21st Century Skills Development Through Inquiry-Based Learning

Samuel Kai Wah Chu · Rebecca B. Reynolds
Nicole J. Tavares · Michele Notari
Celina Wing Yi Lee

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From Theory to Practice

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Samuel Kai Wah Chu
Faculty of Education
The University of Hong Kong
Hong Kong
Hong Kong

Rebecca B. Reynolds
Rutgers, The State University of New Jersey
New Brunswick, NJ
USA

Nicole J. Tavares
Faculty of Education
The University of Hong Kong
Hong Kong
Hong Kong

Michele Notari
University of Teacher Education
Bern
Switzerland

Celina Wing Yi Lee
Faculty of Education
The University of Hong Kong
Hong Kong
Hong Kong

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Foreword 1

Globally, there is much talk about the importance of learning the twenty-first century skills and practices, which go beyond traditional content learning to include cross-cutting skills that span across disciplines, such as problem solving and information literacy as well as softer skills such as collaboration. The twenty-first century skills standards seem to demand inquiry-oriented approaches to learning without explicitly saying so. That is what makes the current volume so timely as it bridges these new standards for learning with enabling pedagogies and technologies.

I am delighted to write a foreword to this volume written by this particular group of international collaborators. In this book, *21st Century Skills Development Through Inquiry-based Learning: From Theory to Practice,* Chu, Reynolds, Tavares, Notari, and Lee bring together three of the most important contemporary topics in educational research as they address the twenty-first century skills in technology-rich inquiry learning environments. Within each of these topics, the book works at integrating across frameworks for a range of standards, as well as varying inquiry-oriented pedagogies. As they review the definitions of twenty-first century skills, they consider what different frameworks have established as contemporary guiding educational tenets, and then they do the important job of helping the reader see the intersections among frameworks, and how they align in the three very different national educational contexts of Hong Kong, Switzerland, and the United States.

A key theme that runs through the book is the ambitious teaching and learning practices that are integral to inquiry-based learning environments. These are ambitious for teachers in that they will need to be prepared to adapt to the directions that learners take in their inquiry. These are ambitious for learners, as much is expected of them, as they become active agents with heavy responsibility for their own learning. Inquiry-based learning environments are ambitious in the type of new approaches to instructional design and assessment that are needed. The challenges are considerable as they are at variance with teachers' learning histories and even the current generation of students' learning experiences. It requires a high level of

technology, information literacy, and media literacy that are twenty-first century skills for teachers along with the students they teach. An important feature of this book is that the authors tackle these important issues without glossing over the challenges but by providing evidence-based insights for addressing these challenges.

As a scholar of problem-based learning (PBL) for more than 25 years, I have seen few volumes that coherently address a range of inquiry-based learning approaches. They focus on the common prospects and challenges across these approaches in multiple cultural contexts rather than trying to figure out how they are unique. Finally, they finish with concrete sets of advice for teachers, researchers, school librarians, and policy makers. I especially would like to highlight the role of librarians as one of the defining features of inquiry-based approaches that help them afford learning twenty-first century skills are the demands for information literacy. Much work on PBL and iPBL leaves the role of support for information literacy tacit. By addressing the role of the school librarian in this support, this work asserts and affirms the ongoing relevance of this integral role in the constellation of school leadership. If schools of information science and school library programs do their jobs well, school librarians should be eminently prepared to support learners in technology uses for inquiry, information-seeking, and information literacy development. In summary, anyone who is considering using inquiry-based learning to support learning twenty-first century or pursue research or policy in this domain will benefit greatly from the lessons captured within the pages of this volume.

Dr. Cindy E. Hmelo-Silver
Professor, Learning Sciences
Indiana University
Director, Center for Research on Learning and Technology
Director, 4C Lab
Barbara B. Jacobs Chair in Education and Technology
Indiana University

Foreword 2

This book's focus on inquiry-centered approaches to student engagement is timely. Presently, educational systems around the world are grappling with the complexities of what constitutes meaningful and powerful learning for young people growing up in dramatically changing technological, social, and cultural environments. The challenges are enormous. Deep questions are being asked around the efficacy and legitimacy of education and curriculum practices rooted in the traditions of past decades. These revolve around teacher-centric instruction, prescription of knowledge and competency standards, standardized approaches to testing and assessment, and coming to terms with the complexities of information technology integration that goes beyond passive searching and finding, and transfer and transmission of information with low levels of intellectual engagement.

We are at a significant educational crossroad. One the one hand, there are concerted calls for a deliberate, deep, and sustained focus on deepening and enriching the learning experience and outcomes of students, with attention being given to meaningful engagement, construction, creation, problem solving, communication and collaboration. On the other hand, educational practices and assessment approaches continue to embody standardization and competition, cooperation rather than collaboration, content knowledge and basic literacy skills and the regurgitation of factual knowledge. The enormous gap between rhetoric and reality continues to be a stark reminder of the challenges ahead.

John Dewey, in his provocative book "Experience and Education" states as follows:

"The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other" (Dewey 1938, 25). Dewey continues to challenge us today to actively disrupt traditions and practices that do not enable and enrich learning and life experiences, and provokes us to ask why we continue to struggle with these fundamental issues. He later writes: "There is, I think, no point in the philosophy of progressive education which is sounder than its emphasis upon the importance of the participation of the learner in the formation

of the purposes which direct his [sic] activities in the learning process, just as there is no defect in traditional education greater than its failure to secure the active cooperation of the pupil in construction of the purposes involved in his studying" (Dewey 1938, 67).

Dewey's perspectives highlight why this book is fundamentally so valuable and critical. The transformation of education is first and foremost about transforming ourselves as educators: developing both our own pedagogical awareness and our own instructional capacity that focuses on student inquiry, critical engagement with information in all its forms, and how we engage with collaborative, networked technology to empower and enable depth of learning. The book charts a range of social constructivist pedagogical approaches centering on inquiry, their underlying pedagogical assumptions and principles, and the empirical research that directs, informs and challenges the learning process. The diverse approaches presented here immerse students as partners, collaborators and creative producers in the design and process of their learning, and showcase the essential complexity of developing technical, intellectual, and reflective capabilities to enable this learning to take place in powerful ways.

At the heart of inquiry-centered learning is the inquiry question. Thinking is driven by questions, not answers. Students engaged in inquiry construct their own meaningful questions, refine and improve their questions, strategize on how to design and produce responses to their questions, and to communicate, share, and reflect on the process, outcomes, impacts, and implications. And here we confront the essential paradox of the question: in order to ask one must know enough to know what one does not know. The book provides both a vital starting point for us as educators to question and to come to know our own perspectives on learning, our own frames of reference, our own assumptions and beliefs about learning, and then to advance our pedagogy through the rich elaboration of the approaches provided here.

Dr. Ross J. Todd
Associate Professor, Director, Center for International
Scholarship in School Libraries
School of Communication and Information
Rutgers University

Reference

Dewey, J. (1938). *Experience and Education.* New York, Kappa Delta Ki. Available at: http://elibrary.kiu.ac.ug:8080/jspui/bitstream/1/1431/1/Experience%20and%20Education_0684838281-%20Dewey.pdf

About the Book

This book presents innovative instructional interventions to support inquiry project-based learning as an approach to equip students with twenty-first century skills. Instructional techniques include collaborative team-based teaching, social constructivist game design and game play, and productive uses of social media such as wikis. The book will be of interest to researchers seeking a summary review of recent empirical studies in the inquiry project-based learning domain that employ new technologies as constructive media for student synthesis and creation. The work also offers a crosswalk from empirical works to a range of national- and international-level educational standards frameworks such as the P21, the OECD framework, AASL Standards for the 21st Century Learner, and the Common Core State Standards in the U.S. For education practitioners, the book gives a detailed description of inquiry project-based learning interventions that can be replicated in today's schools. Further, the book provides research-driven guidelines for assessment and evaluation of student inquiry project-based learning. Finally, this work may guide education policymakers in establishing anchors and spaces for inquiry project-based learning opportunities for today's youth, to inspire, motivate and engage them in transformative social constructivist knowledge-building with lasting impact, as well as to prepare them with a mindset and dispositions conducive to dealing with present-day societal challenges.

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