Title	Commentary: Inquiry-based learning and teaching
Author(s)	Mark Baildon
Source	*HSSE Online, 9*(1), 70-77
Published by	Humanities and Social Studies Education (HSSE) Academic Group, National Institute of Education, Singapore

HSSE Online 9(1) 70- 77

Commentary: Inquiry-based Learning and Teaching

Mark Baildon

National Institute of Education (Singapore)

Abstract

This article has simultaneously been published in NIE Perspectives. *In this commentary, Singapore-based research on inquiry-based teaching and learning is shared. It provides a summary of research findings that highlight pedagogical practices in classrooms to effectively structure and support IBL, build an inquiry culture in classrooms and develop inquiry mindsets and social practices that support inquiry.*

Why inquiry-based learning?

Inquiry-based learning (IBL) is now considered the gold standard in curriculum and classroom practice. If we consider inquiry to be the methodical building of evidence-based claims and arguments, it is central to authentic intellectual work, disciplinary reasoning, developing an informed and participative citizenry and 21st century skills, such as critical and creative thinking, problem-solving and even empathy. Inquiry is a method for building knowledge and is fundamental to learning. However, despite calls for everyone to jump on the inquiry bandwagon, and it is difficult to find anyone *not* in favor of the inquiry approach in education, it does seem that IBL is challenging to enact in classrooms. Research focusing on IBL in Singapore indicates that inquiry instruction remains teacher-centric and teachers are unsure about how to use inquiry as a core pedagogical approach (Costes-Onishi, Baildon, & Aghazadeh, in press). What might account for some of these challenges?

First of all, perhaps educators have set the bar too high for what inquiry should look like in classrooms. Maybe we need a more charitable and age-appropriate view of IBL. Inquiry actually is quite fundamental to being human. Even as infants we begin to inquire about the world; we use our senses to experience both the physical and social world around us, and with the help of knowledgeable others (e.g. our parents or other family members) we begin to make sense of our experience and ourselves. Eventually we learn to ask questions, to wonder, to experiment and to make meaning from experience. As we go through life, we might even engage in fairly significant inquiries about who we are, what kind of person we want to be, how we might contribute to society and what will make our lives meaningful and purposeful. To get good at something in work or play, likely requires some degree of inquiry into the field of interest in order to develop the necessary knowledge, skills and dispositions to perform well in that field. As citizens, we inquire into societal concerns by reading about a public issue, talking with others about it and getting enough information to be able to develop an informed position. The point is, inquiry might be considered part and parcel of so

many facets of our lives that we tend to forget that inquiry is what we are doing in varying degrees when we learn something new, think carefully about what we are doing, who we want to be and what is good for our lives and society.

However, whether we call it inquiry or not likely depends on the extent to which these efforts might be considered active, persistent and careful, the degree to which one reflects upon experience and actually learns, grows and develops through that process of making meaning of experience. As Parker (2011) argues, as humans we experience things and we reflect on or theorise what these things mean. We then test our theories – in new experiences or by hearing others' views and feedback, for example – and revise them in accordance with new experiences, new ways of looking at or thinking about things (i.e., theories) and in light of newfound or more compelling reasons and evidence. According to Stanley (2010), this makes inquiry a "method of intelligence." While we might be predisposed to these dispositions, these more methodical and intelligent ways of thinking most certainly have to be cultivated, developed and practiced. So, to answer *why IBL*, we might say that inquiry is core to learners constructing knowledge, that it is fundamental to lifelong learning, and that it provides a "method of intelligence" that is vital to living and working in society.

What is inquiry-based learning?

To understand what IBL is, we shouldn't lose sight of the fact that at an early age, children are natural-born inquirers, a bit like junior scientists and social scientists, a point made by Dewey (1902) in *The Child and the Curriculum*. In this treatise, he argued that it might be more productive to see the child and the disciplinary expert on a continuum, that both are fundamentally engaged in sense-making and that for those working in the disciplines it is more a matter of utilising rigorous, systematic methods to build warranted knowledge – knowledge that is justified, tested, proven and valid based on reliable methods in a community of practice (i.e., other scientists, historians, social scientists, etc. who have developed expertise in the field of knowledge). Dewey also highlighted the importance of problems as core to inquiry and to thinking. For Dewey, we only think when confronted with a problem, when there's some unease, a disruption, a feeling of discomfort, disequilibrium or confusion, where things are amiss in our experience in some way. This problem, whether it be something we directly experience or hear about affecting others second hand, whether it be a social issue or a personal problem, whether it is something in the physical world that is perplexing or that we wonder about, prompts us to engage our faculties to figure it out, to understand what's going on, and to explore how it might be addressed, solved or managed. Problems, then, prompt inquiry, whether it be for the child or the expert. What experts, whatever their field of study, are especially good at, in fact, is identifying and defining problems and asking really good questions that enable them to investigate problems in ways that lead to new knowledge or solutions. As educators, we hope to instill similar kinds of dispositions with students, encouraging them to identify problems in their experience and ask questions about what they are experiencing; or by helping them become genuinely curious and interested in problems we might pose to them and helping them ask really good questions that will lead them into the problem in an educative way.

Based on what has been discussed above, we might understand inquiry as grounded in

experience. If we think about this, problems are core tensions and felt problems arising from experience that drive the need to pursue more knowledge and experience (Dewey, 1938). According to Costes-Onishi, et al (in press), effective IBL is grounded in students' experiences in some way to provide powerful and expansive learning opportunities. Based on a review of studies about IBL, these authors argue that effective IBL engages students experientially and collaboratively in solving real-world problems, problems worthy of authentic inquiry in which students are engaged in the search for meanings, actively questioning, and sharing and communicating their understandings throughout the process. Doing so, requires building an inquiry culture, inquiry mindsets and social practices that support inquiry (Costes-Onishi, et al, in press).

If we move from a naturalistic view of inquiry, to one that highlights the more methodical aspects of inquiry, we tend to start with particular processes that make inquiry more structured and systematic. First, we might note that there are multiple definitions of what constitutes IBL across different subjects. While a number of models of inquiry can be found in different syllabuses, inquiry has been taken to mean authentic, often discipline-based intellectual work, such as geographic fieldwork, issues-based inquiry (focused on the study of significant societal issues or public policy issues), model-based inquiry (e.g., based on inquiry into scientific models and representations), as well as more interdisciplinary forms of inquiry, such as project-based inquiry and design-based inquiry that promote self-directed learning (Kwek, et al, 2019). Inquiry, then, can take many forms with multiple models of the inquiry cycle offered as ways to engage students in structured inquiry-based learning processes when taken as a whole. While each subject may have its own particular inquiry model, such as the *Humanities Inquiry Cycle* of "Sparking Curiosity, Gathering Data, Exercising Reasoning and Reflective Thinking," examining other models of inquiry can contribute to how educators might think about and practice inquiry in classrooms. Sharing different approaches to inquiry from different subjects can add to the repertoire of understandings and practices teachers might employ in their classrooms. As teachers, an inquiry into inquiry, or sharing different conceptions and effective approaches to IBL by others across subject areas can enhance our own professional learning. For example, instead of model-based inquiry in the sciences, humanities teachers might develop case studies for students to investigate as models of causation in history or geography, or as cases of Social Studies issues that might show how different societies understand and address particular issues that are shared across most societies (like inequality or climate crisis).

Studies have also found that there are a range of pedagogical practices that support IBL. Costes-Onishi, et al (in press) argue that IBL essentially should focus on helping students learn how to create knowledge through authentic learning experiences and activities. This would include engaging students in real problems, whether in the sciences or humanities subjects, allowing students to raise and investigate questions that are meaningful to them and allow for rich investigation into the problems through the collection of relevant information or data to develop their own conclusions. Authenticity is key here – the problems should be authentic (actual problems core to the disciplines yet designed for students to investigate in age-appropriate ways) and the methods used to construct knowledge about

the problem should provide opportunities to collect and work with authentic data or information sources and develop their findings in meaningful ways. This requires educators to recognize that problems are core to their subjects. As Parker (2010) reminds us, subject matter is often taught as if

> the academic disciplines are settled and devoid of controversy. Nothing could be further from the truth. The disciplines are loaded with arguments, and expertise in a discipline is measured by one's involvement in them . . . Argumentation is authentic disciplinary activity. Social scientists argue about everything they study—about why Rome fell, what globalization is doing, why slavery lasted longer in the U.S. than in England, why poverty persists, how the nation-state system developed initially, and why it is maintained today. (p. 254)

So, to effectively practice IBL in classrooms, it is imperative that inquiry-oriented educators identify and tailor problems that will prompt inquiry and help students develop understandings aligned with curriculum. This requires planning lessons that support students' inquiry-engagements with these problems.

Kwek and colleagues (2019) found several pedagogical practices in classrooms that effectively structured and supported IBL that can be taken into consideration in planning and enacting IBL. In sum, these included:

- *The effective use of questioning:* Studies pointed to teachers effectively using a range of questioning approaches, using questions strategically to seek clarifications, discuss topics and structure different forms of argumentation, especially with a claims-evidence-reasoning framing (e.g., questioning focused on what claims were being made and what the reasoning and evidence were to support those claims);

- *Scaffolding student learning:* In several studies, teachers were often seen to scaffold student learning through learning consolidations (e.g., through recapping or reviewing learning by highlighting key ideas, concepts or content), engaging students in evaluation of authentic information sources (using a range of scaffolding, heuristics and guidance), and using ICT-enabled forms of scaffolding (e.g., to organise ideas, structure arguments, share findings, etc.);

- *An emphasis on student-centred learning:* Teachers were observed to effectively focus on students' prior experiences and ideas, leverage these experiences and ideas to promote learning and encourage student experimentations and explorations – the focus was on designing rich tasks for student inquiry and engagement, rather than teacher talk;

- *Perspective-taking and synthesising information:* As part of inquiry, teachers encouraged students to consolidate or synthesise their learning and view issues, problems, tasks and ideas from multiple perspectives (e.g., they often asked students to consider different perspectives than those provided by the textbook);

- *Supporting students' emotional needs:* Teachers also supported students' emotional needs, including support for students to work through ambiguity or 'mistakes' and to overcome fear of experimentation and exploration – they created safe learning environments for students to share their views, consider different perspectives and develop their own conclusions; and

- *Engaging students in the core social practices of disciplined inquiry*: Teachers helped students understand the disciplinary nature of their subjects (e.g., how knowledge was constructed in the discipline), emphasised evidence-based reasoning (the evaluation of claims and evidence) and made explicit these practices (by providing guiding heuristics for reasoning or by modelling and making visible these practices).

Taken together, these studies reveal teachers who are effectively using a range of strategies to guide students in IBL processes through questioning strategies, using effective scaffolding as needed to support and guide student learning, and encouraging students to consider different viewpoints and to take initiative and self-direct their learning in a supportive, caring learning environment. While the teacher role is active and provides necessary support and guidance, the focus is on students taking centre-stage in their learning, prompted by good questions, rich and authentic information sources, consideration of different perspectives, and constant encouragement to develop their own conclusions and findings.

Dewey (1910) reminds us that making meaning through inquiry is a process of ongoing reflection. Reflection, like other social practices, is learned as a social process modelled and guided by those who are close to us, such as family members and our teachers. These expert others help us reflect on or think about our experiences, what we encounter in the form of problems, information sources, stories or issues, and through this process help us develop understandings about the world, others and ourselves. The approaches outlined above suggest the kinds of methods that teachers and students can engage with in this endeavour.

Why is IBL so challenging? How might these challenges be managed?

If inquiry is such a natural process, fundamental to human life, something that everyone does to a certain extent to understand and address problems, and considered the gold standard in curriculum and pedagogy, why then is it so difficult to enact in school settings? In Singapore, while the inquiry approach has been a feature of curriculum since the early 2010's, with a great deal of teacher education and professional development marshalled to prepare teachers to use inquiry approaches in their instruction, there is some evidence that the use of IBL remains uneven (Kwek, et al., 2019). Why is this the case? Why is inquiry pedagogy so challenging? How might these challenges be managed? How might inquiry be more fully enacted in more classrooms?

First of all, inquiry-based teaching *is* challenging. It is not simply a matter of technique or teaching strategies. Unfortunately, there is no formula for effective inquiry teaching. But let us return to this after considering some of the reasons why inquiry is so difficult. There are several

factors identified by teachers that Kwek, et al (2019) suggest constrain the implementation of inquiry in classrooms. These include time constraints (inquiry requires ample planning time among teachers and time for students to explore, investigate and discuss problems, etc.), deficit views of students (as not able to engage in inquiry due to knowledge or skills deficits), large class sizes (which makes fieldwork investigations difficult to manage, for example), and the emphasis on exam preparation. In some cases, teachers saw inquiry as a form of skills-based work that could help students prepare for exams, but Kwek, et al (2019) found that this reduced the intent and potential of IBL into procedural steps and skills that had to be learned. These findings are consistent with international literature, which is aptly summarised by Barton and Levstik (2003) that "in study after study, what teachers know has little impact on what they do" (p. 37). Instead, while teachers may believe in the value of IBL, their efforts to implement it in classrooms comes into conflict with other priorities that exist in schools, such as managing classrooms, covering content and exam preparation. As Dewey (1916) noted over a century ago, education systems serve many other purposes, such as socialising students into the norms and values of society, the meritocratic sorting of students and preparing students for work, which may restrict and constrain the full potential of inquiry as an educative process.

How then, might the tensions that arise between IBL and competing educational purposes and priorities be managed? First of all, these tensions and the ways they can be managed can be made an explicit focus of teacher learning at all levels. In other words, managing these tensions requires ongoing, continual inquiry by teachers to explore what works, what problems and questions invite more authentic forms of inquiry, what forms of scaffolding and guidance work, and having opportunities to share among teachers the different insights and practices that contribute to effective IBL. Kwek, et al (2019) found that there were particular teacher beliefs that facilitate the implementation of IBL in classrooms. These included teachers having a strong belief in and commitment to the inquiry process and the purposes of IBL, and that teachers' dispositions mattered a great deal. They pointed to the need for teachers to be open-minded to trying out new practices and ideas, being adaptable and flexible in their approach to classroom practice, and having high expectations for their students' capacities and readiness for inquiry. They also noted that school structures that provided support for teacher inquiry were key. Like their students, teachers need to have adequate time to delve into problems of practice and opportunities to engage in reflection, sense-making and problem-solving collaboratively.

How can we move IBL forward?

This brings us to the paradox of doing inquiry in classrooms. If we return to our definition of inquiry as the methodical building of evidence-based claims, this suggests there are particular methods that enable us to build knowledge or learn. There are – we see these used in the disciplines – and this article has suggested these methods can be used in some authentic and age-appropriate ways to support IBL. However, method should not be confused with technique or simply reduced to teaching strategy. This is because doing inquiry well in classrooms depends on a number of things – the students, the curriculum, the problem or issue being investigated, the context – and thus requires judgment and choice. Judgment cannot be simply reduced to a set of rules or

techniques (Flyvbjerg, 2001).

Instead, inquiry might be better understood as a set of commitments, values, dispositions, aspirations or practices that effective inquiry educators develop over time. Murdoch (2015) has identified a set of effective inquiry practices teachers are observed "doing" in their classrooms. These include:

- Creating flexible, open and equitable classrooms where students have choice;
- Linking learning to authentic contexts, problems and intellectual work;
- Using a range of questions to prompt thinking, especially open-ended questions;
- Stimulating student curiosity and encouraging student questioning;
- Supporting students to figure things out for themselves;
- Giving students opportunities to research to understand and address problems;
- Using scaffolds and routines that support a range of thinking processes;
- Being open to exploration, unexpected turns and different pathways in reasoning;
- Limiting whole class instruction (and teacher talk), and encouraging students to take initiative, to talk and share their thinking;
- Building reflective thinking into daily routines; and
- Being inquirers themselves into students' lives, experience and interests, into content and into pedagogy.

Rather than particular techniques or strategies, these are manifest as social practices (things we see inquiry teachers do) that are developed through persistent effort over time. To develop these classroom practices requires believing that change is possible, identifying existing routines that inhibit inquiry as well as those that might be more satisfying and productive (such as those listed above), and working collaboratively and collegially to adopt and utilise these new routines in classroom practice. If we consider these as social practices, we recognise that we need to help each other make these changes.

To conclude, effective IBL is less about better teaching techniques than it is about necessary commitments and support to develop particular practices among students and teachers. It requires reconceptualising what it means to teach and learn and the creation of a system-wide culture of inquiry focused on authentic and meaningful problems (Costes-Onishi, et al, in press).

References

Barton, K.C., & Levstik, L.S. (2003). Why don't more history teachers engage students in interpretation. *Social Education, 67*(6), 358-361.

Costes-Onishi, P., Baildon, M. & Aghazadeh, S. (in press). Moving inquiry-based learning forward: A meta-synthesis on inquiry-based classroom practices for pedagogical innovation and school improvement in the humanities and arts. *Asia-Pacific Journal of Education*, xx, xxx-xxx.

Dewey, J. (1902). *The child and the curriculum*. Chicago, IL: University of Chicago Press.

Dewey, J. (1910/1985). *How we think,*

and selected essays (Vol. 6). Carbondale, IL: Southern Illinois University Press.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillan.

Dewey, J. (1938). *Experience and education*. New York, NY: MacMillan.

Flyvbjerg, B. (2001). *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge: Cambridge University Press.

Kwek, D., Baildon, M., Costes-Onishi, P., Yeo, J., Sengalrayan, B.W., Tan, M., & Bhardwaj, D. (2019). *Inquiry-based pedagogies & inquiry-based learning in Singapore classrooms*. Singapore: OER-NIE.

Murdoch, K. (2015) *The power of inquiry: Teaching and learning with curiosity, creativity and purpose in the contemporary classroom*. Northcote, AU: Seastar Education.

Parker, W. (2011). Foreword. In M. Baildon, & J. S. Damico, *Social studies as new literacies in a global society: Relational cosmopolitanism in the classroom* (pp. xiii-xv). New York, NY: Routledge.

Stanley, W. B. (2010). Social studies and the social order. In W. C. Parker (Ed.), *Social studies today: Research and practice* (pp. 17-24). New York, NY: Routledge.

Note: This article was reprinted with special permission by *NIE Perspectives*. To access the site, click: https://nie.edu.sg/perspectives and log in with your NIE gmail which is in this format: john.smith@g.nie.edu.sg (log in with your NIE password). Alternatively, you can go to the NIE portal > Staff Services > NIE G Suite and click *Perspectives*. Following the commentary, is a curated list of related research by NIE faculty.