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Research Findings on Inquiry in Classrooms: Implications for Teaching and Learning

By *Mark Baildon*

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The Case for Inquiry-Based Learning

Inquiry-based learning (IBL) is considered central to developing 21st century competencies necessary for lifelong learning and preparing young people for work and citizenship. IBL not only supports our capacities to learn and methodically build knowledge based on sound reasons and evidence, it also provides a means for collectively addressing complex problems to create more just, equitable and sustainable futures. IBL offers a "method of intelligence" (Dewey, 1910) for understanding and addressing problems we might face in workplaces, life and society.

Creating Inquiry-Based Classrooms

Inquiry-based classrooms are characterised by climates of trust, purpose and belonging intentionally created and sustained by teachers committed to IBL. IBL classrooms foster cultures of questioning, where students and teachers ask a lot of questions—"What does this mean? What should we do? Do you agree or disagree? Why? What is your evidence for that? How might others view this topic?" Teachers ask questions to prompt student curiosity, to seek clarification, to probe thinking, to encourage listening and engaging with ideas, to deepen student reasoning and to engage students in dialogue and deliberation about information sources and problems.

IBL classrooms are also characterised by classroom routines and forms of scaffolding that support students in "doing" inquiry. The teacher designs authentic, real-world type tasks and provides necessary guidance and support to help students manage challenges, complete tasks and maintain their interest and effort. There is a strong sense of purpose in the classroom—students understand what they are doing and why. IBL classrooms are vibrant, engaging spaces and students feel safe and supported.

Effective IBL Practices

Foremost is that teachers believe wholeheartedly in the purposes and power of IBL. There is commitment to IBL and teachers believe all students are capable of and benefit from IBL if adequately supported. IBL-committed teachers are open-minded and flexible, willing to try new approaches and pedagogies, and responsive to the learning interests and needs of their students. They engage in their own inquiry learning (into curriculum, student learning, pedagogy, etc.) and have belief in their efficacy to manage the many challenges that IBL poses.

A synthesis of research on IBL in Singapore (Kwek et al., 2019) found that effective IBL is based on the five following practices:

1. **Effective use of questioning:** Teachers were found to use a range of questioning strategies, and they especially emphasised questions to seek clarification of ideas and student reasoning or to help students develop their own arguments and positions (e.g., claims-evidence-reasoning framing).
2. **Scaffolding student learning and their emotional needs**: Teachers scaffolded learning by:

a. Encouraging and helping students work through ambiguity and challenge and to overcome their fear of failure and making "mistakes";

b. Helping students consolidate their learning through regular recaps and reviews of key subject matter, skills and learning goals; and

c. Strategically guiding student work with authentic data or information sources, often using specifically designed scaffolds, heuristics and ICT-enabled scaffolding.

3. **Emphasis on student-centred learning**: Effective IBL teachers often leveraged students' prior experiences and ideas; they encouraged student experimentation and exploration (through the design of rich tasks that students found relevant to their lives);

4. **Perspective-taking and synthesising information**: Teachers encouraged and guided students to view problems and ideas from multiple perspectives (often beyond information in their textbooks) and to reflect upon and synthesise their learning; and

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

These findings are consistent with international studies of IBL. IBL is more effective supporting student learning gains than teacher-centred pedagogical approaches if students are provided guidance, support and scaffolding (Costes-Onishi et al., 2021; Lazonder & Harmsen, 2016).

Teaching With and For Inquiry

According to Parker (2018), when teachers teach ***with*** inquiry, it supports constructivist forms of learning that enable students to build knowledge. When teachers teach ***for*** inquiry, IBL helps students learn powerful ways of reasoning that will enable them to understand and address problems in their lives (Dewey, 1910). In this sense, IBL can provide students with the necessary learning capacities, thinking skills, knowledge and dispositions to enable lifelong learning.

While inquiry is a "method" for learning and thinking (used in disciplinary communities, for example, to build knowledge and support rigorous forms of reasoning), it cannot simply be reduced to techniques and strategies easily employed in classrooms. This is the paradox and challenge of IBL. While inquiry is a method, IBL requires creating an ethos of inquiry that permeates classrooms and schools where teachers and students are engaged in rigorous forms of questioning, reflection and collaboration to figure things out for themselves (both individually and collectively). This ethos requires an inquiry stance or set of commitments on the part of teachers and students to be curious, open to new ideas and experiences, to question and challenge yet respect others' ideas and ways of thinking. It means valuing inquiry as a process, as participation in inquiry practices that support learning, knowledge building and rigorous forms of thinking that are much needed in the 21st century.

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