are co-developers of the River Styles Framework. River Styles foundation research has been supported through competitive grant schemes and university grants. Consultancy-based River Styles short courses taught by Fryirs and Brierley are administered by Macquarie University. River Styles contract research is administered by Macquarie University and University of Auckland. River Styles as a trade mark expired in May 2020.

The researchers were highly sensitive to their own positionality throughout this work, and its subsequent write up. The *Short Course*, taught by Brierley and Fryirs, ran as a capacity strengthening exercise associated with a NERC-PCIEERD funded project (Principal Investigator (PI) Williams, and Senior Scientist and course participant Tolentino), but funded through a standalone SFC-GCRF Capacity Strengthening grant (also PI Williams). The qualitative research design and analysis were conducted by Mitchell and Laurie, working only on this SFC-GCRF grant, and not connected to either *River Styles* or the broader NERC-PCIEERD project. This distinction was explained to the participants by email before the course and in-person on the first day, thereby ensuring transparency and encouraging less circumspect opinions to be voiced. Although not involved in the initial qualitative research design, data collection, or analysis, Brierley and Fryirs were supportive of the evaluation and contributed their insights on running courses internationally. Likewise, Tolentino was integral to course coordination and provided valuable input to, and reflection on, the findings of the observation. The authorship of this paper, therefore, reflects this collaborative endeavour and an intentional integration of all parties in this activity.

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