Professional development in conservation: an effectiveness framework

THIRZA A. C. LOFFELD, TATYANA HUMLE, SUSAN M. CHEYNE and SIMON A. BLACK

Abstract Contemporary conservation professionals are part of a workforce focused on overcoming complex challenges under great time pressure. The characteristics of conservation work, and in particular the evolving demands placed on the workforce, mean that to remain effective these professionals need to enhance their skills and abilities continually. Currently, there are no sector-wide guidelines to promote systematic professional development that addresses both individual and organizational learning. This study builds upon existing knowledge from other sectors by examining professional development in conservation through an in-depth qualitative thematic analysis of interviews with 22 conservation professionals, resulting in an effectiveness framework for professional development in the conservation sector. Our findings indicate how individuals' motivation to learn, proactivity, open-mindedness towards alternative information and views were considered preconditions for effective professional development. A balance between organizational goals and career ambitions was found essential to maintain this motivation to learn and vital for staff retention and preservation of institutional knowledge. Professional development plans may help distinguish between individual career aspirations and organizational objectives and aid a discussion between staff and management on how to balance the two. Leaders have the opportunity to remove barriers to effective professional development. We discuss solutions to overcome specific barriers, to promote an inclusive approach for diverse learners through provision of opportunities, effective learning design, and resource distribution for professional development. This effectiveness framework can be used by conservationists and conservation organizations to plan and decide on professional development.

Keywords Capacity, conservation workforce, human dimension, inclusion, leadership, learning, personal agency, professional development

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Introduction

The Convention on Biological Diversity highlights the need for capacity development in its redrafting of strategy post-2020. One priority is to understand better how staff capacity inputs influence outcomes (e.g. ecological, social and organizational outcomes) to guide future policy (Bacon et al., 2019). To date, research addressing this has predominantly focused on protected areas, where some studies have identified staff capacity as a critical predictor of positive conservation impacts (e.g. Geldmann et al., 2018), whereas another study highlights contextual influences (e.g. law enforcement, corruption, land title issues) as predictors of conservation success (Schleicher et al., 2019).

Capacity, whether individual or organizational, varies according to context, and so is more usefully considered over time. Capacity development is defined as the intentional process whereby individuals, organizations or society build and maintain capacity over time (Simister & Smith, 2010), and can be considered an umbrella term that includes both organizational and individual development (Lusthaus et al., 1999). Acknowledging that capacity development may involve many participants and that capacity includes more than an employees' knowledge and skills (Müller et al., 2015), our study focused on individual capacity development, in particular the development of conservation professionals (not including pre-entry education). As in the education sector (Campbell et al., 2017), we used the term professional development to denote the active process of growth and development an individual undertakes in their professional life, across their entire career, including a range of approaches, activities and interventions, as well as the surrounding context and available resources that support this process. It is important to distinguish between professional development and professional learning. Professional learning refers to outcomes (what is learnt, how learning is applied and the establishment of new behaviour) whereas professional development refers specifically to the process that prompts such changes (Killion, 2013).

Other than wider evaluations of capacity development approaches (Sterling et al., 2021), as far as we are aware, to date, there have been no specific systematic reviews of professional development in conservation. Attempts to link

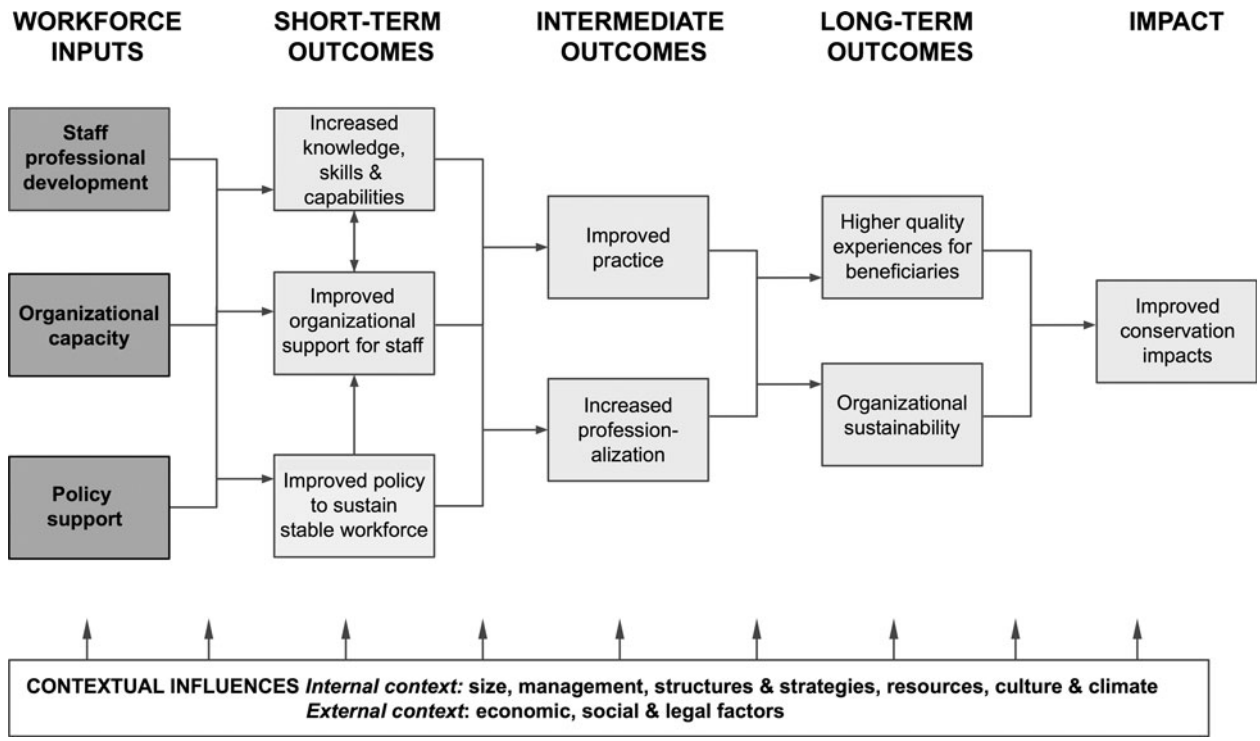

FIG. 1 Conservation capacity model, adapted from a model for education (Weiss et al., 2006). Inputs, outcomes and impact are not all-encompassing and are provided here as examples of capacity development in conservation. Beneficiaries are recipients of improved conservation practice and may, for example, include landowners such as communities, governments and private companies.

professional development directly to conservation impact risk oversimplification, because there are many steps influenced by contextual factors, and conservation success may not be attributed to a single professional development initiative. Evidence of outcomes of professional development in conservation is scarce, but other sectors offer insights. Research in international development reveals that the further removed an impact is from the professional development intervention (e.g. organizational, beneficiary and/or biodiversity level), the more challenging is its attribution to that intervention (James, 2009). Figure 1 illustrates four levels of professional development evaluation, drawing upon findings in education (Weiss et al., 2006) and training (Kirkpatrick, 1996). The first level of measuring change is assessing the quality of intervention (short-term outcomes), followed by internal organizational changes (level 2: medium-term outcomes), external changes for beneficiaries (level 3: long-term outcomes) and external changes for biodiversity (level 4: impact).

Professional development needs in conservation

Studies of conservation capacity needs include evaluation of job advertisements, graduate programmes and capacity building initiatives, and perceptions of conservation professionals (Blickley et al., 2013; Barlow et al., 2016; Parsons & MacPherson, 2016; Lucas et al., 2017; Elliott et al., 2018; Robinson et al., 2018), collectively highlighting gaps in non-technical skills and knowledge (interpersonal skills, communication, project management, interdisciplinary skills, strategic thinking, problem solving). A disconnect has been observed between formal pre-professional education received and the competences (i.e. knowledge, skills, abilities and related characteristics) needed for complex demands in situations encountered in conservation practice (Lucas et al., 2017). These competence requirements also vary by employer type (Blickley et al., 2013), geographical location of employment, and the location of the professional development provision (Barlow et al., 2016; Lucas et al., 2017; Elliott et al., 2018). Professional development opportunities are therefore important for attracting and retaining staff (Nielsen, 2012) and have been positively associated with motivation, engagement and job satisfaction (Purcell et al., 2003). Many factors come into play when seeking relevant competences, and needs change over time as a result of socio-economic and technological developments, altering the relevance of existing competences. Standardization of competences remains less common in conservation compared to disciplines such as healthcare and law, making it challenging to evaluate professional development initiatives and the skill levels of individuals, potentially affecting the work and career progression of conservationists (Barlow et al., 2016). Interest in standardization is now growing, however, as illustrated by the Global Register of Competences

TABLE 1 Demographic characteristics of the 22 conservation professionals, of 12 nationalities, participating in semi-structured interviews in 2017.

Characteristics	Total sample (n = 22)	Female (n = 12)	Male (n = 10)
Demographics			
Mean professional conservation experience, years (± SD)	17.5 ± 9.8	16.1 ± 10.1	19.1 ± 9.8
Mean age, years[1] (± SD)	41.3 ± 9.9	38.9 ± 10.5	43.3 ± 9.5
Employer/occupation			
University	5	1	4
Student	6	4	2
NGO	4	3	1
Government	1	0	1
Charitable organization or trust	2	2	0
Non-profit corporation	2	2	0
Not-for-profit company	2	0	2

[1]Based on eight female and 10 male professionals.

for Protected Area Practitioners (Appleton, 2016) and the Global Register of Competences for Threatened Species Recovery (Maggs et al., 2021).

Despite efforts to codify competences for conservation professionals, few studies have examined the conditions (e.g. content, format, contextual factors) required for professional development to yield positive effects on individual capacity and work performance, here called effective professional development. Our study addresses this. We defined a conservation professional as an individual who is paid or receives compensation in exchange for work supporting nature conservation goals. The process of professional development and learning outcomes is largely dependent on the behaviour of professionals, such as participating in professional development and applying newly acquired competences (Brekelmans et al., 2016). The availability of resources and opportunities also influences whether new behaviour will occur (Purcell et al., 2003). We explore professional development across a variety of contexts, rather than following a case-study approach examining specific resources or opportunities, so we do not examine the perspectives of conservation organizations, and organization types were therefore not relevant to the scope of this study. Based on our research results, we were nevertheless able to make recommendations for how organizations could support employees in optimizing their professional development and learning outcomes.

We used semi-structured interviews with conservation professionals to explore professional development needs and provision by looking beyond learning content. To achieve this, we adopted a three-dimensional definition of work performance from other sectors (Koopmans, 2014) that separates task performance, contextual performance and adaptive performance. Task performance is the competence where an individual performs core technical tasks central to their job (Campbell et al., 1990). Contextual performance involves competences addressing the psychological, social and organizational environment (Motowidlo & Van Scotter, 1994). Adaptive performance is the ability to adjust to changes in work roles or work environment (Griffin et al., 2007). Our findings are intended to help conservation organizations and donors assess the quality of professional development provision, and to help professionals consider the quality of development they undertake. By including insights from other disciplines, such as education and healthcare, we aim to inform approaches to capacity development in global conservation.

Methods

Participants and interview guide

We used a qualitative research methodology as this was an exploratory study, with limited prior empirical evidence, so that we could generate propositions for future research (Newing, 2011). We chose convenience sampling (Newing, 2011), recruiting participants from three sources: (1) the University of Kent, UK, (2) attendees at an international conference of conservation professionals (University of Pune, India, 18–21 March 2017), and (3) our professional networks, thereby drawing people from a range of ages, roles and settings. All 22 respondents had professional experience working in countries with high biodiversity where capacity and access to resources are limited (in Africa, Latin America and developing regions in Asia), and were interviewed by TACL (Table 1). The sample size was adequate to identify meta-themes across different sites and to reach saturation; i.e. when new information results in little to no change to the codebook (Hagaman & Wutich, 2017). Prior to interviews, respondents were informed by e-mail of the research aims, and assured anonymity, confidentiality and freedom to withdraw from the study at any time. Interviews were conducted during March–June 2017 at a location convenient to the interviewee, with no non-participants except for one interviewee whose colleague was present. The semi-structured interviews lasted an average of 74 minutes

TABLE 2 Quotes from interviews with 22 conservation professionals during March–June 2017, illustrating key components 1 and 2, and their sub-components, of effective professional development related to learning design and implementation.

Key & sub-component(s)	Illustrative quote
1. Learner-centred	
Application of competences	People need to be given the space to put what they are learning into practice. Either they first learn the theory & then they do the practice or they are doing it as they are going along. (Respondent 2)
Facilitating various learning styles & social learning	I learn from seeing & trying to copy it. Only reading does not really work for me. To work together & then practice it straight away is more beneficial to me. (Respondent 3)
Different levels of advancement	You are recognized officially & internationally that you are certified as a practitioner at a certain level. Then there are different levels & this is motivating you to improve. (Respondent 4)
Structured & sustained follow-up	Normally we provide training, but it is not one short training, there is also refresher training after 6 months. (Respondent 5)
2. Evidence-informed & data-driven	
Empirical evidence from research, evaluation & data	A lot of times it's just training because they just need to tick the box [...] to say that we trained 50 people in this. There is no real follow up to make sure that people actually learnt something new. (Respondent 6)
Professional judgement	A lot of it is intuitive, a lot of it is trial & error [...] I don't need a full formal written evaluation to know whether it [training] is working. (Respondent 7)
Qualitative & quantitative indicators of success	How do you measure capacity development when so much of it is about relationships & not necessarily about how many times somebody went to a workshop? [...] You are not looking at the real lessons [learnt], you are looking at what is feasible to be counted. And often the things that are feasible to be counted are not what drive success. A lot of resources are put in the wrong place, because of those disconnects. (Respondent 1)

(range 30–130 minutes). Questions followed an interview guide (Supplementary Material 1) and a checklist developed by Tong et al. (2007) to promote explicit and comprehensive reporting in qualitative research (Supplementary Table 1).

Analysis

Interviews were audio recorded, transcribed verbatim, and coded in *NVivo 12* (QSR International Pty Ltd., 2018) using keywords to categorize positive and negative perceptions and conceptual links, so that we could identify patterns and themes. We followed Braun & Clarke's (2006) thematic analysis and used both the inductive development of codes as well as a deductive approach to identify factors purported to influence professional development and learning outcomes (Bradley et al., 2007). For the deductive approach, we used various start lists from previous research in other sectors (e.g. Campbell et al., 2017). Themes were identified, refined and/or expanded through comparison of data to identify theoretical saturation (Hagaman & Wutich, 2017). During transcription, participants were assigned ID numbers, and these are used hereinafter.

Results

All interviewees had recent (< 6 months before interview) experience of employed professional work in conservation. Eleven of the 22 participants were professionals in conservation roles at the time of interview. University-based participants included two senior lecturers, two lecturers, one postdoctoral researcher, one doctoral student and five MSc students (Table 1).

Characteristics of effective professional development We identified seven components and three higher-order themes of professional development (Tables 2, 3 & 4), and used these to form an effectiveness framework for professional development; i.e. a system of key components that can be used to plan or decide on professional development (Fig. 2). All interviewees shared experiences covering at least one identified component; 86% (19/22) of respondents reported experiences in four or more components.

1. Learner-centred This component comprised learner-centred descriptions of effective professional development reflecting adult learning theories, including experiential learning (i.e. learning from doing), and direct application of learning to work practice (Table 2). Some respondents highlighted the role of supervisory coaching and support to integrate newly acquired competences, whereas others mentioned learning with peers. Most interviewees described social learning experiences in organizations or wider professional networks. Some respondents stressed that structured and sustained follow-up after the development intervention (e.g. workshop) improves the effectiveness of learning.

2. Evidence-informed and data-driven Few people reported evidence-based learning initiatives and few initiatives were

TABLE 3 Quotes from interviews with 22 conservation professionals during March–June 2017, illustrating key components 3 and 4, and their sub-components, of effective professional development related to quality of content.

Key & sub-component(s)	Illustrative quote
3. A focus on both technical & contextual competences	
Motivation to learn	There are always new things to learn. The minute you say 'I know everything & I am done with everything', that is when you start stagnating. (Respondent 8)
Proactivity	The education system is very teacher-centred, so they wait for the teacher to tell them what to do. [...] Whereas [in] more modern education systems, it's centred around the child, & so that, when the child grows up & gets into real life & gets a job, they are not waiting for their boss to do anything; they can actually generate work for themselves. It makes it much easier for an organization to grow when you have people that are self-motivated & very confident, that can generate ideas. (Respondent 2)
Open-mindedness	We're nowadays required to be able to transit in different cultures & perform well, even though the culture is different. We need to be open-minded, we need to understand that people & cultures are different. (Respondent 9)
4. Balance between employee voice & organizational goals	
Identifying needs & priorities	We have a training needs analysis at the start of the year for every staff. The staff pick the courses that they want to do for their own professional development & then discuss the courses with their line manager or reporting officer to agree why these courses are taken. (Respondent 10)
Professional development plans	If you work for an organization, you will need a career development plan, so they would invest in you. And that way you might stay with them. (Respondent 11)
Return on investment	Now people have started [...] actually signing up on legalized papers saying that after getting this training I am putting in 3 years of work. (Respondent 8)

prompted by data. Professional expertise and judgement were mentioned as important when assessing people's effectiveness (Table 2) but performance analyses at employee and/or organizational level were rarely reported. Respondent 1 mentioned that a range of indicators of conservation and professionalization outcomes is important, including quality and quantity. A starting point for developing qualitative indicators, according to this respondent, is to explore how knowledge exchange is influenced by context (e.g. national culture, organizational norms).

3. A focus on both technical and contextual competences Most comments addressed non-technical activities, termed contextual competences (Koopmans, 2014), such as communication and interpersonal skills (Supplementary Table 2). Several respondents emphasized that a professional has to maintain up-to-date skills and knowledge, known as adaptive competences (Koopmans, 2014). Motivation to learn, proactivity and open-mindedness (to new information and the viewpoints of others) were perceived to enhance the ability to learn (Table 3).

4. Balance between employee voice and organizational goals This component relates to development that balances both the needs of employees and organizational goals (Table 3). A skill-gap analysis was said to help identify discrepancies between employees' competences and those required for the job. Several respondents noted that development initiatives should address urgent and current needs. Some said that professional development plans could help balance career aspirations with organizational objectives, which people felt would enhance relationships with employers. Where an imbalance occurred, interviewees reported decreased motivation and increased intention to leave.

5. Sufficient and equally distributed resources and opportunities This component places importance on sufficient and equally distributed opportunities and resources (e.g. funding) for professional development (Table 4). Respondent 12 noted that in 20 years of receiving international funding for conservation in their country, none was invested in building relevant expertise in-country, resulting in significant project delays when external experts could not enter because of natural disasters and political difficulties. Interviewees were supportive of needs-based approaches, yet the experience of three professional development providers suggested that, when asking employees to list their needs, these lists tended to be long and undeliverable. Instead, they suggested that staff are helped to develop independence in building their own capacity, including conservation leadership and fundraising capability, especially in biodiversity-rich countries with limited resources (Table 4).

6. Supportive and engaged leadership The roles of leaders in facilitating a learning culture was highlighted, with an emphasis on leaders' supportiveness and engagement in learning. Interviewees mentioned that leaders should actively value professional development; e.g. by providing development to staff and communicating openly about

TABLE 4 Quotes from interviews with 22 conservation professionals, during March–June 2017, illustrating key components 5–7, and their sub-components, of effective professional development related to support and sustainability.

Key & sub-component(s)	Illustrative quote
5. Sufficient & equally distributed resources & opportunities	
Developing leadership in the global south	If you would talk to someone on my team & ask 'what are your professional development needs?', you will get a huge list [...] But the point is that it is just a list, [...] my main challenge is: how do I grow conservation leaders? [...] I need people who will inspire & drive & motivate others. (Respondent 7)
The need for sufficient & equal opportunities to grow	I got in[to] a university but I couldn't get a scholarship because I was not affiliated with academia [...] I spent almost 2 years in the field: I went to the national park that is in the middle of nowhere, is there more motivation than that? [...] You don't get the chance to just expand [grow]; that is not fair. (Respondent 14)
Working towards equal funding opportunities in conservation	What I've always heard is: 'We need people to be able to manage their resources'. And it's true, but how are we going to get there? Funding is very ad-hoc right now. It's very much about who is 'in the know'. And I think that is where we want to break the cycle; everybody has to be able to be part of it. (Respondent 13)
6. Supportive & engaging leadership	
Leaders commit to professional development (values)	There is a recognition within the organization that professional development is important & once they identify the need, they will try to find means to make it happen. (Respondent 9)
Leaders' characteristics & thinking (attitude)	One problem is staff turnover [...] but I don't see it as a problem. For me, if someone gets a good opportunity [...] we have helped them gain knowledge from our project. That is fine. We always have a contingency plan. (Respondent 5)
Leaders provide opportunities for professional growth (behaviour)	I can learn many things & my boss also gives me more responsibility. Even if it's out of my comfort zone, I am willing to do it & they can see that. (Respondent 3)
Leaders discuss professional development with their employees (communication)	Where I felt that people tend to leave & go [is when] there is no growth potential for them [...] [A] needs assessment of the organization & also of the individual. [...] That transparent & open communication environment that is there, so formal & informal mechanisms of filling this information in. (Respondent 8)
7. Strategic & aligned professional development	
Need for strategic capacity development	There's no strategy. [...] From my experience in the NGO, instead of being like: 'right, what capacity do we need for our staff in X, Y & Z positions & how are we going to build that capacity?', it's a case of 'I got an email [...] they are offering training [on] how to be a good community facilitator for climate change adaptation. That guy working with communities in his park, let's send him there & he can get that training. (Respondent 15)
Readiness for change	I think that professional development is effective when the individuals in the organizations are ready for change, they recognize what that change needs to be, or ready for maintaining what seems to be working. (Respondent 1)
Gather & share evidence on capacity development initiatives	Standardize evaluations to whatever extent is possible. Because otherwise we are spending all of our time tweaking, when we could be spending all of our time expanding our reach. So I think that that's very important & I think we need to share relentlessly. (Respondent 16)
The role of donors in strategic & aligned professional development	If you wanted to make policy for increasing capacity in NGOs, all you need to do is get the donors to write it in their requirements & it would be in every proposal. But it's not what is necessarily required now. (Respondent 17)

development opportunities and decisions (Table 4). Five respondents provided a leaders' perspective, commenting that professional development is never wasted (Respondents 7 and 13), even if there is staff attrition (Respondent 8). Contingency plans are crucial in addressing staff turnover (Respondent 5), and Respondent 10 highlighted motivational approaches to prevent loss of staff. The resourcefulness and flexibility of leaders were important in creating cost-efficient development opportunities and to stabilize organizational capacity, such as attracting retired professionals as advisors.

7. Strategic and aligned professional development This component concerned strategic capacity development aligning individual, organizational and wider interests (e.g. regional, sectoral). Overall, respondents noted that priorities for learning were driven by external funding rather than organizational strategies (Table 4). Where capacity development strategies were present, these were generally not integrated in the overarching strategic processes of organizations, and donor interests influenced implementation. Some participants noted the importance of individual and organizational readiness to change (Table 4).

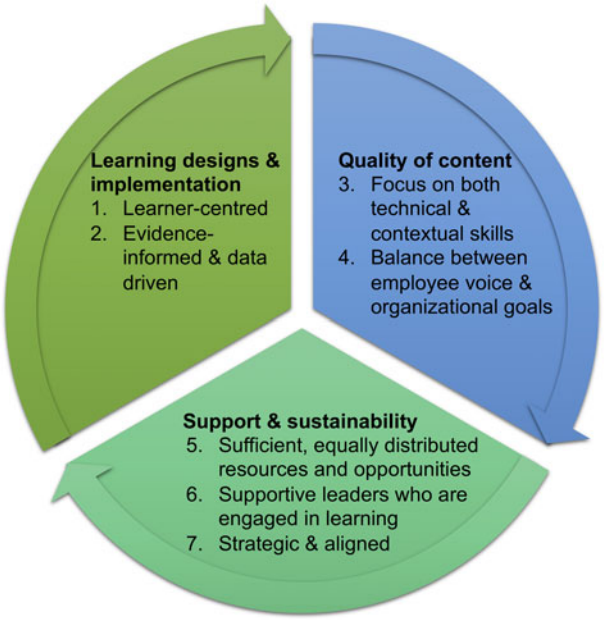

FIG. 2 Effectiveness framework for professional development, adapted from a framework for education (Campbell et al., 2017). This framework comprises three higher-order themes and seven key components (Tables 2, 3 & 4), indicating how higher-level components encompass and set prerequisites for effective professional development. This framework was derived from interviews with 22 conservation professionals.

For example, Respondent 8 observed a conservation organization sending staff for external training, but afterwards giving people the same work and no career progression, which impeded the organization's sustainability, and many of its programmes failed. Multiple interviewees recommended gathering evidence on effective capacity development and sharing this between organizations (Table 4).

Discussion

Our findings, based on the views of a sample of conservation professionals, reflect previous research in the education sector (Campbell et al., 2017), and suggest seven key components for effective professional development (Fig. 2). There is considerable overlap between components and therefore our discussion addresses three higher-order themes: learning designs and implementation, quality of content, and support and sustainability.

Learning designs and implementation

There are many approaches to professional development (e.g. training, mentoring) and no single approach will suit all individuals under all conditions. Our findings are congruent with constructivist theories (Mathieson, 2015) and demonstrate that professional development interventions should be grounded in adult learning theory, learner-centred, tailored to learners' previous knowledge and experiences, suited to engage with participants' various learning styles, and focused on integration of newly acquired competences into work. Most respondents highlighted the importance of social learning experiences, reflecting both social learning theory (Bandura, 1971) and empirical evidence (Campbell et al., 2017; Kainer et al., 2019). The success of any method will depend on the competences being developed. Learning cycle theories and competence registers can offer guidance in the design of learning processes, including which activities and techniques develop specific competences (e.g. Gibb, 2002; Kainer et al., 2019).

Our study revealed that few reported professional development initiatives were evidence-informed, similar to findings in healthcare and education (Schostak et al., 2010; Campbell et al., 2017). Our findings suggest quantitative indicators of capacity development may obscure what drives success and poorly reflect the true complexity of practice (Schostak et al., 2010). Qualitative indicators of success, combined with quantitative measures (e.g. the most significant change approach; Davies & Dart, 2005), may address this, especially for contextual and adaptive competences, which are harder to measure. Before implementation, a professional development initiative should have a clear purpose and rationale, in addition to measurable learning outcomes, progress indicators and a method of evaluation (Guskey, 2000). Evaluation should consider the time required to practise and integrate newly acquired competences on the job and for changes in the wider organization to occur (Kainer et al., 2019). Evaluations should include details of the pedagogical activities implemented and the theory that both pedagogy and outcomes were based upon, to measure professional development quality and to attribute any improvements (Payler et al., 2008).

Quality of content

Conservation professionals need contextual skills (e.g. interpersonal and communication skills), as identified in this study and previous research (e.g. Blickley et al., 2013; Parsons & MacPherson, 2016). Continuous learning is important for organizations focused on innovation (Psarras, 2006), so it is unsurprising that interviewees indicated keeping knowledge up-to-date as a key skill. Characteristics supporting this ability were motivation to learn, open-mindedness (e.g. towards the viewpoints of others), and proactivity (i.e. initiating change). These findings align with research in healthcare: increased motivation to learn encouraged nurses' participation in professional development (Brekelmans et al., 2016). Open-mindedness facilitates work across science, policy and practice

boundaries, an identified capacity gap within conservation (Elliott et al., 2018). Van Woerkom & Meyers (2018) found self-efficacy to be a prerequisite for engaging in personal growth activities; people's belief in their abilities to master challenges and achieve desirable outcomes was followed by their proactivity towards personal growth. We recommend measurement of self-efficacy in future research on professional development.

Adaptivity is imperative in contexts of uncertainty or when not all roles can be formalized (Griffin et al., 2007). Our findings underline the importance of including contextual and adaptive competences (Supplementary Table 2), alongside technical/task competences, in any conservation competence register or professional development initiative. Researchers in other disciplines have already recognized that all three performance dimensions (task, contextual and adaptive) independently influence an employee's value for the organization (Griffin et al., 2007). The work performance definition adopted in our study offers a way for conservation organizations to integrate developmental behaviours to influence outcomes on an individual, organizational, and societal level. Additionally, a definition such as this can compare capability of individuals across a variety of roles and situations.

Our results indicate that a combination of organization-directed and self-directed professional development is required to balance career aspirations with organizational goals. Learners are better able to direct their growth by participating in the design of relevant learning processes (Calvert, 2016), thereby increasing their motivation to participate. Several tools were suggested by some of our interviewees, such as professional development plans, return-on-investment contracts, and needs assessments. However, needs assessments must identify underlying problems at work and barriers to wider sharing of learning, or there is a risk the approach will generate a list of wishes instead of needs (Guskey, 2000). Collectively, our findings highlight another priority area for professionals: building agency in one's own learning, namely the capacity to effectively direct one's professional growth and enable growth in others (Calvert, 2016).

Support and sustainability

The majority of interviewees reported professional development occurring sporadically, mostly because of limited funding, and some suggested that development follows external agendas such as donor requirements. Similarly, Nielsen (2012, p. 302) reported that in 832 protected area assessments in a total of 24 countries, training was 'haphazard, ad hoc and inappropriate to the needs of the staff'. Professional development that is externally driven and top-down may merely address fashionable topics (Guskey, 2000), and so people may not acquire competence and expertise needed to solve complex challenges. Countries with high biodiversity and limited resources (e.g. lack of information and human capacity) are in many cases the countries most underfunded for conservation work (Waldron et al., 2013). It is unsurprising that our respondents, all of whom had worked in biodiversity-rich yet resource-poor countries, reported unequal opportunities for professional development, and our findings suggest this decreased both morale and staff retention, congruent with previous research (Nielsen, 2012). Our interviewees reported greater satisfaction and engagement at work when they felt their employers invested in them, mirroring findings for other sectors (Purcell et al., 2003). Leaders hold significant power over resource and opportunity allocation; so clear communication and decision-making can influence perceptions of fairness. Leaders have important roles in promoting a learning culture, and should commit to the development of all who affect conservation outcomes, including staff, communities, and external beneficiaries, thereby promoting engagement, staff retention and fruitful partnerships (Psarras, 2006). Successful alignment of capacity development requires stakeholder buy-in, as well as fitting programmes within wider, country-specific workforce strategies, including long-term (i.e. >5 years) support (Aring & DePietro-Jurand, 2012). Sectoral leaders (e.g. donors) can demonstrate how they value learning and improvement by prioritizing issues related to learning, enabling participation and co-design of professional development (Marsick & Watkins, 2003), and providing both consistent funding and time. They can also provide sector-wide coordination of knowledge exchange, evaluation and policy development (Aring & DePietro-Jurand, 2012).

One definition of successful professional development that emerged from our study is knowing how a learning opportunity can help improve conservation practice and how this change fits into the wider environment, whether organizationally, or across society, geographical area or sector. Guskey (2000) suggested the effectiveness of professional development initiatives should be measured against two criteria: quality and value. The quality of an initiative is measured against its intended goal; e.g. learning objectives (inputs, Fig. 1). The value of an initiative is determined from fulfilment of needs; e.g. the needs of an individual professional, delivery of the conservation organization's mission or contribution to the public good (outcomes and impact, Fig. 1). Quality and value should be considered in selection and evaluation of professional development initiatives.

The active process of growth and development of a conservation professional, as a set of behaviours, largely depends on an individual's beliefs (e.g. attitudes, values and norms), self-perception of their abilities, intention to perform a certain behaviour (Ajzen, 1985), and perceptions of

their work environment (Purcell et al., 2003). In this study, we focused solely on the individual level; i.e. data concerning the individual's perspectives of professional development. The availability of resources and opportunities to support professional development also influences whether this process delivers valued learning outcomes. Future research could usefully include measures of organizational mechanisms, resources and opportunities.

Implications for conservation organizations

Our research provides guidance on designing professional development initiatives and assessing the quality of professional development in conservation. Our effectiveness framework for professional development includes recommendations covering planning, design, implementation and evaluation, going beyond common assessments that solely measure learner satisfaction. We recommend involving interested parties and advisers from the outset of a professional development initiative, to ensure a collaborative approach that is socially relevant and builds learner agency. We also conclude that more research is needed on the effects and causality of professional development on short-, medium- and long-term outcomes. Taking an interdisciplinary approach to this kind of research may help establish quantitative and qualitative evidence of transformed conservation practice, organizational sustainability, higher quality experiences for beneficiaries and improved conservation impacts. Internal factors for any conservation organization (e.g. management, resources, culture) and external contextual influences (e.g. economic, social and political factors) should be considered.

Learning and working are interconnected. Organizations involved in conservation activities will not improve outcomes for biodiversity unless employees grow professionally, improve practice, and build organizational memory and expertise. This study identified organizational and systemic changes required to accommodate and facilitate these individual improvements. Although there is no single approach to creating effective professional development, we hope our framework serves as a timely contribution to the literature on capacity development.

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References

Ajzen, I. (1985) From intentions to actions: a theory of planned behavior. In *Action-control: From Cognition to Behavior* (eds J. Kuhl & J. Beckmann), pp. 11–39. Springer, Heidelberg, Germany.

Appleton, M.R. (2016) *A Global Register of Competences for Protected Area Practitioners*. IUCN, Gland, Switzerland. iucn.org/content/a-global-register-competences-protected-area-practitioners [accessed 8 February 2022].

Aring, M. & DePietro-Jurand, R. (2012) *Technical and Vocational Education and Training. Promising Youth Development Strategies*. Education Development Center, Newton, USA.

Bacon, E., Gannon, P., Stephen, S., Seyoum-Edjigu, E., Schmidt, M., Lang, B. et al. (2019) Aichi biodiversity target 11 in the like-minded megadiverse countries. *Journal for Nature Conservation*, 51, 125723.

Bandura, A. (1971) *Social Learning Theory*. General Learning Press, New York, USA.

Barlow, A., Barlow, C.G., Boddam-Whetham, L. & Robinson, B. (2016) A rapid assessment of the current status of project management skills in the conservation sector. *Journal for Nature Conservation*, 34, 126–132.

Blickley, J.L., Deiner, K., Garbach, K., Lacher, I., Meek, M.H., Porensky, L.M. et al. (2013) Graduate student's guide to necessary skills for nonacademic conservation careers. *Conservation Biology*, 27, 24–34.

Bradley, E.H., Curry, L.A. & Devers, K.J. (2007) Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Services Research*, 42, 1758–1772.

Braun, V. & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77–101.

Brekelmans, G., Maassen, S., Poell, R.F., Weststrate, J. & Geurdes, E. (2016) Factors influencing nurse participation in continuing professional development activities: survey results from the Netherlands. *Nurse Education Today*, 40, 13–19.

Calvert, L. (2016) *Moving From Compliance to Agency: What Teachers Need to Make Professional Learning Work*. Learning Forward and NCTAF, Oxford, USA.

Campbell, C., Osmond-Johnson, P., Faubert, B. & Hobbs-Johnson, A. (2017) *The State of Educators' Professional Learning in Canada*. Learning Forward, Oxford, USA.

Campbell, J.P., McHenry, J.J. & Wise, L.L. (1990) Modeling job performance in a population of jobs. *Personnel Psychology*, 43, 313–333.

Davies, R. & Dart, J. (2005) *The 'Most Significant Change' (MSC) Technique: A Guide to Its Use*. mande.co.uk/wp-content/uploads/2018/01/MSCGuide.pdf [accessed 8 February 2022].

Elliott, L., Ryan, M. & Wyborn, C. (2018) Global patterns in conservation capacity development. *Biological Conservation*, 221, 261–269.

Geldmann, J., Coad, L., Barnes, M.D., Craigie, I.D., Woodley, S., Balmford, A. et al. (2018) A global analysis of management capacity and ecological outcomes in terrestrial protected areas. *Conservation Letters*, 11, e12434.

Gibb, A. (2002) In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews*, 4, 233–269.

Griffin, M.A., Neal, A. & Parker, S.K. (2007) A new model of work role performance: positive behavior in uncertain and

interdependent contexts. *Academy of Management Journal*, 50, 327–347.

Guskey, T.R. (2000) *Evaluating Professional Development*. Corwin Press, Thousand Oaks, USA.

Hagaman, A.K. & Wutich, A. (2017) How many interviews are enough to identify metathemes in multisited and cross-cultural research? Another perspective on guest, Bunce, and Johnson's (2006) landmark study. *Field Methods*, 29, 23–41.

James, R. (2009) *Just Do It: Dealing with the Dilemmas in Monitoring and Evaluating Capacity Building*. Praxis Note 49. INTRAC, Oxford, UK.

Kainer, K.A., López Binnqüist, C., Dain, J.L., Contreras Jaimes, B., Negreros Castillo, P., Gonzalez Basulto, R. et al. (2019) Leading by listening, learning by doing: modeling democratic approaches to conservation leadership in graduate education. *Journal of Environmental Studies and Sciences*, 9, 206–217.

Killion, J. (2013) *Comprehensive Professional Learning System: A Workbook for States and Districts*. Learning Forward, Oxford, USA.

Kirkpatrick, D.L. (1996) Techniques for evaluating training programs. *Training & Development Journal*, 50, 54–59.

Koopmans, L. (2014) *Measuring individual work performance*. PhD thesis. Vrije Universiteit, Amsterdam, The Netherlands.

Lucas, J., Gora, E. & Alonso, A. (2017) A view of the global conservation job market and how to succeed in it. *Conservation Biology*, 31, 1223–1231.

Lusthaus, C., Adrien, M. & Perstinger, M. (1999) Capacity development: definitions, issues and implications for planning, monitoring and evaluation. *Universalia Occassional Paper*, 35, 1–21.

Maggs, G., Appleton, M., Long, B. & Young, R.P. (2021) *A Global Register of Competences for Threatened Species Recovery Practitioners: A Comprehensive List of Skills, Knowledge and Personal Attributes Required by Practitioners Working Within Threatened Species Recovery*. IUCN, Gland, Switzerland. doi.org/10.2305/IUCN.CH.2021.09.en [accessed 8 February 2022].

Marsick, V.J. & Watkins, K.E. (2003) Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources*, 5, 132–151.

Mathieson, S. (2015) Student learning. In *A Handbook for Teaching and Learning in Higher Education,* 4th edition (eds H. Fry, S. Ketteridge & S. Marshall), pp. 63–79. Routledge, Oxon, UK.

Motowidlo, S.J. & Van Scotter, J.R. (1994) Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology*, 79, 475–480.

Müller, E., Appleton, M.R., Ricci, G., Valverde, A. & Reynolds, D.W. (2015) Capacity development. In *Protected Area Governance and Management* (eds G.L. Worboys, M. Lockwood, A. Kothari, S. Feary & I. Pulsford), pp. 251–290. Australian National University Press, Canberra, Australia.

Newing, H. (2011) *Conducting Research in Conservation: A Social Science Perspective*. Routledge, Oxon, UK.

Nielsen, G. (2012) Capacity development in protected area management. *International Journal of Sustainable Development and World Ecology*, 19, 297–310.

Parsons, E.C.M. & MacPherson, R. (2016) Have you got what it takes? Looking at skills and needs of the modern marine conservation practitioner. *Journal of Environmental Studies and Sciences*, 6, 515–519.

Payler, J., Meyer, E. & Humphris, D. (2008) Pedagogy for interprofessional education – What do we know and how can we evaluate it? *Learning in Health and Social Care*, 7, 64–78.

Psarras, J. (2006) Education and training in the knowledge-based economy. *VINE: The Journal of Information and Knowledge Management Systems*, 36, 85–96.

Purcell, J., Kinnie, K., Hutchinson, R., Rayton, B. & Swart, J. (2003) *Understanding the People and Performance Link: Unlocking the Black Box*. CIPD Publishing, London, UK.

QSR International Pty Ltd. (2018) *NVivo*. qsrinternational.com/nvivo-qualitative-data-analysis-software/home [accessed 18 February 2022].

Robinson, B.S., Creasey, M.J.S., Skeats, A., Coverdale, I. & Barlow, A. (2018) Global survey reveals a lack of social marketing skills in the conservation sector and shows supply of training doesn't meet demand. *Social Marketing Quarterly*, 25, 9–25.

Schleicher, J., Peres, C.A. & Leader-Williams, N. (2019) Conservation performance of tropical protected areas: how important is management? *Conservation Letters*, 12, e12650.

Schostak, J., Davis, M., Hanson, J., Schostak, J., Brown, T., Driscoll, P. et al. (2010) *The Effectiveness of Continuing Professional Development*. College of Emergency Medicine, London, UK.

Simister, N. & Smith, R. (2010) *Monitoring and Evaluating Capacity Building: Is it Really That Difficult?* Praxis Paper 23. INTRAC, Oxford, UK.

Sterling, E.J., Sigouin, A., Betley, E., Zavaleta Cheek, J., Solomon, J.N., Landrigan, K. et al. (2021) The state of capacity development evaluation in biodiversity conservation and natural resource management. *Oryx*, published online 21 December 2021.

Tong, A., Sainsbury, P. & Craig, J. (2007) Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19, 349–357.

van Woerkom, M. & Meyers, M.C. (2018) Strengthening personal growth: the effects of a strengths intervention on personal growth initiative. *Journal of Occupational and Organizational Psychology*, 92, 98–121.

Waldron, A., Mooers, A.O., Miller, D.C., Nibbelink, N., Redding, D., Kuhn, T.S. et al. (2013) Targeting global conservation funding to limit immediate biodiversity declines. *Proceedings of the National Academy of Sciences*, 110, 12144–12148.

Weiss, H., Klein, L., Little, P., Lopez, M.E., Rothert, C., Kreider, H. & Bouffard, S. (2006) Pathways from workforce development to child outcomes. *The Evaluation Exchange*, 11, 2–4.