Reflection on theory: Investigating the "who", "what" and "how" of an internationally minded education

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In this essay, the editors-in-chief reflect academically on the nature of action research. They locate the IB's educational philosophy as both classical and radical, offering an overview of the thinking that informs teaching and learning in IB programmes. This paper outlines an extensive global research agenda that includes school environments, student-centred education, re-conceptualist and organic approaches to curriculum development, critical literacy, and social-constructivist content and method (including effective inquiry, connected learning, conceptual understanding and rigorous assessment).

INTRODUCTION

The *IB Journal of Teaching Practice* is, by design, a practically-oriented publication, encouraging and celebrating classroom teachers and their work. However, this essential work is not without important theoretical foundations. The IB has always been concerned with **principles** as well as practice. This research review uses the structure and vocabulary of *What is an IB education?* (2013) to organize our reflection. This important document describes the philosophy of education that informs the journal's work. It also frames the practical questions that arise about teaching and learning in IB World Schools (and like-minded institutions and people around the world).

In this paper we consider three very broad questions about the character of action research in the context of education for international mindedness:

1. **Who** should be at the centre of IB action research?

2. **What** and **how** should we be researching about education in IB World Schools?

3. **Why** is action research in international education important for the world today? (We address this question in the second half of our reflection, planned for the next issue.)

WHO?

An IB education leans toward the development of a certain kind of person who can function effectively as a human being and guardian of the planet, who puts the IB's mission (to help create a better and more peaceful world) into action. Specifically, the IB identifies ten attributes that would mark such people in its learner profile: inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, and reflective. These define, for the IB, the goal of an education that develops international-mindedness (IBO, 2008). While the curriculum (**what** and **how**) can be outlined by an international organization, it is the people (**who**) intimately involved in and responsible for education at local levels who ensure that the attributes of the learner profile are both "caught and taught".

MacKenzie (2010) examined an international cross-section of parents in order to understand the basis on which they chose schools for their children. While there was some variation across countries,

parental priorities remained surprisingly consistent. Among the most important factors influencing parental choice were school structure (class size, examinations, etc.) and the "language of instruction". After these two priorities, parents were most concerned about an elusive characteristic the researcher labelled "the affective dimension". Parents looked for a caring school environment in which their children would be happy. While definitions and measurements of school climate are notoriously intangible, the ideals from which school climates are created are an essential (if sometimes overlooked) component of educational philosophy (Hare, 2010).

For the IB, the foundations of school climate rest in a philosophical commitment to holistic, values-based, student-centred education. This stance is by no means unique: many national curriculum bodies develop analogous statements of intent. For the IB, however, these ideals are part of a larger commitment to international education. As Marshall (2009, p. 267) noted, international education's brief is wide-ranging, involving not only discourse about the "non-exclusive nature of different citizenships [and] complexities associated with rights and responsibilities … in the context of global power inequalities" but also "emotion, identity, imagination, and the 'non-rational' in educational relationships". Education is never the sole province of the mind; learning is always embodied in relationships, in specific institutional settings. The IB concerns itself not only with syllabi and examinations, but also with the health and well-being of students and the educational institutions that serve them.

Hicks (2012) identifies this approach as "person-centred education" in his typology of educational philosophies. There are clear implications in terms of programme development and school leadership/management priorities that flow from the IB's philosophy, including regards for equity, the promotion of diversity and the recognition of a cohesive personal and community commitment to access, engagement, inclusion and participation for all learners (IBO, 2013).

The IB's educational philosophy places issues of identity, boundaries and community values at the centre of schooling. In that sense, the IB's philosophy may be less individualistic than it appears on first inspection, since it values the individual in socio-cultural contexts as an individual-in-community. Steinberg and Kincheloe (1998, p. 112) argued more than a decade ago that "Contemporary schools still emphasise quantities, distance and locations, not qualities, relationships or context." This insight is as valuable for school leaders and administrators as it is for teachers (cf. Greenfield & Ribbins, 1993), and it is important to remember that head teachers, principals, instructional coaches, district officials and coordinators can be action researchers, too.

WHAT AND HOW?

The IB's educational philosophy and practice offers a corrective stance that begins with the "who" of education. This essential starting point has important implications for what and how students learn—a major focus of inquiry, action and reflection for the IB community, in general, and for the work of action researchers in particular.

A "modern" positivist stance promoting science and technology as the solutions to important problems is no longer adequate for complex, global issues (Kincheloe & Steinberg, 2007; Apple, 2004). The "postmodern" movement, developed predominately in Europe through the works of Heidegger, Kuhn, Derrida, Foucault and Lyotard, affirms that learning builds on relationships between ideas, behaviours, contexts and outcomes, and accepts the feminist perspective that challenges the separation of logic and emotion. This philosophical stance opens up new perspectives and solutions to issues such as climate change, aging, gender relationships, water management, urban studies and lifelong learning (Landfester & Palsson, 2009).

The constructivist theories described by Piaget, von Glasersfeld, Vygotsky and Dewey offer an alternative curriculum vision supporting this postmodern stance and the centrality of the learner. Piaget, credited with first formalizing the theory of constructivism, believed that learners construct knowledge by assimilating experiences from their environment and accommodating them to internal mental structures or schema. Learning occurs in response to conflict, provocations or problems (Piaget, 1970). von Glasersfeld believed that nothing exists outside the individual's experience and new learning comes from disturbances between old experiences, the physical world and the social world (von Glasersfeld, 1989). Vygotsky focused on the significance of the relationship between adult and child. The adult brings the child's understanding of her physical and social world forward through social interaction (Vygotsky, 1981). For Dewey (2001), considered the founder of social constructivism, the idea of "transaction" describes the transformation of learners in community. Through transaction, teachers and students become learners creating a common understanding, thus setting a foundation for democratic societies.

In addition to "constructing" knowledge, postmodern thinkers deconstruct what they see in the world. Deconstruction means inquiring into unintended meanings that many would consider unimportant but which can expose significant contradictions or power abuses (Naas, 2003). Deconstruction inquires about silences, for example, the absence of women's and indigenous' voices in historical texts.

In the mid-1970s, Pinar and Grumet (1976) proposed that educators move beyond a good/bad division between behaviourism and constructivism and "re-conceptualize" curriculum to meet new times and situations. They moved away from the noun "curriculum"—the "what to teach" and returned to the verb *currere* to re-focus on how understandings are constructed as a personal experience. The teacher becomes facilitator, accepting that students bring understandings and experiences with them and that new knowledge is created when these understandings intersect in an active and critical way (Kincheloe, 2004; Shor, 1997).

Continuing this re-conceptualist, postmodern vision, Doll and Gough (2002) described curriculum through 5Cs: *currere*, complexity, cosmology, conversation and community. There is no set starting point, "the beginning is in the existential moment and as the experience, with communal help, plunges into a situation, a matrix of connections (rich, recursive, relational, and rigorous) emerge" (Doll, 2005, p. 7). Complexity accepts chaos and acknowledges that nature is not simple: complexity can be a source of creativity. Cosmology demands a universal view focusing on relationships and interdependence rather than facts. Conversation brings together different perspectives, enhances relationships and develops understanding. In resonance with Dewey and Vygotsky, experience is constructed socially in a community dedicated to care and critique. This is a vision of education that supports international-mindedness.

Deleuze and Guattari (1994) described binary patterns of thought as arborescent—having tree-like, controlled structures that are systematic, rational and certain. They use the metaphor of rhizomes to describe more realistically an endless pattern of knowledge, movement and change that has no hierarchy of importance. In a postmodern, poststructuralist world, the binaries of "what" and "how" of teaching and learning need not exist. This comes close to an idea of "civic competence for learning how to learn", an approach that integrates "the academic and contextual, the universal and local, the objective and the subjective, the cognitive and the affective, facts and values" (Hoskins & Deakin Crick, 2010, p. 185). What we teach is how we teach.

The IB's educational philosophy highlights four key aspects of content and method that develop this broader commitment to contemporary social constructivism: effective inquiry, connected learning, conceptual understanding and rigorous assessment.

Reflective inquiry

IB programme standards and practices state that "Teaching and learning engages students as inquirers and thinkers" (IBO, 2010, p. 4). This inquiry stands at the heart of social constructivism. "Inquiry, as Dewey conceived it, is transformational and transactional. Both student and teacher are called to be artists in the construction of a better life and a better world" (Wickersham, 2002, p. 128). Inquiry cycles described in education literature have their origins in Dewey's five stages of reflective thinking, placing higher order thinking, reflection and action as inseparable in an inquiry environment (Dewey, 1933).

Inquiry can range from a structured form where students are provided with data or information to analyse, through guided inquiry where teachers present the initial questions but leave the methods, solutions and development of further questions for students, to open inquiry where students pose questions and find solutions (Bonnstetter, 1998; Jordan, 2008). Didactic teaching occurs frequently in inquiry classrooms. Teachers direct learning by "careful prompts at strategic times" (Audet, 2008, p. 145). This teaching may be with the whole class, small groups or individuals, but it occurs where needed to support a learning community working together to build shared understandings (Lave and Wenger, 1991).

This observation raises important questions for teachers to explore in the midst of their work with students:

- Does a constructivist approach work for all children?

- Do some children require more direction at different stages of their development or on the basis of their personal learning preferences?

- Are there more culturally or generally preferred (or effective) learning sequences or balances of didactic and inquiry-based learning (for example, initially, a more didactic approach that gradually releases responsibility to students for their own learning)?

Inquiries take different paths depending on the starting points, interests and abilities of teachers and students. This means that teaching through inquiry is inherently uncertain. Dewey considered reflection

as "the active, persistent, and careful movement from uncertainty to understanding" (Dewey, 1933, p. 18). Critics of Dewey felt that he did not put enough emphasis on the importance of emotions and feelings to what makes a person reflect and inquire. Later rewording of the role of reflection brought the connection between inquiry, uncertainty and action into clearer focus.

The practitioner allows himself to experience surprise, puzzlement or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation.

(Schön, 1983, p. 68)

Inquiry is often falsely equated with "hands-on" or "experiential learning". Although these facets may well be often observed in an inquiry classroom, it is the attempt to draw meaning out of the experience through reflection that distinguishes inquiry from any other paradigm (Audet, 2008). Reflection leads to the development of learning dispositions that empower students to manage their own learning. As they are guided through inquiry, students learn how to reflect, find and solve problems themselves. Inquiry supports true differentiation. When students are encouraged to follow a reflective pathway, the need for streaming or acceleration of students mostly disappears. They develop the ability to inquire into the known and unknown, to think critically and creatively about their own actions and those of others, to request proof, to critique opinions, and to look for diverse points of view (Zuckerman, 2003, p. 182). The relationships involved in this process call on all attributes of the learner profile. Inquiry with reflection and action weaves international-mindedness into the daily fabric of IB classrooms. The "what to learn" merges with how it is learned.

Conceptual understanding

Concepts are essential for critical thinking (Abbott & Wilks, 2005). Concepts consist of one or two words and may be relevant in all areas of learning such as change, system and interdependence, or they may be more discipline-specific such as wealth, poverty, habitat or government (Erickson, 2008; Murdoch & Hornsby, 1997; Wing Jan & Wilson, 1998). Concepts focus understandings. They underpin the teacher questions that start the inquiry process. Concepts focus the student questions that drive the inquiry cycles.

Exactly how does this work in the classrooms of IB World Schools? We believe that it deserves better documentation and analysis, and closer scrutiny by teacher researchers. In many cases, IB courses and frameworks provide a rich playground for this inquiry. For example, in IB Diploma Programme science courses, students carry out practical work for internal assessment in which teachers are responsible for identifying the scientific **concepts** that are to drive the students' "focused inquiry", but the students are allowed the intellectual space in which to develop the inquiry itself. This challenging instructional process is not always well understood or executed. It is an annual opportunity for meaningful action research.

Bruner, Goodnow and Austin (1956) distinguished five elements of concepts: name, examples, attributes, value and rule. Concepts provide a name to a category of experiences. They allow for positive and negative examples in which the concept may be used. Concepts have attributes that learners can describe and consider as essential or nonessential to their current context. These attributes have a value that determines an acceptable level of variation that can be used to filter the wide range of possible examples. Concepts have rules that link attributes; a rule is only a working definition that may be elaborated or disproved. Erickson (2008) defined concepts as ideas that are broad, abstract, timeless, universal and allow for many possible examples. "Conceptual understanding" is one of many similar terms that include throughlines, enduring understandings, essential understandings, big ideas, generalizations and central ideas. Regardless of the label, they are "complex statements building on one or more concepts to focus the inquiry" (Wiggins & McTighe, 2006, p. 128). They are rules that link attributes of the concept to an authentic situation so may prove to have exceptions over time.

Concepts are not stable entities. They are created and constructed by each learner. Students who have inquired into "change" or "conflict" in one context will build on that past understanding when faced with that concept in a different context at another time. Constructivist learners not only create the concept, they use it to weave a unique fabric of conceptual understanding—a plane of personal meaning. Each learner's plane or "plan" is unique. Deleuze and Guattari (1994) referred to this as a plane of immanence or "becoming". It is progressive and endless.

Inquiry through concepts is integral to social constructivism. Individual planes of understanding the world will have points of connection, overlaps and dissonance with those of others. When people

work within and between these different conceptual understandings, they co-construct communities and build recognition of shared worlds. If "colliding conceptual planes" are fundamental to human understanding, concepts become an essential element for any educational system that aspires to be internationally minded.

and change (Klein, 2011). The latter places "discipline" as an established area of expertise involving not only information about the core concepts, theories and findings in the domain, but also calling upon students to learn about the methods by which disciplinary knowledge is produced; the purposes and applications for which knowledge is

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Clearly, no two conceptual worlds are identical, nor are they entirely different; rather, moving points of connection, overlap and differentiation exists between them. Responsiveness, then, entails that individuals exercise the concepts that belong to others' lives and inform their doings and thinkings and understandings.

(Laverty, 2010, p. 37)

An internationally-minded education moves the responsibility to develop conceptual understanding from the domain of philosophers to an obligation on everyone. Dewey viewed this process as the essence of responsible citizenship. He defined responsibility as the "modification of character and the selection of the course of action which would make this possibility a reality" (Dewey, 1998, p. 351). To be responsive is to co-construct a new conceptual understanding and act on that new learning. To be responsible is to inquire.

Connected learning

Although it has become accepted that schools organize and plan by distinct disciplines or subjects, in real life we do not learn that way. People pose and solve problems individually and collaboratively using a wide range of discipline knowledge and skills, and call on attitudes and values to make decisions and act. This is not only an education issue: the European Science Foundation strategic plan for 2006–2010 emphasized "… increasing scale of cooperation and a wider scope of disciplines including interdisciplinarity" (Landfester & Palsson, 2011, p. 4). However, "… experienced educators worry if interdisciplinary instruction should be embraced at the expense of learning in the disciplines, or should interdisciplinary teaching build on individual disciplines?" (Boix-Mansilla, 2010, p. 1).

Disciplines may be described through two sets of metaphors. The positivist metaphor of turf, border and domain highlights the "control" of intellectual inquiry. The postmodern organic metaphors of cross-fertilization, mutation and interrelation highlight connection

pursued; and the typical ways in which information is communicated in the discipline (Boix-Mansilla, 2010, p. 5).

However, understanding the world demands both disciplinary and interdisciplinary approaches (Boix-Mansilla & Gardner, 2007). Interdisciplinary learning is generally defined as the process by which students come to understand bodies of knowledge and modes of thinking from two or more disciplines or subject groups and integrate them to create a new understanding (Boix-Mansilla, 2010, p. 13). There are no simple definitions of "understanding". Dewey defined understanding as:

To grasp the meaning of a thing, an event, or a situation is to see it in its relation to other things: to see how it operates or functions, what consequences follow from it, what causes it, what uses it can be put to.

(Dewey, 1933, p. 137)

Boyer (1995) proposed that students explore understandings through transdisciplinary themes that represent shared human experiences. Boyer's work has been seminal to the development of the Primary Years Programme (PYP). Debate and discussion representing multiple perspectives led to the selection of six transdisciplinary themes (IBO, 2009):

- Who we are

- Where we are in time and place

- How we express ourselves

- How the world works

- How we organize ourselves

- Sharing the planet

In the Middle Years Programme (MYP), interdisciplinary education invites students to integrate concepts, theories, methods and tools

from two or more disciplines to deepen their understanding of a complex topic (Boix-Mansilla, 2010). MYP global contexts provide another strategy for connecting curriculum, further developing PYP transdisciplinary themes in ways that meet the needs of adolescent learners. The starting point for curriculum development can be these ideas that are intrinsically relevant, significant, challenging and engaging.

Both the PYP and MYP develop understandings through authentic experiences that call on a range of discipline knowledge and skills and require students to solve and pose problems, gather and analyse information, communicate clearly with diverse audiences, make connections between events, work as members of learning communities, transfer acquired knowledge and skills to new situations, and take action to improve conditions (Newmann, Bryk, & Nagaoka, 2001; Boix-Mansilla & Jackson, 2011). To complete the IB continuum, the Diploma Programme students encounter a range of subjects, and through the Creativity, Action, Service (CAS) component of the Diploma Programme core may continue their own explorations of physical activity and the creative process. Interdisciplinary Diploma Programme courses such as Environmental Systems and Societies offer students ways to explore new issues and understanding that reach across disciplines, and the Theory of Knowledge course helps students connect their learning across the curriculum.

A continuum of learning that supports the development of discipline knowledge and skills, values and attitudes through inquiry into conceptual understandings of local and global significance while respecting the voice of the learner is indeed fundamental to developing international-mindedness.

Rigorous assessment

The dominant education ideas of the twentieth century developed around behaviourism and the "factory" model, underpinned by external standardized testing. Over the past thirty years, the shift to constructivist principles has been referred to as an "emergent paradigm" as it is still reconciling various theories and philosophies, particularly as these develop through new investigations into the brain and neuro-system (Shephard, 2000). This shift requires a greater emphasis on assessment as helping students develop skills to learn independently rather than being used to rank students or provide a summary statistic. Through assessment, teachers model the skills of critical thinking and self-assessment that they want students to learn (Stiggins, 2001; Shephard, 2000; Brookhart, 2003).

Reviews of research reports on formative assessment offer insights into the roles of assessment in inquiry learning (Black & Wiliam, 1998, 2009). Rigorous formative assessment that included regular and systematic feedback to individual students resulted in substantial achievement gains in reading, mathematics and science over control groups experiencing traditional classroom environments. Students involved in tasks that were designed to help them learn better rather than obtain a grade spoke of the importance of learning and the value of effort and were more likely to seek help from their teacher, but after significant attempts at independent mastery.

Another insight from Black and Wiliam's (1998) review addressed the central role of self-assessment as part of the inquiry cycle. Asking questions and acting to find solutions is self-assessment. Students who posed their own questions demonstrated higher achievement than those who answered teacher or textbook questions. Students who used peer feedback to answer and discuss their questions demonstrated even greater learning gains. Researchers often found it impossible to differentiate peer assessment from group activities. Effective formative assessment, effective inquiry and effective learning are enhanced through collaborative responsibility.

Although inquiry learning shifts the focus of assessment from summative to formative, summative assessment is still essential. These tasks give students the opportunity to demonstrate their resolution of the puzzlement that initiated the inquiry. The nature of the summative assessment must be known to students at the beginning of the inquiry. A summative task must be rich enough to give purpose to the development of a wide range of knowledge and skills; develop higher order thinking by requiring a synthesis of ideas, analysis of data or evaluation of different perspectives; allow for creative approaches and solutions; encourage creativity; and acknowledge individual learning styles (Wiggins & McTighe, 2006; Erickson, 2008). IB students demonstrate their consolidations of learning through a variety of assessments, culminating with the Primary Years Programme exhibition, the Middle Years Programme personal project, the Diploma Programme extended essay and the IB Career-related Certificate reflective project. Summative assessment of each subject in the Diploma Programme also aims to balance valid measurement with reliable results, offering a rigorous entrance qualification that is recognized by universities worldwide (IBO, 2013).

Assessment is part of the inquiry process: it incorporates reflection and action. When students learn how to assess themselves and when

they are empowered to set their own learning goals as part of a learning community, they develop the capacity to navigate colliding planes of conceptual understanding and act responsibly in a complex world. These collisions and the action that students take in their aftermath are dynamic settings for action research that is both theoretically grounded and practically applicable across educational frontiers.

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