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ABSTRACT

Best Practice Principles for Impact Assessment (IA) Teaching and Training were developed for the International Association for Impact Assessment (IAIA). Research conducted throughout 2018 and 2019 encompassed seven iterative steps: an initial practitioners workshop; comprehensive review of 40 years of literature on teaching IA; initial survey of teachers and trainers; follow-up interviews; development of draft set of principles; final survey of the importance of the draft principles to university teachers and professional development trainers in IA; and a final workshop at IAIA19. The resulting principles are grouped in relation to content (what is taught), pedagogy (how content is taught) and skills development. From 29 draft principles, those identified as 'Extremely Important' or Very Important' (28 in total) in the final survey were included in the Principles published by IAIA. Differences in relative importance of the principles are apparent between teachers and trainers, reflecting their different teaching contexts and objectives. It is hoped that the principles can contribute to more consistent and more effective IA education, contributing in turn to improved IA practice.

Keywords: impact assessment; teaching; training; learning; capacity building; best practice principles

1. Introduction

There is a long history of literature on the teaching and training of impact assessment (IA) dating back at least four decades. The earliest sources we could find were Bisset and Tomlinson (1985), Lee and Wood (1985) and Wood (1985), but, each of these papers also references grey literature materials specifically about IA teaching going back to the start of the 1980s. We did not find any reference to published works from the 1970s, IA teaching must have been taking place in this, the first decade of IA practice, and passing mentions of training courses do appear in Wolf (1975), Andrews (1976) and O'Riordan (1976). Since the 1980s there has been a modest but steady output of literature specific to IA teaching and training. As will become evident, most of these works report on teaching curriculum and approaches in particular regions or jurisdictions. There has been little attention specifically devoted to understanding and distilling international principles describing how IA might be best taught.

The purpose of this research was to establish international best practice principles for teaching IA. This is the first study to attempt this in a dedicated and systematic way. The research was supported by an Innovation Grant from the International Association for Impact Assessment (IAIA), leading to the development of a resource to inform the ongoing development of IAIA training courses and to support members of the Association involved in teaching IA in higher education institutions. A synthesis account of the key findings has previously been published as *International Best Practice Principles for Teaching Impact Assessment* (Pope and Morrison-Saunders, 2018). Here a full account of the research methods and findings and the comprehensive literature review underpinning this work is presented along the final set of international best practice principles for teaching IA. It is hoped that the principles, and the resources underpinning their development as summarised in this paper, will contribute to more consistent and more effective impact assessment education, contributing in turn to improved IA practice.

2. Research design and approach

We adopted a mixed-methods approach to data collection and analysis comprising reflexivity, workshops, literature review, surveys and interviews. Each of these is described in sequence below, although in reality the process was somewhat iterative with different components overlapping as various themes emerged and were pursued.

2.1 Initial workshop

Our research commenced at a symposium for IA practitioners held in Melbourne, Australia in February 2018. Here we ran a workshop based around two prompting questions, in which we participated ourselves as respondents as well as facilitators. We encouraged the 19 participants to consider their own personal experiences as teachers (in whatever capacity that might take, ranging from academics teaching IA courses at university to academics or practitioners delivering training courses to IA professionals to providing on-the-job training and mentoring in the workplace), and to share this in a round-table discussion within two small groups. Thus, our principal method was based on reflexivity and narrative utilising our

own identities and lived realities (Elliott, 2005; Fox et al. 2007) with further brainstorming and refinement through small-group discussion, serving as focus groups (Ritchie, 2003). From the notes recorded by each group, we assembled some 24 preliminary best practice principles for teaching IA. The prompting phrase: "IA should be taught in a manner that involves…" provided a list of 17 points with a further seven points emerging in response to the prompting question "What needs to be taught?". With regards to the second question, we had specifically directed our workshop participants not to itemise the obvious steps of the IA processes that would be included in a university or training course (e.g. such as screening, scoping, impact prediction etc) but rather to consider foundational or fundamental considerations central to IA. These 24 preliminary principles provided a focus for our literature review.

2.2 Literature review

The first step in developing our principles for teaching IA was to conduct a literature search involving:

- relevant literature familiar to us from our own previous research on the topic;
- searches within our university library catalogue which includes access to multiple online databases (e.g. including Scopus and Web of Science) using keyword combinations of "impact assessment" and "teaching" or "training" along with synonyms to these;
- similar keyword searches within the websites of the three main IA journals (*EIA Review*, *Impact Assessment and Project Appraisal*, *Journal of Environmental Assessment Planning and Management*) along with more specific searches using terms from our list of preliminary principles;
- asking survey and interview respondents to recommend literature on IA teaching;
- checking the reference list within the publications we sourced to identify further (i.e. older) items; and
- performing citation searches on the publications we sourced to identify further (i.e. newer) items in the field.

This systematic approach to identifying relevant literature (e.g. Bloomberg and Volpe, 2008; Grant and Booth, 2009) gives us confidence that we have located the vast majority of mainstream published literature (in English) on the specific topic of teaching IA. We have referenced all of this literature in this paper, so that our reference list can serve as a comprehensive list of the IA teaching field literature at this point in time. In making this claim, we acknowledge that grey literature is also an important input to the field. Grey literature referenced in publications of the 1990s and earlier is not readily accessible because it precedes digital or online publishing, whereas contemporary grey literature sources could be more easily included in our research. Occasionally we located both a grey literature item and a formal published work for the same content, in which case we only cite the latter in this paper. Finally, we acknowledge that there is long-standing literature on environmental and sustainability education as well as for other professions (e.g. engineering, planning, health sciences) which may be peripherally relevant to our research aim but which we have specifically excluded from consideration in this research.

Since virtually none of the literature collected engaged specifically with "principles" of IA teaching as a concept or topic in its own right (an exception here being Cherp 2008), we needed to 'analytically interpret ideas' (Bloomberg and Volpe, 2012, p74) from the published works in the context of our preliminary principles. This process, together with the results of our initial survey (Section 2.3) and interviews (Section 2.4), contributed to the development of an expanded and revised list of draft principles for teaching IA (Section 2.5), which formed the basis of our final survey (Section 2.6). Our account of the literature is presented in Section 3.

2.3 Initial survey

An initial self-administered survey was developed and issued to relevant IAIA members. The survey instrument comprised just two open ended prompts:

- Please complete the following sentence. *Impact assessment should be taught in a manner that involves…*; and
- Please provide an explanation of how you achieve this in your teaching practice.

As identified by Neuman (2014, p333), this open question approach had a number of advantages including permitting an unlimited range of possible answers and enabling creativity and self-expression by participants. In designing the survey in this way, we hoped to expand our list of preliminary IA teaching principles and to confirm the validity of those we had already identified.

The survey instrument was made available online. A letter of invitation was sent (in May 2018) by administrative staff from IAIA to all trainers and academics in their membership list seeking their engagement with the instrument prior to the IAIA2018 annual conference later that same month. The short notice may have restricted the number of people who responded to the survey, but a total of 50 responses were received. From these, a number of potential new IA teaching principles were identified and added to our list. In the letter of invitation that accompanied the initial survey instrument, we indicated our interest in interviewing IA practitioners involved in teaching and training activities.

2.4 Interviews

Follow-up interviews were initially conducted during session breaks at the IAIA2018 annual conference in Durban, South Africa. Further interviews were conducted over several weeks following the conference using electronic communications or carried out opportunistically in person where possible. A total of 21 interviews were conducted. For the interviews, we posed the same two questions as utilised in the initial survey. Thus, the interviews were semi-structured, comprising open questions that allowed a conversation to flow from there by stimulating our informants into talking freely (Arksey and Knight, 1999) about our IA teaching topic. This approach utilises reflexivity by the interviewees and interviewers alike (Clegg and Stevenson, 2013). The interviews generated further potential IA teaching principles that we added to our list.

2.5 Development of draft principles

To design the final survey instrument, we examined our list of preliminary IA teaching principles (which now contained 31 entries) to identify themes by making conceptual linkages between expressions (Ryan and Bernard 2003). This process resulted in three groupings of the principles in relation to *content* of IA courses (i.e. what is taught), *pedagogy* (i.e. how it is taught) and the *skills* that should be developed by learners. We also eliminated repetition or overlap in the principles and clarified the wording for each to ensure they each represented a discrete consideration. This process resulted in 29 draft IA teaching principles (each are explained later on) to be included in our final survey instrument.

2.6 Final survey

The purpose of the final survey was to understand the relative importance of the 29 draft IA teaching principles to different teachers and trainers. To this end, three sets of questions were employed in the survey which was administered online in a similar way to the initial survey. While it has been noted that there are numerous different types of IA teaching, including undergraduate level, postgraduate level, continuing education, short courses and on-the-job training (Lee and Wood, 1985; Lee, 1988; Clark 1999; Stelmack et al, 2005), for the purposes of this research conducted under the auspices of IAIA, two main categories of teaching were felt to be most relevant. These were university teaching and professional training. Thus, the survey commenced with a fixed option question served to differentiate between respondents who deliver:
(i) university *teaching* only (whether at undergraduate or postgraduate level),
(ii) professional *training* courses (which can range from those delivered within a particular jurisdiction on a specific aspect of IA practice through to more general professional development and capacity building programs offered to international participants), or
(iii) *both* of these forms of IA teaching.

The response to this question determined how the IA teaching principles were presented to each respondent with those in the *both* category being asked to provide separate responses for *teaching* or *training* purposes. Consequently, four groups of answers were ultimately generated from the survey. A total of 83 respondents completed our survey, with 39 selecting the *both* category. Thus, the total number of respondents was 122, as summarised in Table 1.

Table 1 Typology and number of survey respondents

Type of IA teaching	No.
Grp 1. University teaching only	27
Grp 2. Both – when university teaching	39
Grp 3. Professional development training only	17
Grp 4. Both – when training	39
TOTAL	122

A simple scale of importance (Thomas, 2004) was utilised to determine the perceived importance of IA teaching principles to respondents. We used a five-point scale from 'extremely' to 'very', 'moderate', 'slight' and finally 'not at all important'. At the end of each category of questions (i.e. content, pedagogy and skills) an open-ended question seeking any comments regarding the category was posed.

As ranking perceived importance represents an ordinal measure scale, use of descriptive statistics such as median for determining central tendency, frequencies for variability or box plots to visually display the range of responses by quartile (Lewandowski and Bolt 2010) was considered the best way to analysis the data obtained. This approach enabled differences between the four respondent groups to be identified. For all but one draft IA teaching principle, responses overwhelmingly fell into either the 'Very Important' or 'Extremely Important' ordinal categories. This resulted in us excluding that draft principle from our final list of 28 IA teaching principles which we presented at a workshop during the IAIA 2019 annual conference and which have subsequently been published in Pope and Morrison-Saunders (2018).

2.7 Final workshop

A workshop marking the final stage of our research was conducted at the IAIA19 conference in Brisbane, Australia. Following a presentation of our research process outlined above that lead to the derivation of IA teaching principles, we asked workshop participants to identify and explain their approaches to teaching IA and to map these in accordance with the 28 final principles. This lead to some rich discussions about IA teaching beyond the scope of this paper. Relevant, however, to our purpose here was to determine whether there were any omissions in the suite of principles or refinements that could be made in how they are expressed. No changes were made.

The next section discusses the details of the IA teaching principles followed by the analysis of their perceived importance to teachers and trainers.

3. Explanation of the IA teaching principles

In this section, we present the 29 draft best practice principles for teaching impact assessment that were posed in the final survey in the context of the literature. The material presented in this section is a compilation of literature, with the intent of providing a comprehensive collection of sources relevant to the teaching of IA. The principles are presented within the three groupings of content, pedagogy and skills, and each is expressed as a headline name and a sentence of description.

3.1 Content

Arguably the literature on IA teaching is dominated by studies that discuss the curriculum of courses. Examples here include studies that survey the status or review the curriculum for IA teaching in different settings at the global or multi-national scale (e.g. Lee and Wood, 1985; Chaibva, 2000; Gazzola, 2008a; Gazzola and Jha-Thakur, 2009; Sánchez and Morrison-

Saunders, 2010; Fischer & Jha-Thakur, 2013; Ramos et al., 2015), at the national or local level (e.g. Wood, 1985; Fuller, 1994; Onorio and Morgan, 1995; Diduck and Sinclair, 1997; Stelmack et al., 2005; Ramos et al., 2008; Weiland, 2012; Fischer, 2014; Fischer and Nadeem, 2014; Schuchter et al., 2015; Kabera, 2017; Enríquez-de-Salamanca, 2019), for individual universities, training providers or teachers (e.g. Bisset and Thomlinson, 1985; Spricis, 2001; Sánchez, 2010; Morrison-Saunders and Hobson, 2013a; b) as well as published EIA training manuals (e.g. US EPA, 1998a, 1998b; Ecaat, 2001; Sadler and McCabe, 2002; Miazga et al., 2003; Fischer et al., 2008; UNU-INWEH, 2008). Common to the majority of these works (particularly the training manuals) is the inclusion of the key impact assessment process steps and tasks (e.g. screening, scoping, prediction, consideration of alternatives, stakeholder engagement, decision-making, follow-up etc.). There is further literature that targets specific forms of IA, such as technology assessment, strategic environmental assessment or HIA, and the curriculum content advocated for those areas of speciality (e.g. Carpenter and Maragos, 1989; Strohmann 1998; United Nations Economic Commission for Europe, 2012; Pollack et al., 2015; Partidário, undated).

We do not duplicate previously published accounts of IA teaching curricula. The 10 content-related best practice principles presented here instead represent higher level considerations that could be relevant to any form of IA teaching irrespective of specific course curricula topics.

Each principle articulated below should be read with the preceding text in mind:
Best practice impact assessment teaching…

(1.1) Integrates the theory and practice of impact assessment. *Practical aspects are discussed in the context of theory, and vice versa*.
The importance of addressing both theory and practice in IA teaching features in several literature sources. Some contributions make generic statements about each dimension being important (Fischer and Nadeem, 2014; Morgan et al, 2012), others emphasise the inter-relationship between the two, with theory providing a lens through which practice can be reviewed and practice contributing to the development of theory (Petts and Brooks, 2006). Several researchers highlight that theory is informed by research in the field (which relates to the next principle).

(1.2) Incorporates research contributions. *Learners engage with emerging research in the field*.
Sources that highlight this principle include Sánchez and Morrison-Saunders (2010); Clark (1999) Schuchter et al. (2015) and Diduck and Sinclair (1997), while Pollack et al. (2015) refer to the application of foundational knowledge derived from 'readings' (p81) along with experiential learning. Enríquez-de-Salamanca (2019) is a strong advocate for university EIA teachers to also be active researchers in the field.

(1.3) Presents international best practice principles. *Learners are aware of what constitutes international best practice, regardless of the specifics of the impact assessment systems within which they operate*.
The importance of best practice principles in IA teaching is common in the literature; for example Sadler and McCabe (2002, p36) succinctly argue:

> The purpose of EIA training is to promote good EIA practice. Therefore, guidance should be provided on what constitutes good EIA practice in order to clarify the objectives and desirable content of EIA training.

Ramos et al (2008) specifically advocates the use of IAIA's principles for best practice as: 'an introductory general support for EIA course content design and evaluation, as they set out what should be emphasised and guaranteed in the courses' (p642). The rationale for this approach is clearly expressed by Sánchez (2010) who wrote: 'one aim of EIA teaching… is to avoid future practitioners reproducing current poor practices; rather, it is hoped that well-educated professionals will be able to recognise good practices' (p259). For Gazzola (2008b) IA 'principles, concepts and fundamentals of EA must be taught' (p32) as this is assumed to be important in ultimately enhancing the overall effectiveness of IA and further that they should be taught in such a way as to be 'understood within all sectors and disciplines' (p32). Gazzola and Jha-Thakur (2009) further indicate that IA education should be international so that learners could work anywhere in the world, which lends itself to teaching international best practice principles and practice.

(1.4) Presents the requirements of specific standards, regulations or procedures relevant to the participants. *Learners are familiar with the specifics of the impact assessment systems within which they operate*.

Sánchez (2010) suggests that 'in many countries EIA teaching usually starts as short-term training or informative courses mainly driven by showing "how to comply with laws and regulations" or other requirements, such as a financial institution lending policy and procedures' (p246) and from there evolves to university courses and qualifications. Reviews of IA teaching (e.g. Ramos et al., 2008; Sánchez and Morrison-Saunders, 2010) record legal, institutional and procedural aspects as being extremely common or even appearing in all examples of courses evaluated. Diduck and Sinclair, (1997) note that 'education about EA is, at least partly, *a form of public legal education*, inasmuch as it deals with EA legislation and regulation, government policy, public hearings, and administrative proceedings' (p297, emphasis added). While the IA training manual of Sadler and McCabe (2002) is intended to be applicable in developing and transitional countries anywhere in the world, the authors underscore the importance of identifying 'local IA needs and priorities' and for trainers to 'custom design training courses to meet these needs' (pv).

It is noted that this principle to some extent contradicts the previous one, which emphasises internationally accepted best practice principles (e.g. Gazzola and Jha-Thakur, 2009) rather than the specifics of the policy context within a given jurisdiction

(1.5) Explores professional ethics. *Learners are prepared to face ethical dilemmas and are aware of expected professional standards*.

Several studies mention the importance of teaching that addresses ethics in IA practice (e.g. Cherp, 2008; Ramos et al., 2008; Sánchez, 2010; Morgan, 2017) with Gazzola and Fischer (2008) including a sub-module devoted to the topic.

(1.6) Positions EIA as an interdisciplinary process. *Learners are aware impact assessment integrates different forms of knowledge*.

Writers in the field often note that impact assessment itself is inherently multi-disciplinary (Lee 1987 cited in Thomas 1992; Clark, 1999; Sánchez, 2010; Gazzola 2008a; Sánchez and

Morrison-Saunders, 2010), involving 'people with different professional backgrounds collaborating' (Morgan et al., 2012, p11) carrying out impact assessment tasks (see also Principle 3.6). Other writers note that impact assessment teaching may be accessed by professionals from a wide range of disciplines (e.g. Gazzola, 2008a, 2008b; Fischer and Jha-Thakur, 2013), and that this is an important contributor to interdisciplinary teaching (Cherp, 2008) since one of the desired qualities for an EIA professional as the 'ability to relate concepts deriving from different disciplines' (Sánchez, 2010, p259). The notion that IA itself is interdisciplinary (IAIA and IEA, 1999) and therefore that IA teaching should also be is argued by many (Stelmack et al., 2005; Lee 1987 cited in Thomas 1992; Gazzola & Jha-Thakur 2009; Sánchez, 2010; Enríquez-de-Salamanca, 2019).

In practice, Fischer and Jha-Thakur (2013) found that only 17 programmes in their sample of 106 master level degree programmes across the European Union 'were offered in an interdisciplinary manner' (p16), while in contrast Stelmack et al (2005) recorded that most of the 21 professors they interviewed in Canada 'took an interdisplinary approach teaching their courses' (p47).

(1.7) Presents impact assessment as a pluralistic process. *Learners are aware impact assessment engages with multiple stakeholders with different values and perspectives.* The pluralistic nature of impact assessment arising from the interaction of different stakeholders which makes it a 'democratic, multi-disciplinary procedure' (Stelmack et al. 2005, p36) has evoked various responses in the IA teaching literature. Here the emphasis is on exposing learners to different values and perspectives as the following examples attest. When employing a simulation game for teaching negotiation skills, Rundle (1986) reported that 'participants appreciated the importance of discovering the underlying interests of others and of revealing their own' (p260). Similarly, Sánchez (2010) identified having an 'open spirit to understand other world views and rationalities different from one's own' (p259) as one of the desired qualities for IA professionals. Cherp (2008) identified university IA teaching having a 'mission to promote open democratic societies where ideas are rigorously, critically and comparatively examined' (p24). Hobson and Morrison-Saunders (2013) observed that having students participate in class based on IA public engagement techniques (in this particular case by using a world café format) accomplished effective inter-student discussions that 'exposed them to different ideas' (p780) and was considered by the students to be more effective than previous workshop discussions. Achieving pluralism in IA teaching can also be accomplished in part by engaging a diverse audience so that training encompasses an 'array of community members, agencies, and decisionmakers including developers and elected officials' (Schuchter et al 2015, p192). Such a diverse audience may not be possible in university teaching, so Pollack et al (2015) advocate for students to work on a 'real-world concern identified in partnership with a local stakeholder' (p81). A complementary skill regarding communication between different IA stakeholders is addressed in Principle 3.5.

(1.8) Presents impact assessment as being both socio-political and technical in nature. *Learners are aware impact assessment is both an art and a science.* The relationship and potential tension between these two dimensions in IA is articulated by Sánchez (2010):

> EIA can be approached either as a sociopolitical process or as a concatenated set of technical tasks in support of decision-making — or indeed, as a balanced mix of both. The focus of teaching EIA to environmental engineering students is to introduce both, the technical tools and the sociopolitical context —always conflicting — in which EIA is practiced (p249).

The importance of reconciling the two is widely acknowledged; for example, one of 15 fundamental components of IA related Masters programmes in Europe identified by Gazzola (2008a) were 'modules addressing the relationship between the environment and socioeconomic aspects, in terms of trade-offs or how to reconcile economic growth with environmental protection' (p151). This gives rise to the art and science of IA. In the words of Gazzola & Jha-Thakur (2009):

> the European approach to EA could therefore be described as a 'science… as it has to do with the methodologies and techniques for identifying, predicting and evaluating the environmental impacts' of a proposed policy, plan, programme or project. Furthermore, it could be described as an art, thus a social science 'as it has to do with those mechanisms for ensuring environmental analysis of such actions and influencing the decision-making process' (p630).

(1.9) Fosters sustainability-orientated norms and values. *Learners are prepared to be advocates for the environment and sustainability.*
Impact assessment is framed by IAIA and IEA (1999) as a tool to promote sustainable development in their principles of EIA best practice, so it is not surprising that this is frequently addressed in the literature as a core goal for IA teaching (e.g. Onorio and Morgan, 1995; Annandale and Morrison-Saunders, 2007; Ramos et al., 2008).

(1.10) Provides practical methods and tools. *Learners leave the course with a 'tool-kit' they can apply in future work.*
Early writers discussed IA training requirements and expectations in terms of capacity building and the need to develop suitably qualified and skilled practitioners to undertake IA in practice (e.g. Wood, 1985; Lee, 1988, Fuller, 1994; Clark, 1999) and hence it is not surprising that this continues to be a key consideration for IA teaching. Principle 1.1, discussed previously, in part already includes a practical consideration. Where training addresses a particular issue or form of IA, the opportunity for providing practical methods and tools will increase. For example, in the context of HIA training Schucter et al. (2015) reported the following:

> 'Trainees emphasized that adult learning must be practical and wanted more concrete examples specific to their needs and interests. They wanted more details on the practical application of HIA concepts and a realistic accounting of the human and financial resources required' (p192).

3.2 Pedagogy
The 10 draft best practice principles for teaching impact assessment outlined here reflect how content is taught. As the focus of our research, and indeed of the literature upon which we draw, is on adult education, whether in universities or professional training contexts it is not surprising that the principles that follow resonate strongly with those for adult learning in general (e.g. Diduck and Sinclair, 1997; Schuchter et al., 2015).

As before, each principle articulated below should be read, keeping in mind the preceding text:

        <u>Best practice impact assessment teaching…</u>

(2.1) Is tailored to the context, needs and capacities of learners. *The requirements of learners are ascertained in advance and the course designed to meet these*.
This principle points to a fairly obvious key consideration for any teaching offering. It is related to Principle 1.10 as well as several of the other pedagogy Principles (2.2, 2.3, 2.6 and 2.8). Ramos et al. (2008) point out for IA courses (at university in this particular instance) to be effective, they should be designed to meet 'the specific need of the people who attend the course' (p644). The literature review conducted by Bryan et al. (2009) explains that knowledge becomes meaningful when adults link new information with their professional practice and consequently that 'identifying, acknowledging, and validating learner's past experience' (p561) is essential for adult learning.

Fuller (1994) criticises EIA training courses for being '*provider-lead* rather than *client-lead*' [sic] (p137) where the clients are organisations seeking to have their personnel trained in IA. Lee (1988) outlines a structured approach for determining training needs for IA professionals in terms of identifying the relevant audience and then tailoring the learning content for that audience. The onus here is on the teacher to undertake this preparatory work. Teaching in a local language in the case of international IA training courses and using local people (e.g. consultants, regulators or other experts) are identified by Onoria & Morgan (1995), Fischer et al. (undated) and Bryan et al. (2009) as an important aspect of meeting the needs of learners.

(2.2) Is flexible. *Teachers/trainers adapt to the emerging requirements of learners as the course progresses*.
Being 'adaptive' is a long-established principle for EIA best practice (IAIA & IEA, 1999, p3). This principle, which builds upon 2.1, is an extension of the adaptive management principle, but one which emerged mainly from our interviews rather than the literature.

(2.3) Facilitates co-learning. *The knowledge and experience of the learners are drawn upon to complement those of the teacher/trainer*.
This Principle is closely linked with the notion of promoting interdisciplinarity within the teaching process (Principle 1.6). Acknowledging and validating the expertise and experience of learners (Principle 2.1) is best achieved 'by making it part of the planned learning' (Bryan et al. 2009, p561). Diduck and Sinclair (1997) make the point that 'a premium is placed on democratic dialogue which shifts the centre of the learning process from the teacher to the student' (p296) and that this signifies a 'change in traditional power relationships' (p296) between teachers and their students. It is consistent with the subject-centred learning approach advocated by Hobson and Morrison-Saunders (2013) whereby the subject of IA itself becomes the centre of attention, thereby allowing for co-learning by teacher and students alike on a topic of shared passion by all.

(2.4) Simulates key features of impact assessment practice. *Pedagogy incorporates features such as team-work, communication, transparency, accountability, peer review*.

The subject-centred learning approach mentioned previously is a means to 'walk the talk or teach through immersion by being the subject itself' (Morrison-Saunders and Hobson, 2013a, p8). In other words, aspects of IA practice are explicitly modelled or mimicked in the delivery and learning activities for a teaching offering. For example, having students work in groups on an assignment serves to prepare them for the kind of team work normal in IA practice. Another frequently identified teaching approach is the use of role playing (Wood 1985; Lee and Wood, 1985; Lee, 1988, Department of Environmental Protection, 1990; Onoria and Morgan, 1995; Sinclair and Diduck 1995; Partidário, undated; US EPA, 1998b; Clark, 1999; Chaibva, 2000; Stelmack et al., 2005; Annandale and Morrison-Saunders, 2007; UNU-INWEH 2008; Sánchez and Morrison-Saunders, 2010; Kabera, 2017) as a means of simulating some aspect of IA practice in some form.

(2.5) Provides opportunities for discussion and debate. *Learners are encouraged to participate, challenge and share views.*
Principle 2.3 above is best delivered through discussion and debate amongst learners. Delivering IA teaching and training in a participative fashion with an emphasis on learner dialogue, discussion and debate in role-plays, workshops and group discussions is a frequently discussed topic in the literature (e.g. Onoria & Morgan 1995; Diduck and Sinclair, 1997; US EPA, 1998b; Sánchez and Morrison-Saunders, 2010; Ramos et al. 2015; Kabera, 2017). As noted by Sinclair and Diduck (1995), where there is an interactive component in IA teaching activities, 'people will learn not only from the information that is imparted to them, but also from the questions that others ask'. Sánchez (2010) reports on the adoption of a 'communicative approach' (p253) based on establishing 'classroom discussions aiming at a collective knowledge construction on selected topics' (p253). Applying this principle in IA teaching can be a way to mimic and demonstrate the benefits of the stakeholder engagement aspect of IA practice (e.g. Chaibva, 2000; Annandale and Morrison-Saunders, 2007; Morrison-Saunders and Hobson 2013a, b) or simply develop skills for this aspect of the process (Sinclair and Diduck, 1995; Fischer, undated).

(2.6) Utilises case studies. *Actual or hypothetical examples of impact assessment practice are provided to illustrate concepts and as the basis for practical exercises.*
The use of case studies or '*real world* examples' (by Lee and Wood, 1985, p284) in IA teaching is discussed by numerous authors (Bisset and Tomlinson, 1985; Wood 1985, Lee and Wood, 1985; Lee 1988; Thomas 1992; Fuller 1994; Onoria & Morgan 1995; Canter and Sadler, 1997; US EPA, 1998a, 1998b; UNU-INWEH 2008; Sánchez 2010; Strohmann 1998; Ramos et al., 2015; Kabera, 2017; Fischer et al., undated Ecaat, 2001; Fischer et al., 2008; Fischer and Nadeem, 2014), both as learning tools in their own right and as substitutes for field work (Clark, 1999). In the international survey of IA teaching at universities, Sánchez and Morrison-Saunders (2010) found case studies to be the 'most favored teaching tool, used by 84% of respondents' (p248).

Guidance on the selection and preparation of case studies is provided in Sadler and McCabe (2002). Case studies may be hypothetical (e.g. Department of Environmental Protection, 1990) or directly drawn from actual IA practice (e.g. Annandale and Morrison-Saunders, 2007) although the former likely are based on actual real-life experience anyway. Wood and Lee (1987) produced the earliest suite of IA training case studies that we are aware of, which Lee (1988) suggests were to offer 'more realistic training aids' (p157) in order 'to

confront the problem of the limited practical experience in EIA work of many instructors and teachers on EIA courses' (p157) at that time. The literature generally agrees that local case studies, relevant to the learners, should be utilised in favour of generic international ones (Onorio and Morgan, 1995; Gazzola and Jha-Thakur, 2009; Pollack et al., 2015; Schucter et al., 2015; Fischer and Jha-Thakur, 2013; Fischer et al., undated).

(2.7) Provides opportunities to gain practical experience. *Activities reflect the realities and complexities of impact assessment practice*.
Upholding this principle is essential if tacit knowledge is to be gained by IA learners, which Morgan (2017) argues 'is best learnt through some form of situated learning, which can range in scope from small practical exercises on specific aspects of the IA process through to immersion in a real IA study' (p84). The ability to offer practical experience in IA teaching is a function of the locality, number of learners, length of course and resourcing considerations. For example, it is unlikely that a short course offered to an international audience (e.g. such as the training courses at the annual IAIA conference) will be able to offer practical experience beyond the kinds of simulations provided for in case studies or role plays discussed previously. In contrast and by default, on-the-job training is inherently practice based. For university courses, where a teaching semester typically extends over several months, it may be possible to incorporate practical experience through inclusion of a field visit where students can interact with practitioners at the same time as experiencing an actual site. Fowler and Engel-Cox (2007) are strong advocates for incorporating site visits into their teaching and training activities and these were mentioned by 38% of respondents in the survey of Sánchez and Morrison-Saunders (2010). Use of field visits in IA teaching is also mentioned in Chaibva, (2000), Ecaat (2001), Stelmack et al. (2005), UNU-INWEH (2008), Fischer and Nadeem (2014), and Kabera (2017).

Where it is not logistically feasible to take students out of the classroom to experience IA in practice directly, inviting IA experts into the classroom as guest presenters offers some degree of practical insight to be realised through use of 'verbal examples and anecdotal stories… [from people having] first-hand experience with performing environmental assessments' (Fowler and Engel-Cox, 2007, p19). Invited lectures were a teaching method used by 66% of respondents in the survey of Sánchez and Morrison-Saunders (2010). Other approaches that enable a degree of practical experience to be gained by learners include use of real-life case studies discussed previously (Principle 2.7), '*hands-on* or action learning' (Diduck and Sinclair, 1997, p199) where students are encouraged to come up with their own 'practically feasible solutions to concrete environmental challenges during their courses' (Cherp, 2008, p24).

(2.8) Facilitates self-learning. *Learners are encouraged to apply concepts to their own contexts and to reflect on their personal learning processes*.
This principle aligns with adult learning principles in general (Bryan et al., 2009). In the IA teaching described by Sánchez (2010) one intention is 'to stimulate personal reflection and the continuing building of a strong conceptual framework that could underpin [their own] future professional practice' (p252); a similar perspective from adult learning theory is noted by Koo and Miner (2010). Self-learning features strongly in the 'critical pedagogy' outlined by Diduck and Sinclair (1997) and is accomplished where 'the teacher poses critical

problems for inquiry' and subsequent 'critical - discussion encourages self-reflection and social reflection' (p296). When discussing future directions for environmental engineering education (which includes IA), one of several basic assumptions posited by Smith and Biswas (2002) is that: 'life-long, self-directed learning (continuing education) is a fundamental requirement of the environmental engineer' (p6), which Ramos et al. (2008) subsequently adopted for equivalent relevance to IA professionals.

(2.9) Is memorable and fun. *An enjoyable learning environment is created*.
The topic of an enjoyable learning experience is not addressed in the literature on IA teaching (this principle came from practitioners surveyed and interviewed). However, when discussing principles of learning in general, Dumont et al. (2010) note that 'emotions are integral to learning' (p6) being linked with learner motivations. While Dumont et al. (2010) underscore the importance of giving attention to motivations in the pursuit of effective learning rather than simply in making the experience enjoyable, they state that it is 'better still if it is both' (p6).

(2.10) Includes mentorship and post-course support. *Learning continues after the course*.
This principle is more obviously applicable to professional training courses than university programmes, and even then is likely to be beyond the scope of most training. It was raised in particular by practitioners at our initial workshop (Section 2.1), but there is limited discussion in the literature. In their survey of HIA trainees, Schuchter et al. (2015) asked their post-training needs noting that: 'some trainees undertook further reading and learning on their own… [while others] received mentoring and/or technical assistance connected to a funded project' (p192). They also noted that the trainees reported 'needing various tools – such as worksheets, case studies, and research literature – to support learning during the training *and implementation after'* (p194 – emphasis added). In the context of professional accreditation programs, beyond obtaining an initial appropriate qualification, Park et al. (2002) identify the need for ongoing teaching programmes to 'continually retrain EIA specialists… because on-going training enables professionals to keep up to date with new developments in the qualification item' (p76).

2.3 Skills
The nine draft best practice principles for teaching impact assessment outlined here reflect the essential skills for impact assessment teachers to impart to learners. Note that the focus here is on the coordination and management of impact assessment processes and not technical or specialist skills that are often required such as biodiversity surveys, air quality modelling, stakeholder engagement etc. Thus, our teaching principles are oriented towards 'EIA managers' rather than 'technical specialists' in the terminology of Lee (1988, p144) and similar typology utilised by Clark (1999).

As explained in Pope and Morrison-Saunders (2018) it is also important to note that the skills reflected in the principles are very generic; that is, they are important for IA but also for many other disciplines and professional activities. Many of them are common to adult education generally (e.g. Bryan et al., 2012; Koo and Miner, 2010). For this reason, it is reasonable to expect that these skills would be acquired through many different learning experiences and not simply one IA teaching/training offering. In a higher education

environment, such skills should be developed throughout the learner's degree, and beyond it in their professional lives; while professional development trainers could reasonably expect that many learners participating in their courses would already have developed such skills through their professional experience. Nevertheless, the set of skills principles are included here because IA teaching should ideally aim to provide learners with an opportunity to develop or enhance and to utilize these skills to the extent appropriate in the learning environment.

Each principle articulated below should be read, bearing in mind the preceding text:
> Best practice teaching of impact assessment supports the development of...

(3.1) Integrative and systems thinking. *The ability to synthesise information from different sources to develop a holistic understanding*.
In the context of SEA education, Ramos et al. (2015) states that 'training students to have a holistic and strong systemic perspective on sustainability issues' (p227) should be a key goal. Other authors state that IA teaching should be 'holistic' (e.g. Stelmack et al 2005; Gazola 2008a; Gazzola and Jha-Thakur, 2009; Fischer et al., undated). We suggest that the spirit of the suggestions here align with Principle 3.1. The point made by Strohmann (1998) that approaches that support 'the interaction between developments in science and technology, society, and the decision-making process' (p188) are of a similar ilk.

(3.2) Critical thinking. *The ability to make reasoned arguments based upon critical evaluation of information*.
Diduck and Sinclair (1995) frame their entire work around the concept of 'critical EA education', the content of which should cover 'both process and substance issues' (p298). The lead author in Morrison-Saunders and Hobson (2013a) reflects that: 'what I mostly teach is actually critical thinking, reading and writing skills' (p219) in the context of IA teaching where this is based on the 'review and critique of secondary sources' (p219). The encouragement of critical thinking in IA students is mentioned repeatedly by Sánchez (2010) in Brazil and Stelmack et al. (2005) in Canada, while in contrast Gazzola and Jha-Thakur (2009) suggest that mechanistic approaches dominate IA practice in India and as a consequence 'EA education is therefore failing to promote that critical thinking considered key for advancing effective EA practice and education' (p634).

(3.3) Judgement. *The ability to make decisions in situations of uncertainty, incomplete information and competing values*.
The importance of developing judgement as a core skill of IA features in curriculum documents and commentary on IA teaching (e.g. Wood, 1985; Carpenter and Maragos, 1989; US EPA 1998a, 1998b; Ecaat, 2001; Sadler and McCabe, 2002; United Nations Economic Commission for Europe, 2012). Other writers mention similarly related issues such as:
- the 'rich topic of (environmental) decision-making and trade-offs' (Hobson and Morrison-Saunders, 2013, p779);
- learning modules on 'consensus building' (Fischer et al., undated)
- calls for greater development of 'skills in framing to make meaningful and politically palatable recommendations' (Schuchter et al., 2015, p192).

- Introducing training participants to 'theories and techniques of effective conflict management' (Rundle 1986, p255); and
- an interactive role play exercise where students 'work towards resolving a conflict' (Annandale and Morrison-Saunders, 2007, p181).

(3.4) Written communication skills. *The ability to prepare written materials in a clear and logical way that is comprehensible to non-experts*.
Wood (1985) was of the view that 'lack of basic communication skills, especially writing ability, is a serious flaw in the educations of many [IA] specialists' (p332). Having the ability to communicate in written expression is identified by Sánchez (2010) as one of the 'soft skills' (p257) that a competent IA practitioner should demonstrate. Similar written communication skills are one of the learning objectives in the IA teaching described in Morrison-Saunders and Hobson (2013a).

(3.5) Oral communication skills. *The ability to engage in meaningful two-way verbal communication with a variety of different stakeholders*.
The ability to communicate in oral expression is identified by the same writers as for written communication skills (Principle 3.4), i.e. Sánchez, 2010; Morrison-Saunders and Hobson, 2013a. Others mention the use of oral presentations as part of the assessment task in university IA teaching (e.g. Diduck and Sinclair, 1997; Fischer et al., undated; Fowler and Engel-Cox, 2007; Pollack et al., 2015; Kabera, 2017). This skill may be developed through role-playing (Principle 2.4) and providing opportunities for discussion and debate in the classroom (Principle 2.5).

(3.6) Collaboration and team-work skills. *The ability to work in diverse, inter-disciplinary teams*.
The importance for practitioners to have suitable skills working in interdisciplinary teams in the practice of IA is discussed at some length by Wood (1985), while Sadler and McCabe (2002) have a group activity devoted to 'establishing an interdisciplinary EIA team' (p452). It is perhaps no surprise then that working in small groups or teams is frequently mentioned in the IA teaching literature. This may take the form of in-class exercises (e.g. Onorio and Morgan, 1995; UNU-INWEH, 2008) or for formal assessment tasks (e.g. Stelmack et al., 2005; Sánchez, 2010) which were reported as being utilised by 69% of respondents in the survey of Sánchez and Morrison-Saunders (2010). An embodiment of this principle appears in Pollack et al., (2015) who reported that students in the four courses they reviewed 'worked collaboratively in groups to complete an HIA on a topic of real-world concern identified in partnership with a local stakeholder' (p81).

(3.7) Project management and coordination skills. *The ability to manage a team and complex tasks to achieve a defined goal*.
Project management is identified as one of three types of IA training by Lee and Wood (1985). Not surprisingly, then, there are stand-alone training courses devoted to the topic or it is otherwise included in broader IA teaching curricula (e.g. Wood, 1985; Clark, 1999; Smith and Biswas, 2002; Sánchez and Morrison-Saunders, 2010). In the context of HIA training in the US, Schucter et al. (2015) identified it as one of several 'outstanding training needs' (p192). Sadler and McCabe 2002, note that 'EIA project management is complex and

demanding, requiring a combination of specialist and managerial skills, and commitment to the task' (p437).

(3.8) Research skills. *The ability to formulate, conduct and report on research*.
Research is implicitly linked with training by Montaño and De Souza (2015) who, maintain that: 'the lack of a well developed and distinct field of training and research is, according to our experience, one of the major barriers to IA research' (p4). Developing research skills in IA learners is an extension of Principle 1.2 around incorporating research contributions into teaching.

(3.9) Job-readiness. *The practical skills required to coordinate an impact assessment in a professional setting*.
Many of the early publications about IA training work backwards from what the authors identify as the needs of practitioners and other stakeholders to then discuss training needs (e.g. Wood, 1985, Lee and Wood, 1985; Lee 1988). Indeed, Clark (1999) specifically discusses IA training in relation to capacity building for IA professionals, especially in developing countries, while US EPA (1998a) suggest that many EIA programs rely on on-the-job training to meet staff learning needs. Thus, it is implicit that IA teaching should be imparting practical skills, making learners appropriately job-ready. One of the four essential principles in the Erasmus Mundus Masters programme reported on by Cherp is to 'focus on practical requirements of environmental professionals' (p24). Gazzola and Jha-Thakur (2009) also mention the importance of IA teaching having relevance to appropriate job markets in regards the employability of graduates. Finally, by definition on-the-job training which 'tends to consist mainly of "learning by doing"' (Wood, 1985, p334) is automatically about skills development for professional work.

4. Importance of the IA teaching principles to teachers and trainers

Here we present the results of the second stage survey of IA teaching practitioners where respondents were asked to indicate the importance of each aspect of IA teaching (i.e. 29 in total) across the three categories of IA teaching content, pedagogy and skills. Included in our discussion of the findings are points made in written comments on the survey. Before presenting the results for the 29 aspects in our three categories of IA teaching, some overall characteristics of our respondents and the survey data set are provided.

4.1 Overall importance of draft IA teaching principles

Figures 1–3 present the survey results for all 122 responses combined as the frequency of importance ratings for each IA teaching principle.
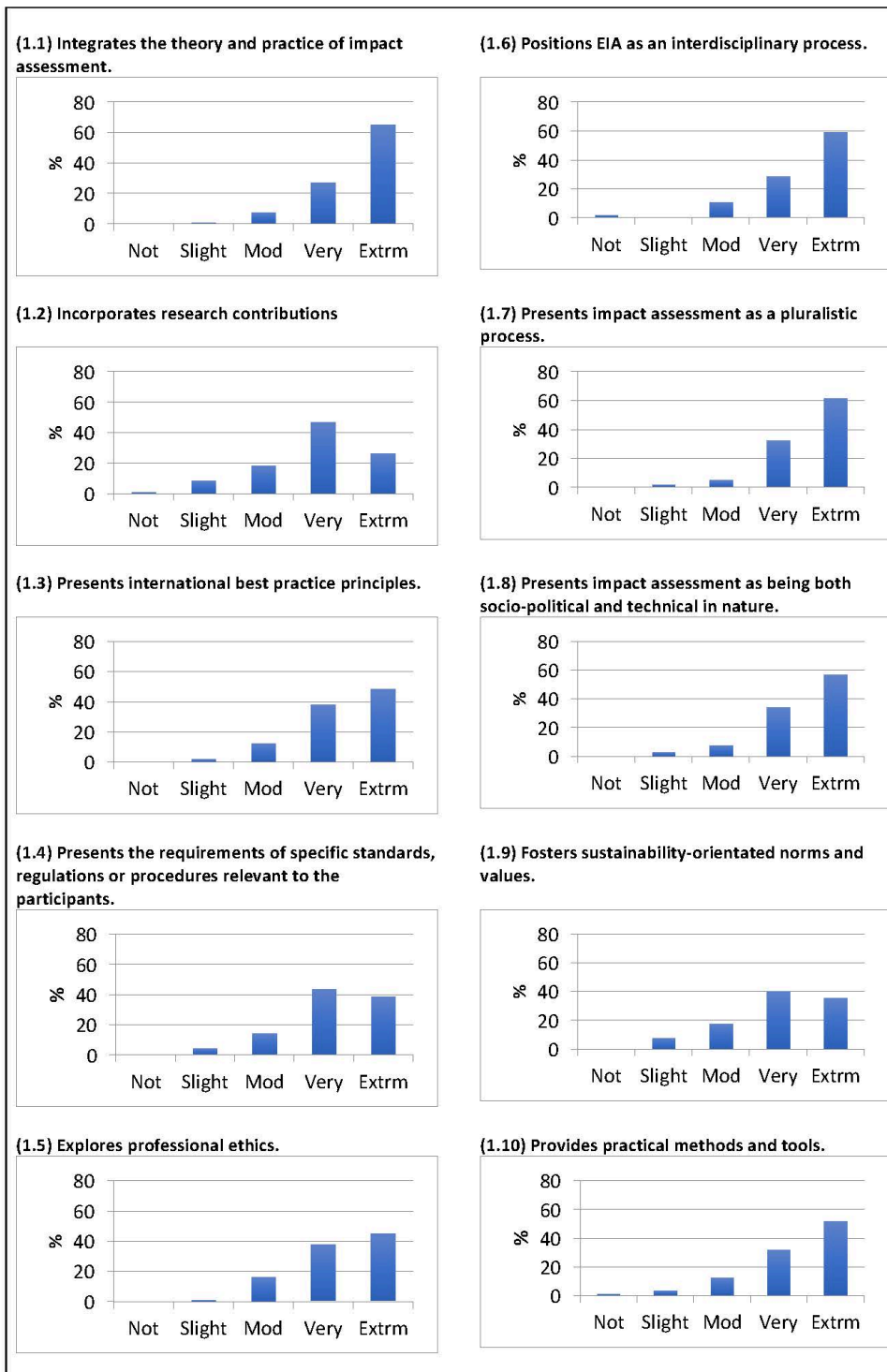
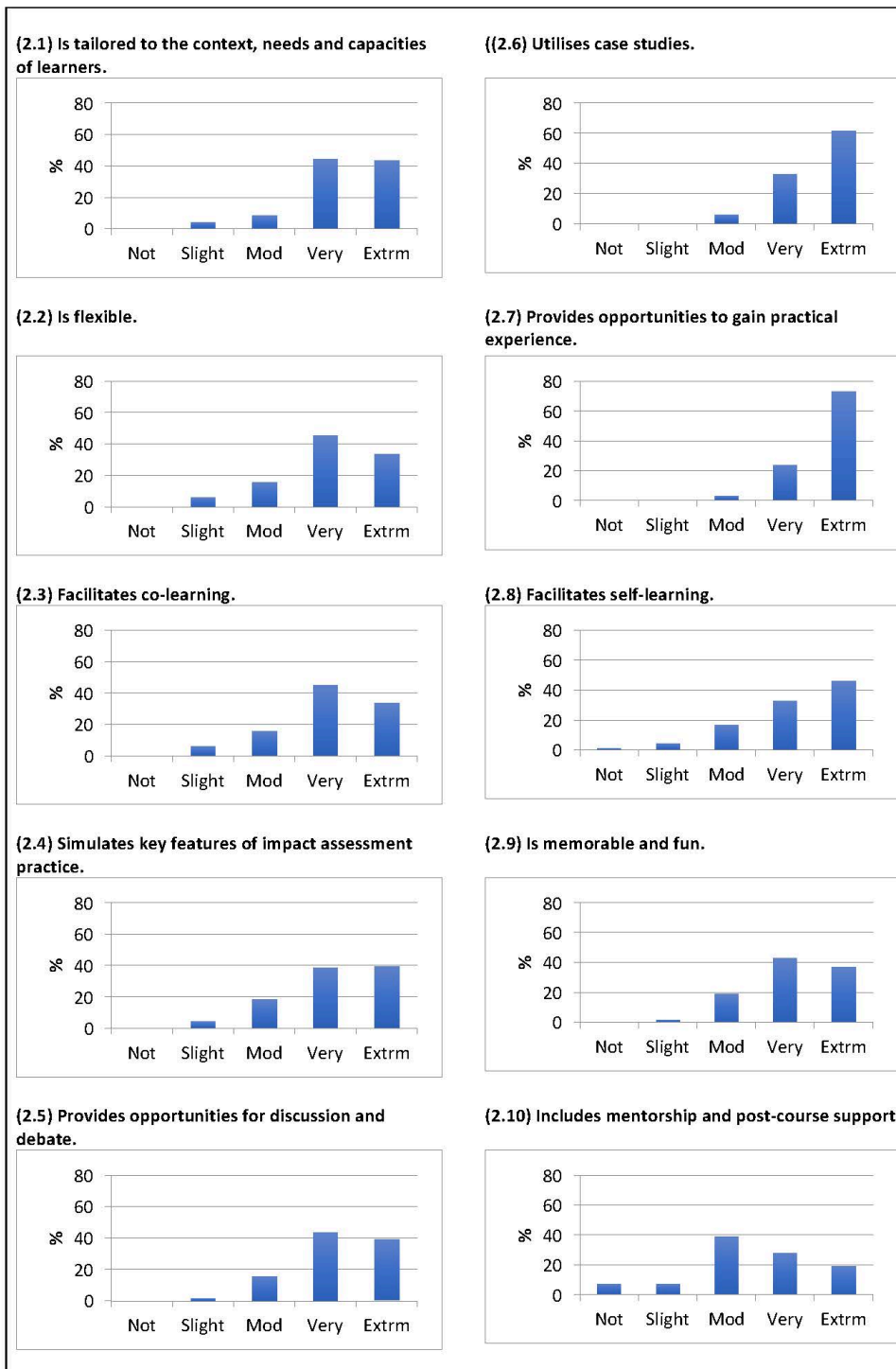**Figure 1: Importance of the draft Content principles to IA teachers**

(2.1) Is tailored to the context, needs and capacities of learners.

((2.6) Utilises case studies.

(2.2) Is flexible.

(2.7) Provides opportunities to gain practical experience.

(2.3) Facilitates co-learning.

(2.8) Facilitates self-learning.

(2.4) Simulates key features of impact assessment practice.

(2.9) Is memorable and fun.

(2.5) Provides opportunities for discussion and debate.

(2.10) Includes mentorship and post-course support

Figure 2: Importance of the draft Pedagogy principles to IA teachers
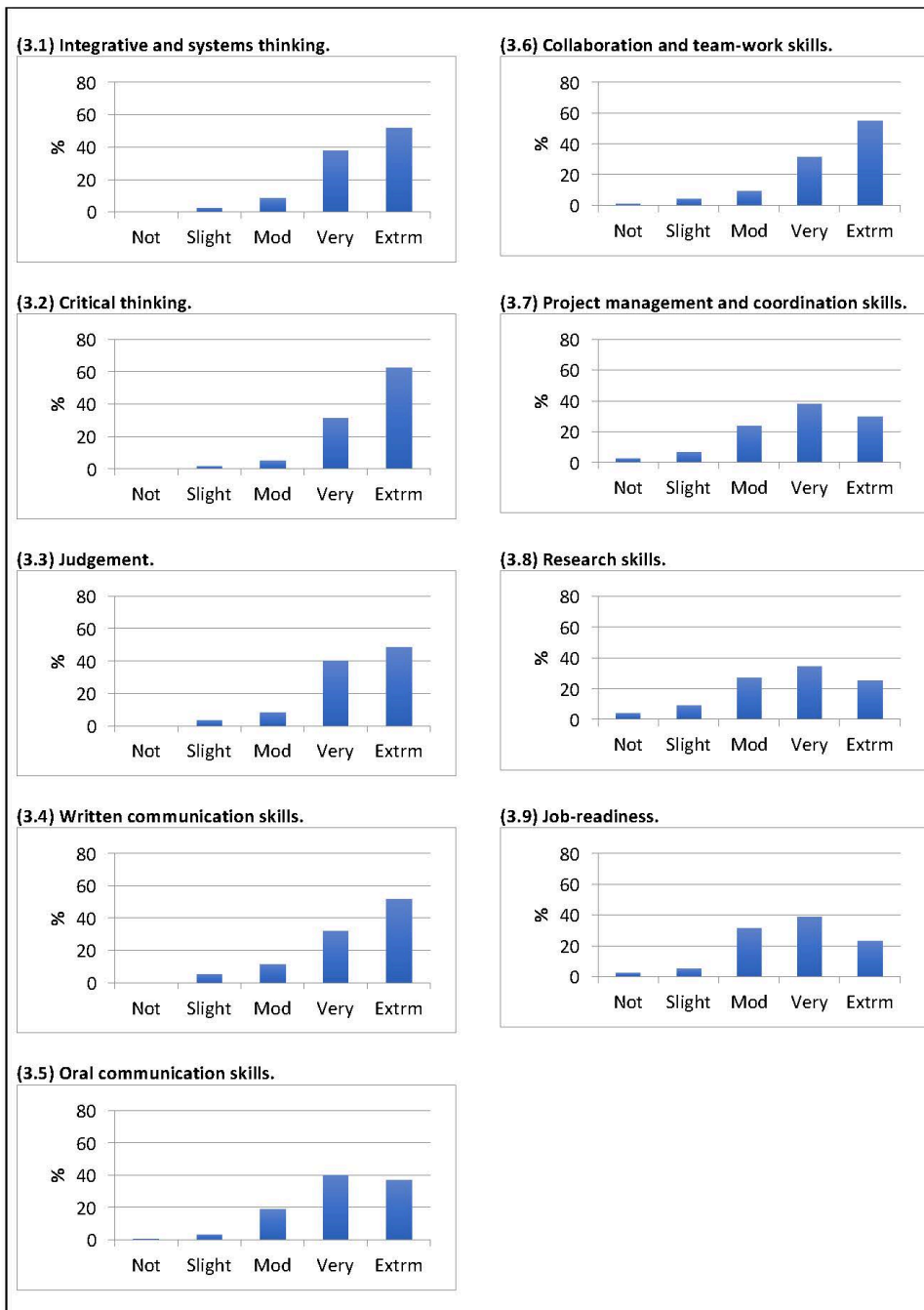
Figure 3: Importance of the draft Skills principles to IA teachers

From the three figures, it can be clearly seen that overall, there was a high level of support for each of the 29 aspects of IA teaching. Ratings of Not Important were only recorded for nine aspects and only in very small numbers. Six aspects stand out above the others, with each receiving around 60% Extremely Important and 30% Very Important ratings; these are:

- 1.1 Integrates the theory and practice of IA
- 1.7 Presents IA as a pluralistic process
- 1.8 Presents IA as being both socio-political and technical in nature
- 2.6 Utilises case studies
- 2.7 Provides opportunities to gain practical experience; and
- 3.2 Critical thinking.

There are other aspects that perform almost as strongly, receiving over 50% ratings for the Extremely Important category alone. Overall, 28 of the 29 aspects received high ratings with combined scores of Extremely and Very Important of 60% or greater.

Against this, the lowest scoring principle does stand out, receiving just 47% of these two highest importance categories combined. This was Principle 2.10 Includes mentorship and post-course support which received substantially lower ratings of importance than any other principle. The principle was originally put forward by a workshop participant who had been involved in professional development training courses, especially for capacity building purposes and we subsequently found passing reference to it in the literature (discussed previously). Numerous feedback comments addressed this topic in the survey responses making the point that while it is certainly desirable to offer post-course assistance to learners, this is typically unfeasible in practice due to physical and resourcing limitations; for example, dispersal of trainees following a short course delivered at an IAIA annual conference to their respective home countries or impracticality of an academic maintaining meaningful post-semester contact with hundreds of individual students who might have attended a university course. We suggest that on-the-job training is the main form of IA teaching where this principle might realistically be expected to be upheld. In light of the survey responses, we dropped this draft principle from the final set, leaving us with 28 best practice principles.

For now, the key point is that the high levels of importance point to the relevance of including all 29 aspects as best practice principles for IA teaching. This result is perhaps not surprising, given that the 29 aspects were derived from the first stage of the research methodology involving literature review, an initial survey to identify relevant IA teaching principles and interviews with academics and trainers.

4.2 Comparative analysis of the importance of IA teaching principles for teaching and training applications

Due to the predominantly high ratings of importance for each of the 28 principles, Box plots for the four types of respondents identified in Table 1 did not reveal any defining characteristics of our data set. Instead, we found it useful to resort to a simple descriptive approach comparing the most frequent responses for each principle between university teaching and professional training.

Four categories of response were distinguished for this purpose:

- Extremely important for both teaching and training;
- Very important for both teaching and training;
- Extremely important for teaching (but not training);
- Extremely important for training (but not teaching).

The results (originally provided in Pope and Morrison-Saunders, 2018) are shown in Tables 2–4.

Table 2: Best practice teaching of impact assessment – content

Principles	Extremely important for both teaching & training	Very important for both teaching & training	Extremely important for teaching	Extremely important for training
(1.1) Integrates the theory and practice of impact assessment. *Practical aspects are discussed with emerging research in the field.*	X			
(1.2) Incorporates research contributions. *Learners engage with emerging research in the field.*			X	
(1.3) Presents international best practice principles. *Learners are aware of what constitutes international best practice, regardless of the specifics of the impact assessment systems within which they operate.*		X		
(1.4) Presents the requirements of specific standards, regulations, or procedures relevant to the participants. *Learners are familiar with the specifics of the impact assessment systems within which they operate.*		X		
(1.5) Explores professional ethics. *Learners are prepared to face ethical dilemmas and are aware of expected professional standards.*		X		
(1.6) Positions EIA as an interdisciplinary process. *Learners are aware that impact assessment integrates different forms of knowledge.*	X			
(1.7) Presents impact assessment as a pluralistic process. *Learners are aware that impact assessment engages with multiple stakeholders with different values and perspectives.*	X			
(1.8) Presents impact assessment as being both socio-political and technical in nature. *Learners are aware that impact assessment is both an art and a science.*	X			
(1.9) Fosters sustainability-oriented norms and values. *Learners are prepared to be advocates for the environment and sustain- ability.*		X		
(1.10) Provides practical methods and tools. *Learners leave the course with a "toolkit" they can apply in future work.*	X			

As evident in Table 2, all but one of the Content principles were Very or Extremely Important for both teaching and training. Perhaps not surprisingly, incorporating research

contributions (Principle 1.2) was ranked as being of more importance by university teachers than professional trainers.

Table 3: Best practice teaching of impact assessment – pedagogy

Principles	Extremely important for both teaching & training	Very important for both teaching & training	Extremely important for teaching	Extremely important for training
(2.1) Is tailored to the context, needs, and capacities of learners. *The requirements of learners are ascertained in advance and the course is designed to meet these.*		X		
(2.2) Is flexible. *Teachers/trainers adapt to the emerging requirements of learners as the course progresses.*		X		
(2.3) Facilitates co-learning. *The knowledge and experience of the learners is drawn upon to complement those of the teacher/trainer.*				X
(2.4) Simulates key features of impact assessment practice. *Pedagogy incorporates features such as teamwork, communication, transparency, accountability, peer review.*		X		
(2.5) Provides opportunities for discussion and debate. *Learners are encouraged to participate, challenge, and share views.*	X			
(2.6) Utilizes case studies. *Actual or hypothetical examples of impact assessment practice are provided to illustrate concepts and as the basis for practical exercises.*	X			
(2.7) Provides opportunities to gain practical experience. *Activities reflect the realities and complexities of impact assessment practice.*				X
(2.8) Facilitates self-learning. *Learners are encouraged to apply concepts to their own contexts and to reflect on their personal learning processes.*		X		
(2.9) Is memorable and fun. *An enjoyable learning environment is created.*		X		

Similar as for the Content principles, most of Pedagogy principles (Table 3) were important for both teaching and training; with two principles being more highly rated for training. An explanation for this finding for Principle 2.3 *Facilitates co-learning* was revealed during the interviews to the effect that university teaching often includes large classes for which lectures and online learning materials are used extensively to communicate content to students (i.e. largely unidirectional one-to-many communication). In contrast training courses tend to be conducted in smaller workshop and round-table settings in which the small group discussions (i.e. peer-to-peer communication) is utilised. For Principle 2.7 *Provides opportunities to gain practical experience*, survey respondents and interviewees alike noted that it is difficult, again especially where large class sizes are involved, for university teachers to provide actual practical IA experiences. Simulations of real-life situations through practical exercises are also particularly important in a professional development setting.

Table 4: Best practice teaching of impact assessment – skills

Principles	Extremely important for both teaching & training	Very important for both teaching & training	Extremely important for teaching	Extremely important for training
(3.1) Integrative and systems thinking. *The ability to synthesize information from different sources to develop a holistic understanding.*	X			
(3.2) Critical thinking. *The ability to make reasoned arguments based upon critical evaluation of information.*	X			
(3.3) Judgement. *The ability to make decisions in situations of uncertainty, incomplete information, and competing values.*		X		
(3.4) Written communication skills. *The ability to prepare written materials in a clear and logical way that is comprehensible to non-experts.*			X	
(3.5) Oral communication skills. *The ability to engage in meaningful two-way communication with a variety of different stakeholders.*		X		
(3.6) Collaboration and teamwork skills. *The ability to work in diverse, interdisciplinary teams.*	X			
(3.7) Project management and coordination skills. *The ability to manage a team and complex tasks to achieve a defined goal.*		X		
(3.8) Research skills. *The ability to formulate, conduct, and report on research.*			X	
(3.9) Job readiness. *The practical skills required to coordinate an impact assessment in a professional setting.*				X

It can be seen from Table 4 that more variation in findings for Skills is revealed relative to the previous two tables. Further to the observation about the pedagogy Principle 2.7 regarding practical experience, it is no surprise that Principle 3.9 *Job readiness* was also rated of highest importance for IA training courses. Not surprisingly also, university teachers considered Principle 3.4 *Written communication skills* of high importance relative to trainers, since these skills are generally not part of IA training, especially for short courses. Also related here, university teachers rated Principle 3.8 *Research skills* as of more importance than trainers, as written assignment tasks will typically require research effort by students. The finding aligns with that for Principle 1.2 regarding the incorporation of research into IA teaching.

5. Conclusion

This research outlined the process utilised to derive 28 international best practice principles for IA teaching, along with ratings of the relative importance of each of these to university teachers and training course providers alike. The principles are supported by insights drawn from literature over the past four decades on IA teaching and training. We hope that

practitioners find the principles to be insightful and helpful. They are offered here to guide future teaching endeavours and are not intended to be prescriptive. As noted in Pope and Morrison-Saunders (2018):

> …it is important to emphasize that it may not be possible or even desirable to comply with all principles in a single impact assessment teaching offering. It will be important to identify which principles are most relevant in any given context (p1).

This paper represents the first concerted attempt to distil a set of international best practice principles for IA teaching and training. They can be expected to evolve over time and there may be important considerations that our research has overlooked. We therefore welcome future research findings that point to areas of addition, refinement or enhancement of the principles. Meanwhile we hope that the principles may contribute to more consistent and more effective impact assessment education, contributing in turn to improved impact assessment practice.

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