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Reconceptualizing 'effectiveness' in environmental projects: Can we measure values-related achievements?

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ABSTRACT

There have been recent calls for a shift to an evidence-based paradigm in environmental management, grounded in systematic monitoring and evaluation, but achieving this will be complex and difficult. Evaluating the educational components of environmental initiatives presents particular challenges, because these programs often have multiple concurrent goals and may value 'human outcomes', such as value change, which are intangible and difficult to quantify. This paper describes a fresh approach based on co-creating an entirely new values-based assessment framework with expert practitioners worldwide. We first discuss the development of a generic framework of 'Proto-Indicators' (reference criteria constituting prototypes for measurable indicators), and then demonstrate its application within a reforestation project in Mexico where indicators and assessment tools were localized to enhance context-relevance. Rigorously derived using unitary validity, with an emphasis on relevance, practicability and logical consistency from user perspectives, this framework represents a step-wise advance in the evaluation of non-formal EE/ESD programs. This article also highlights three important principles with broader implications for evaluation, valuation and assessment processes within environmental management: namely peer-elicitation, localizability, and an explicit focus on ethical values. We discuss these principles in relation to the development of sustainability indicators at local and global levels, especially in relation to post-2015 Sustainable Development Goals.

1. Introduction

The need for an 'effectiveness revolution' in environmental management, inspired by transitions to evidence-based management in fields such as medicine and public health, is increasingly being recognised (Ferraro and Pattanayak, 2006; Heimlich, 2010; Keene and Pullin, 2011; Rode and Michelsen, 2008; Sutherland et al., 2004). Governments and donors alike are waking up to the fact that, on the whole, "the organizations to which the public pays and donates billions of dollars cannot yet demonstrate their effectiveness at providing future generations with a healthy environment" (Keene and Pullin, 2011, p. 2134). The absence of clearly articulated program objectives and evaluation criteria is a pervasive problem in non-formal environmental education (EE) and 'education for sustainable development' (ESD) initiatives, whether conducted in isolation or within broader natural resource management programs, (Carleton-Hug and Hug, 2010; Heimlich, 2010), and also extends beyond environmental contexts to other types of non-formal education (Christensen et al., 2005; Wiltz, 2005).

In order for the revolution to succeed, it is necessary to identify *how* the transition to an evidence-based paradigm of environmental management might be accomplished. As highlighted by Springett (2001, 2003), two fundamental questions in any evaluation activity are, first, whose values are driving the evaluation, and second, against whose standards the project activities are measured. More broadly, one might ask whose values underpin the

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initiative or program that is being evaluated. If such questions are not systematically considered, evaluation criteria selected by more powerful stakeholders will often be adopted by default, while the worldviews and priorities of the marginalized may be neglected.

There is much to be learnt from current trends in evaluation studies, such as the development of process-based, participatory, utilization-focused, empowerment-oriented and collaborative evaluation approaches (Burford et al., 2013b; Crishna, 2007; Daigneault and Jacob, 2009; Donaldson et al., 2010; Ellis and Hogard, 2006; Fitzpatrick, 2012; Flowers, 2010; Hogard, 2008; Holte-McKenzie et al., 2006; Springett, 2003). A positive precedent has also been set within the arena of assessing land degradation. Here, new adaptive learning processes for indicator development bring together 'top-down' (expert-led) and 'bottom-up' (community-based) approaches, with a view to achieving a balance between objectivity and ease-of-use criteria (Fraser et al., 2006; Reed et al., 2005, 2006; Stringer and Dougill, 2013). In this paper, we have applied the adaptive learning principle specifically to the evaluation of non-formal environmental education, with a focus on programs whose objectives are values-based rather than purely biophysical, and developed a values-based framework with the potential for broader application.

The work reported here was initiated by demand from civil society organizations (CSOs) who wanted to find context-relevant, practicable and local ways to assess their educational work in sustainable development. For them, assessment of learning could not be separated from overall program evaluation because of the breadth of learning taking place. Rather than imposing external frameworks for evaluation and learning assessment, built on different premises, we decided to build from scratch a new, peer-elicited framework designed to validly represent the worldviews of these practitioners. This was achieved through a consortium approach in which CSO representatives and academic researchers worked together as equal partners, with CSOs holding the balance of decision-making power (Podger et al., 2010).

In Section 2 we present the need for, and challenges of, evaluation in non-formal environmental education (EE) and 'education for sustainable development' or 'education as sustainable development' (ESD). This necessitates unitary validity guidelines and a values-lens approach, so we present background sections on these (Sections 2.2.1 and 2.2.2 respectively). The peer-elicitation of the new framework is then outlined in Section 3.2, and its practical application is described in Section 3.3. A discussion is then provided to relate the results to the initial questions, to highlight significant contributions to other fields of work, and finally (in Section 5.1) to reflect briefly on broader implications for environmental management and global sustainability assessment.

2. Background

2.1. The need for appropriate evaluation of non-formal EE/ESD

For the purpose of this paper, we will use the European Centre for Vocational Training (Cedefop, 2001) definition of *non-formal education* as planned activities which contain an important learning element and are intentional from the learner's point of view, but may not necessarily be explicitly designated as learning activities.[4] In EE/ESD contexts, non-formal education may include community-based activities with an explicit or implicit learning element (such as reforestation, local habitat management or wildlife survey projects), as well as more structured initiatives that primarily target young people outside school hours (e.g. 'Forest Schools', 'Wildlife Clubs' or summer camps).

Mainstream formal education has decades of co-evolution between learning assessment methods and underlying theories of learning and knowledge, providing a firm foundation for evaluation structures. Non-formal education, however, currently lacks any such infrastructure (Clavijo et al., 2005). This gap has become more problematic in recent years, as the societal roles played by non-formal education worldwide have increased in importance and scope (Carleton-Hug and Hug, 2010; Keene and Pullin, 2011). Additionally, funding bodies and donors are increasingly demanding measurable accountability, and becoming frustrated by the inadequacies of conventional evaluation approaches (e.g. Ford Foundation, 2011; Wightman, 2010).

This need is especially pressing and well-documented in the case of non-formal EE and ESD initiatives. These are considered close cousins to formal education, often with learning objectives that appear similar, yet EE is reportedly struggling with rigorous evaluation, as described in a special issue of *Evaluation and Program Planning* (see Crohn and Birnbaum, 2010 for overview). Most EE programs do not incorporate evaluation into their activities (Fleming and Easton, 2010), and practitioners are often unaware of applicable literature to support their goals and methods (Wiltz, 2005). The research base is relatively undeveloped, relying largely on related formal disciplines (Wiltz, 2005) but 'borrowing' concepts from formal education is not necessarily appropriate, because fundamental learning objectives may differ even when the content appears similar.

Non-formal EE/ESD programs present many difficulties to evaluators. They often have multiple goals (Christensen et al., 2005) – some not focused on content – and the individual learner is not always the most appropriate level of measurement. For example, the intended beneficiary of an educational intervention may be a specific ecosystem, or 'nature' in general: the crucial question may not be how much an individual knows about water conservation, but how much water is conserved within a community (Heimlich, 2010). Furthermore, 'situated learning' within a community of practice demands 'situated assessment', e.g. assessing group members' ability to consult with one another and work together to solve problems (Singh, 2011). Many of the goals of non-formal EE and ESD are fundamentally difficult to translate into measurable outcomes: they may be long-term, broad and poorly defined, and, crucially, *affective* in nature. Furthermore, as Wiltz (2005: 18) explains: "The alternative approaches and settings of non-formal education are intended to foster often very personal outcomes in each of the participants." Assessors sometimes refer to these as 'unintended' outcomes, but organizers may view them as fundamental.

Evaluation of non-formal programs can involve a larger, more varied and less defined set of variables, such as changes in participant relationships, levels of participation, feelings of belonging (Christensen et al., 2005) – each requiring different assessment constructs and methods. Furthermore, each non-formal program emphasizes different sets of results, making comparisons across projects very difficult.

Altogether, these challenges provide huge barriers to non-formal EE and ESD evaluation because any proposed framework must be complex and multi-faceted to cope with the range of variables. Additionally, such a framework cannot directly rely on concepts of formal education assessment as they focus on individual content learning and thus are not appropriate for evaluation of non-formal education.

[4] Non-formal education differs from formal education in that the latter involves explicitly recognized learning activities which are conducted within formal institutions, such as schools or universities, and have predefined learning outcomes, resources and time. It is also distinct from informal learning, which is unintentional from the learner's perspective and occurs during daily work or leisure activities, e.g. via the media (Cedefop, 2001).