Education for sustainability: Students lead the way

Tom McLean
Introduction to IB position papers
This paper is part of a series of papers, written by IB practitioners and endorsed by the IB.

Other papers in the series
Carroll, J. 2012. Academic honesty in the IB.


Marshman, R. 2010. Concurrency of learning in the IB Diploma Programme and Middle Years Programme.

Walker, G. 2010. East is East and West is West.
Abstract

This paper examines the origins and evolution of sustainability education (SE) before outlining one expression of contemporary good practice in SE in a school context, including the ways in which schools can assess progress towards sustainability. Commonalities between the IB learner profile and good practice in SE are identified and questions for self-reflection are posed. The paper concludes with the examination of a case study of an IB World School that is embracing a student-led, whole-school approach to sustainability.

Introduction

I have come to believe that the real hope for deep and enduring processes of evolution in schools lies with the students. They have a deep passion for making schools work. They are connected to the future in ways that no adult is. They have imagination and ways of seeing things that have not yet been shaped by the formal education process. And they are crying out wanting to be involved, to become more responsible for their environment. (Senge 2003:16, cited in Harris 2012: 11)

The challenge of sustainability to the IB mission

“The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.” (IB mission statement)

The 2001 Amsterdam Declaration, signed by 1500 scientists from four of the world’s great global research programs1, stated unequivocally that:

An ethical framework for global stewardship and strategies for Earth System management are urgently needed. The accelerating human transformation of the Earth's environment is not sustainable. Therefore, the business-as-usual way of dealing with the Earth System is not an option. It has to be replaced as soon as possible by deliberate strategies of good management that sustain the Earth's environment while meeting social and economic development objectives. (IGBP)

The state of the Earth System2 presents an enormous challenge to the IB mission of creating a better and more peaceful world. Science has confirmed beyond reasonable doubt that we have an urgent problem but to date, humanity has continued with the business as usual “non option”. The reasons for our collective hesitance are the subject of much debate but what is clear is that they are deeply rooted in our cultural mindset. “For centuries, scientific progress, as the way for people to gain technical mastery over nature and to shape the material world for their own purposes, has been a dominant narrative in many parts of the world. According to this view, humanity stands apart from nature; wilderness exists to be conquered and tamed.” (IBO 2012a: 1) To many, the dominance of the humans as apart from nature perspective is the root cause of the condition of the Earth System. Rachel Carson made this point eloquently in 1963, “Now, I truly believe, that we in this generation, must come to terms with nature, and I think we’re challenged as mankind has never been challenged before to prove our maturity and our mastery, not of nature, but of ourselves.” (nytimes.com)

1 The four programs are the International Biosphere-Geosphere Programme (IGBP), Earth System Science Partnership (ESSP), International Human Dimensions Programme (IHDP) and the World Climate Research Programme (WCRP)

2 Defined by the International Geosphere-Biosphere Programme as Earth’s interacting physical, chemical, and biological processes.
The challenge of transitioning to a sustainable society, sometimes referred to as the Great Transition, can thus be viewed as an overarching framework, inextricably linked to the IB mission of making a better and more peaceful world.

Emergence of sustainable development (SD)

The term SD was coined in the 1987 United Nations World Commission on Environment and Development (WECD) *Brundtland Report* in which it was defined as development that, "Meets the needs of the present without compromising the ability of future generations to meet their own needs." (WECD 1987: cited in IBO 2012a: 2) The WECD was asked to respond to an urgent call from the UN general assembly "to recommend ways concerns for the environment may be translated into greater co-operation among developing countries and between countries at different stages of economic and social development and lead to the achievement of common and mutually supportive objectives that take account of the interrelationships between people, resources, environment, and development." (WECD 1987: Foreword). The 1992 Rio UN Earth Summit led to the formalization of the concept of SD and the emergence of the supporting concept of education for sustainable development (ESD) as detailed in the conference publication Agenda 21. SD and ESD can be seen as UN recognition of the interdependence of nature, economy and society and an implicit acceptance of humans as part of nature.

From education for sustainable development to sustainability education

Sterling (2003) argues that, "The term sustainability education is widely thought to be a more inclusive conception than environmental education (EE), education for sustainable development (ESD), education for sustainability (EFS) and education for a sustainable future" (Sterling 2003:310). ESD was a contentious term from the outset. For Jickling (1992), “analysis of the term [SD] has not yet identified sufficient criteria to elucidate common meaning and coherence.” (Jickling 1992: 6) Furthermore, “it appears that there are those who are troubled by questions of logical consistency when sustainable is juxtaposed against development. If such inconsistency is borne out, the conceptual muddle that surrounds sustainable development will be perpetuated.” (Jickling 1992: 6). Engelman’s (2013) observation that, “we live today in an age of sustainababble, a cacophonous profusion of uses of the word sustainable to mean anything from environmentally better to cool,” (Engelman 2013: 1) appears to confirm the realization of Jickling’s concerns.

The term "sustainability education" (SE) will be used throughout the remainder of this paper.

Evolution of sustainability education (SE)

Sterling (2003) has observed that orientations towards SE can be placed into two broad groupings, behaviorist and constructivist, and that the dominant stance taken by educational theorists and practitioners has evolved from a largely behaviorist position to a largely constructivist position.

Behaviorist: The behaviorist approach is based on the observable phenomenon of environmental degradation and aims to achieve behavioral change through an instructive, linear, pedagogy.

Constructivist: The constructivist approach is based on the idea that individuals make meaning of sustainability and the changes required to reach it by interpreting SE in their own context. It seeks capacity building and self-development through a pedagogy grounded in transformation via transaction and feedback.

Sterling (2003) acknowledges that individuals rarely occupy one orientation to the total exclusion of the other and that both stances have strengths and weaknesses. The key problem associated with the behaviorist orientation is that of an inadequate analysis of the human causes of environmental

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Sterling (2003) also discusses the role of critical pedagogy but states that it falls somewhere between the behaviourist-constructivist axis on account of its belief in a ‘real reality’ that can be discovered through a careful analysis of power relationships and knowledge. Sterling refers to this position as reconstructivist. He acknowledges critical pedagogy as having played a significant role in development education as well as in environmental education in Australia and the UK. Critical pedagogy’s relevance to sustainability education, in Sterling’s eyes, is in its focus on movements for self reliance and alternative development models.
degradation and of how individuals learn, whereas the key problem with the constructivist stance is that of relativism and the danger of inaction.

Key characteristics of sustainability education in schools

A meta-analysis of commentators on SE, including the work of McKeown (2002), Tilbury and Wortman (2004), Webster and Johnson (2010), Delors (1996), Sterling (2003), OFSTED (2008) and Harris (2008) reveals the key attributes of successful SE programs in schools as:

- holistic and interdisciplinary
- values-driven
- centred on a whole-school approach
- based on systems thinking
- facilitating the envisioning of possible futures
- having the full support of school leadership
- based on an ecological root metaphor that sees humans as part of nature
- based on constructivist pedagogy that emphasizes critical thinking and reflection
- involving participatory decision-making processes
- emphasizing capacity-building and partnership.

Assessing progress towards sustainability in schools

Assessment of organizational sustainability is an essential component of SE as it provides an opportunity to measure progress towards it and, more importantly in an education context, to understand it. Efforts to assess progress towards sustainability have typically been based on indicators, but a potentially more useful method of assessment of SE in schools is the use of descriptors which are better able to communicate the development of capacities in individuals and societies that are at the heart of SE.

The metaphor of capital as a basis for SE descriptors

The term capital is often used in economics to refer to material wealth used in the production process. However, capital is increasingly used in a broader context. Putnam (2000) identifies several uses of the term capital in his definition of social capital4. Scott (2012) proposes the use of the metaphor of capital as the basis for the development of sustainability descriptors.

Sustainable development is widely recognized to have social, environmental and economic dimensions, and so schools should expect to be making a contribution in all of these areas at the same time. One effective way of thinking about this is in terms of the asset base that we draw on for our civilisation and well-being. This (Daly, 1973; Meadows, 1998) has been described in the terms of four descriptors:

4 Whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense, social capital is closely related to what some have called “civic virtue”. The difference is that “social capital” calls attention to the fact that civic virtue is most powerful when embedded in a sense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital. (infed.org)
“capitals”. These are: “natural, built, human and social capital” (Scott 2012: 12).

As natural and built capital are often measured in different ways from human and social capital, and leadership is widely regarded as critical for the development of successful SE programs, Scott (2012) proposes a set of four stage descriptors\(^5\) for each of the following criteria.

- Leadership
- Natural and built capital
- Human and social capital

One option for schools interested in developing a system of assessment of SE is to create a hybrid of descriptors and indicators, potentially utilizing the concept of doorways.\(^6\)

**The compatibility of sustainability education with the IB learner profile**

“The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.” (IBO 2013: 1)

The emphasis that the IB places on facilitating the development of students who recognize their common humanity and shared guardianship of the planet demonstrates the central place of sustainability education within an IB education. An IB education is a holistic education that places the development of values on equal footing with intellectual development as is evidenced in the learner profile\(^7\) qualities of being knowledgeable and principled. IB students build on their existing knowledge as they engage in structured inquiry into complex problems before taking principled action. “Principled action means making responsible choices, sometimes including decisions not to act. Individuals, organizations and communities can engage in principled action when they explore the ethical dimensions of personal and global challenges.” (IBO 2013: 4) The reflection component of the inquiry approach implicitly acknowledges learning as a systemic endeavour that is responsive to feedback. Understanding the systemic, non-linear, nature of learning is central to good practice in SE. Furthermore, to be a balanced individual requires an acknowledgement of interdependence that is at the heart of sustainability.

In a literature review of approaches to learning, Li (2012) highlighted the following as methods well suited to facilitating student acquisition of the IB learner profile:

- inquiry-based learning
- problem-based learning
- constructivism
- facilitating metacognition
- cognitive apprenticeship
- collaborative learning

These approaches to learning marry well with the key characteristics of sustainability education in schools listed above.

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\(^5\) For further information on the details of these descriptors refer to Scott 2012 in the list of references.

\(^6\) OFSTED utilizes a system of eight “doorways” to addressing sustainability, such as food and drink, energy and water, travel and traffic, etc.

\(^7\) IB learners strive to be: Inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk takers, balanced and reflective.
Sustainability education and IB programmes

It is observable that the IB mission statement, set in the context of the IB learner profile, is consistent with what is deemed good practice in SE. Furthermore, extensive provision for SE is evident across the full range of IB programmes, a review of which is beyond the scope of this paper. A central challenge to IB World Schools in the delivery of effective SE is in facilitating student attainment of what Boyer (1995) refers to as being truly educated. “To be truly educated, a student must also make connections across the disciplines, discover ways to integrate the separate subjects and ultimately relate what they learn to life” (IBO 2009: 11).

The transition to a global society based on a holistic, ecological root cultural metaphor is arguably dependent on education systems becoming far more effective at facilitating student understanding of the interdependence of specialized subject matter that is often taught in isolation. It is therefore of paramount importance that IB World Schools prioritize the opportunities for true education embedded in IB programmes, such as, but not limited to:

- Primary Years Programme (PYP) transdisciplinary themes
- Middle Years Programme (MYP) global contexts
- Diploma Programme (DP) theory of knowledge
- IB Career-related Certificate (IBCC) core

It can therefore be concluded that leaders of IB World Schools face the challenge of ensuring that teachers understand the importance of, and are appropriately skilled in, assisting students in recognizing the interdependence of the subjects, skills and values that they learn.

Questions for self reflection

- Do we understand and prioritize on-going inquiry into sustainability that includes, but goes beyond, environmental activism?
- Do school leaders prioritize aspects of IB programmes that focus on the interdependence between subjects?
- Do teachers understand their role in assisting students to recognize interdependence between subjects, and are they skilled in doing so?
- Is a coordinated whole school approach to sustainability education in existence?
- To what extent are all members of the community, and especially students, involved in decision-making processes?
- To what extent do students learn and understand the value of systems thinking?
- Does the school foster a mutually beneficial relationship with the broader community?
- Does the school foster debate about cultural root metaphors and their influence on everyday life?
- Does the school facilitate discussion of possible futures?
- Does the school assess its progress towards sustainability?
- Does the school foster debate about the ethical framework required for global stewardship?
A framework for action in the context of an IB World School

International School Manila (ISM) launched its whole school approach to SE by providing students with the opportunity to establish and facilitate a whole school goal based on the ISM mission statement pledge to involve our community in safeguarding and sustaining our environment. A core team of student leaders facilitated a series of workshop sessions that utilized the AtKisson Group’s ISIS (stands for “indicators, systems, innovation, strategy”) pyramid and involved a stakeholder group that included members of the board, parent association, leadership team, faculty and students as well as key facilities and business staff. The goal of the workshop sessions was to arrive at four agreed outcomes that could be put into action. The student capacities necessary to facilitate the whole school goal were initially developed in training for, and coordinating, the Global Issues Network (GIN) conference at ISM8.

Students grouped stakeholders, according to their expertise, into the following capital-based groups utilizing the ISIS compass (see Figure 1).

Figure 1: The ISIS compass

The workshop sessions were then framed around the guiding questions of the ISIS pyramid.

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8 A learning story detailing the methodology used by ISM in hosting the GIN conference can be found in the online curriculum centre (OCC) “Cross-programme publications” section. The learning story is titled A global learning story about responsible action.
During the workshop sessions, each group considered the guiding questions and developed innovations and strategies, based on an analysis of data derived from key indicators that were grounded in each group’s vision from their compass group, or capital, perspective.

**Specific outcomes of the whole school goal**

- $250,000 investment in solar panels
- A drive to maximize the efficiency of paper and digital technology use
- A survey on student well-being and a community focus group tasked with taking appropriate next steps
- A community focus group tasked with improving school bus provision

While the specific outcomes of the process are significant, the broader impact of the initiative is arguably far more important. Most important is the sustainability of the initiative itself.

**Impact on participants**

As the stakeholder group was so diverse, the process of arriving at the specific outcomes involved students and adults modelling the key attributes and approaches to learning embedded within the IB learner profile. The task itself was essentially an authentic, collaborative, problem-based, activity grounded in inquiry and necessitating metacognition. The cognitive apprenticeship approach is evident in adults and students functioning in groups on equal terms.

**Impact on teaching and learning**

The prominence of the initiative and the authentic data that it has produced has fostered debate about sustainability across the school and has provided teachers with the opportunity to incorporate sustainability education into their classes in meaningful ways, for example the evaluation of the data sets produced by the solar panel installation in mathematics classes.
Examples of creative, sustainability-focused teaching practice have inspired other teachers to consider how they can improve their own classroom practice and thus generated a positive, improvement-orientated momentum. The framework and common language provided by the ISIS accelerator toolkit has been valuable in enhancing the cohesion and clarity of sustainability education, which has made the challenge of vertical alignment more manageable.

Impact on community

An additional benefit of the focus and coordination of the initiative has been an increase in collaboration and collegiality across the community as individual’s knowledge and skills have become more apparent. This phenomenon has helped foster a school culture that can be characterized as a community of leaders as individuals across the community have been encouraged to reflect on what they can offer to the initiative and then act on it.

Impact on leadership

The approach to SE at ISM has evolved out of the long established culture of academic excellence, service and international-mindedness. The decision to allow students to launch a whole school approach to sustainability was made out of recognition that it was fundamentally compatible with the mission and goals of the school. The role of school leadership can be seen to be supportive as opposed to a directive. School leaders have supported the SE approach in the following ways:

- established extremely high standards
- provided opportunities for student and staff development in order to reach the standards
- backed the approach with time and money once standards were met.

School leadership maintains conditional support of the approach, in other words, for as long as the approach provides tangible evidence of success it will be supported.

The sustainability of the approach

One of the standards of success set by the school leadership is that the approach is sustainable. While this is not the case at this point in time, a whole school coordinator is now in place to oversee the institutionalization of the approach. There are a number of key focus points to address.

- Set the outcomes of the student-led school goal in the context of a school-wide self-assessment framework. This framework provides an “end” goal as well as steps towards the goal.
- Build the capacity of faculty by providing professional development opportunities geared around supporting teachers in incorporating the data from the approach in regular classes and curriculum documents.
- Continue to build the capacity of students by embedding the skill of facilitating groups through the ISIS pyramid in the existing student leadership training programmes.
- Create a strong digital presence for the initiative that tells the story of where we have come from, where we are and where we want to go as well as providing supporting resources for all involved.
Conclusion

It is important to note that SE is exceptionally complex and, as such, generates a great many contrasting perspectives. It is hoped that this paper provides schools with an understanding of the origins and evolution of SE, an outline of the contentions surrounding it, some guidance as to what good practice in SE is and how this practice may be applied in the context of IB World Schools.

Find out More

1. watersfoundation.org
2. facingthefuture.org
3. tigweb.org
4. atkisson.com

References

Amsterdam Declaration on Earth System Science. 26 August 2013. http://www.igbp.net/about/history/2001amsterdamdeclarationonearthsystemscience.4.1b8ae20512db692f2a680001312.html


