



ENVISIONING INNOVATION IN EDUCATION—HONG KONG

Experiments in Teaching and Learning

Edward P. Clapp, Lindsey Hicks, Devon Wilson

ENVISIONING INNOVATION IN EDUCATION—HONG KONG

Experiments in Teaching and Learning

Edward P. Clapp, Lindsey Hicks, Devon Wilson

Envisioning Innovation in Education–Hong Kong: Experiments in Teaching and Learning. © 2024 President and Fellows of Harvard College, Cambridge, MA. Authors Clapp, E. P., Hicks, L., and Wilson, D. Foreword authors Ho, J. and Law, A. Afterword authors Hon, Q. C. K. and Ng, D. K. C.

Layout and design by Andrea Tishman.

Front Cover designed by Andrea Tishman.

Back cover EIE logo by Andrea Tishman.

Back cover photograph: KNEW Limited .

Back cover photograph caption: Participants in the Envisioning Innovation in Education project engage in the Ten Cent Design Challenge.

This work is published by Project Zero, Harvard Graduate School of Education, Cambridge, MA, USA.

Envisioning Innovation in Education–Hong Kong: Experiments in Teaching and Learning was produced by the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. The collaborative inquiry supporting this work was conducted with a cohort of educators and administrators in Hong Kong with the support of CATALYST Education Lab. This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International. This allows users to share this work with others if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. This work cannot be changed in any way or used commercially.

Individual tools and resources appearing on pages 237-311 in the Envisioning Innovation in Education Toolkit chapter of this work are licensed under Creative Commons Attribution-NonCommercial-Share-Alike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications.

The original thinking routines and pedagogical tools in the Envisioning Innovation in Education Toolkit chapter of this work are freely available on the Project Zero website (www.pz.harvard.edu).

If an entity wishes to use the materials in this work for a commercial purpose, they must request and secure a one-time exemption to the license from Project Zero at the Harvard Graduate School of Education (pzlearn@gse.harvard.edu).

Suggested citation:

Clapp, E. P., Hicks, L., & Wilson, D. (2024). *Envisioning Innovation in Education–Hong Kong: Experiments in teaching and learning*. Cambridge, MA: Project Zero.

ISBN: 979-8-218-36858-6

Contents

Acknowledgements	v
Foreword—by Jennifer Ho and Angele Law	ix
Chapter 1: Introduction	1
Chapter 2: Arc of Experience	21
Chapter 3: Meet the Cohort	51
Chapter 4: Pictures of Practice	67
Student and Teacher Agency	71
Documentation	111
Whimsical and Playful Learning	141
Effective In-School Professional Development	171
Chapter 5: Leading for Innovation	193
Chapter 6: Lessons Learned and Looking Forward	205
Afterword—by Queenie Hon and David Ng	229
The Envisioning Innovation in Education Toolkit: Frameworks, Tools, and Resources	237
References and Suggestions for Further Reading	313

Featured Pictures of Practice

Student and Teacher Agency

- A. Providing Opportunities for Cultivating Student Agency in Planning, Assessment, and Production
- B. Supporting Student Agency, Motivation, and Confidence in Design and Technology Classrooms
- C. Cultivating Agency in the Humanities Classroom
- D. Student Agency and the Power of the Passion Project.
- E. "Is It Possible to Change the Teaching and Culture of a School with a 100 Year History?"
Cultivating Teacher and Student Agency

Documentation

- A. Phenomena Walls—Documenting Student Thinking About Big Questions
- B. Documenting Student Analysis of Visual Text
- C. Celebrating Learning—Documentation as Celebration
- D. Slow Looking in High School Geography Classrooms
- E. Sketchnoting—Seeking to Align Assessment, Documentation, and Understanding

Whimsy and Play

- A. "How can I build play into Chinese learning?"
- B. Creating Opportunities for Playful Learning and Connection Schoolwide
- C. Look Out Below!—Playful Learning in the Physics Classroom
- D. Let's Dance—Playful Learning in the English Classroom
- E. Creating Novel Experiences in the History Classroom

Effective In-School Professional Development

- A. From Inquiry Projects to Schoolwide Implementation—Supporting a Shared School Culture of Thinking
- B. The Innovation Lab—Supporting Teacher-Driven Learning and Leadership
- C. The Power of the Study Group
- D. Playful Professional Development

Acknowledgements

We are very grateful for the wealth of support that we have received throughout the journey that has come to be known as the Envisioning Innovation in Education project. Most especially we would like to thank our colleagues at the CATALYST Education lab including Vic Lee, Jennifer Ho, Angele Law, Queenie Hon, David Ng, and Cindy Fan. Relatedly, we would like to further thank the CATALYST Education Lab Advisory Council for their early and sustained contributions to this work, especially Cindy Choi, Alan Chow, Stanley Ho, and Anita Ma.

As this project has been a collaborative inquiry with a host of educators and administrators across a variety of teaching and learning environments in Hong Kong, we are most especially indebted to our school-based colleagues, including...

Sean Lynch, Edwin Lagos, Janelle Codrington, Anjali Nainani, Wendy Ngai, Alison Wong, Cathy Zhang, and Angela Zhuang at Chinese International School;

Gyver Kwok Leung Lau, Kimmy Nga Kam Lie, Jeff Siu Chung Au, Sam Chun Kit Leung, Gabriel Hoi Yin Lee, Chi Man Mui, Yui Yuk Yee Pang, and Chi Chung Tam at Chinese YMCA College;

Veronica Kit Ying Yau, Grace Pik Wan Tse, Chun Ying Au, Rupert Pit Hung Chiu, Chris Ming Him Ho, Tsz Ying Hon, Jolly Sau Man Lam, Jordi Kiu Ho Mok, and Amy Kam Yip Wong at Fanling Kau Yan College;

Ronald Roukema, Scott Williams, Brian Smith, Tom Banaszewski, Alastair Jackson, Betsy Lewis-Moreno, Wendy Smith, and Leann Stanhope at Hong Kong International School;

Patrick Chi Shing Yim, Yuk Yan Tsang, Caroline Nga Lam Sin, Evelyn Wai Ting Chu, David Dat Wing Leong, Eric King Yuen Leung, and Frederick Ka Leong Poon at Munsang College (Hong Kong Island);

Richard Chak Hong Lee, Paul Hee Chuen Cho, Gary Cheuk Kin Wan, Betty Suk Wah Cheng, Chris Kong Hang Hui, Kenneth Chi Hoi Li, Daniele Norman Ng, and Sui Ming Tsang at HKCCCU Logos Academy;

Daphne Ho, Kyle Wing Keung Chan, Joanne Suet Hing Chan, Peter Chun Man Lee, Caroline Jane Li, Stanley Ho Tai Mak, and Lauren Minnie at Marymount Secondary School;

Kin Man Li, Eddy Ka Chun Yan, Celest Wing Yin Chan, Natalie Yan Yi Chan, Dominic Chi Yan Leung, Alvin Yin Zhi Wong, and Lydia Siu Wai Wong at Salesians of Don Bosco Ng Siu Mui Secondary School;

Anne Wai Yu Ma, Victor Ho Kuen Yick, Virginia Yuen Kwan Wong, Tsun Long Fan, Pak Lung Ku, Loretta Yuen Tung Kwong, Tik Chi Lau, Cynthia Sin Yi Man, and Wing Wah Sheung at Saint Francis of Assisi's College;

Jadis Blurton, Alison Kutlaca, Jen Crickenberger, Sam Crickenberger, Joanna Mok, Natalie Mierczak, and Jennifer Stroud at the Harbour School;

Davis Wai Lun Chan, Kiki Wan Ki Kung, Chris Kwun King Lee, Joseph Ka Ho Chan, Karl Chan, Thomas Kai Sing Hung, Elvis Chak Wa Lam, Anthony Sui On Man, and Rita Suk Yee Tang at Wah Yan College, Hong Kong

While the majority of our work on this project took place either online or in Hong Kong, there was a great deal of behind the scenes work that took place amongst our colleagues back home at Project Zero. We are thankful for the support of Daniel Wilson, Faith Harvey, Sara Steinmetz, Carrie James, Liz Dawes Duraisingh, Jordy Oakland, Margaret Mullen, and Mathew Riecken.

As with any project, the cast of characters who contribute to the work is ever changing. Here, we would like to acknowledge and appreciate the efforts and intellect of Jason Brown, Drew de St. Lawrence, and S. Lynneth Solis who were early team members on the Envisioning Innovation in Education initiative.

We would like to further thank the people who came together—sometimes in big ways, sometimes in small ways—to make this project happen, including Lisa Golds, Kelly Grogan, and Carolyn Kar Ning Ho.

There were many tools and resources that we drew upon to guide the work of the Envisioning Innovation in Education project. In particular, we would like to pay our gratitude to the various projects and pedagogical frameworks that we leaned into, including the Agency *by* Design framework for maker-centered learning, the Creating Communities of Innovation model for inquiry-driven innovation, the Pedagogy of Play project, and the Teaching for Understanding framework.

The world we lived in throughout the Envisioning Innovation in Education project was not one that we could have imagined while drafting the initial scope of work for this initiative. Once it was safe to get on a plane to Hong Kong again, many of us were greatly supported by Karelle Harris at the Travel Collaborative for assuring our safe passage to Asia and back again. And as the words that fill the pages in front of you began to take shape, we called on the graphic design expertise of our colleague Andrea Tishman to help us find a look that would capture the spirit of the Envisioning Innovation in Education project. We are grateful for her work.

Innovation in education—or anywhere else—does not happen in isolation. It is a systems-based process. Beyond the people directly related to the Envisioning Innovation in Education project who have been mentioned above, our families, friends, and colleagues have also been a part of this greater system.

Edward would like to thank his fabulous project team at home, and wonderful colleagues in Hong Kong. Edward would like to additionally thank Mehreen Abdulali, Marc Anderson, Kelly Deliberato, Robert Kaufman, Metta McGarvey, Margaret McKenna, Jag Ramdas, Andrea Sachdeva, Sarah Sheya, and the broader Clapp and Mittiga families for their support throughout this project. Edward would like to most especially thank his wife Angela and his children Penelope and Edward Wolfie for their patience, love, and understanding—especially on all those nights when daddy had to miss bedtime to talk to his friends in Hong Kong.

Lindsey would like to thank her Envisioning Innovation in Education team for the joy of working with them on the project, the CATALYST Education Lab team and EIE participants for their support and warm welcome in Hong Kong and for the privilege of being learning partners on the project, and the broader Project Zero community for many helpful and inspiring conversations about innovative pedagogy. Finally, Lindsey would like to thank her family and friends for their interest, love, and support of her work on the project.

Devon would like to thank his family and friends for their love and support, the fellow educators seeking to create impactful educational experiences over Zoom, and each and every person who has ever taken the time to explain something new to him in Chinese over the last ten years 感謝你們！

Foreword

By Jennifer Ho and Angele Law

How should we go about envisioning innovation in education? How might we cultivate conditions that support Hong Kong schools in this pursuit? What mindsets, dispositions, and practices would enable sustainable change and impact in the local education space? Our team at CATALYST Education Lab (CEL) was pondering these questions during the first months into our establishment.

As a Hong Kong non-profit organization that facilitates the professional development of educators and change management of schools, CEL strives to strengthen the education system via “CONNECT, INSPIRE & IGNITE.” CONNECT—grow learning communities where stakeholders can jointly identify problems and develop solutions; INSPIRE—expose educators to research-based, cutting-edge innovations in local and international contexts, and; IGNITE—support educators and schools in their innovation journey.

Since CEL’s establishment in 2018, we have been bringing Hong Kong principals and teachers on study trips to various educational institutions in the Boston area to inspire them about what’s possible. These experiences provided much stimulation for the participating principals and educators, yet little action was taken following these visits as these experiences were quite far removed from the local Hong Kong context. While developing a strategy for next steps for CEL, we felt that a more structured approach would be needed to support educators to examine where they are at, envision where they might go, and consider how to get there. It was around this time that we first met Edward Clapp and Lynne Solis from Project Zero, learnt about the amazing work of the Creating Communities of Innovation project,¹ and ruminated over the possibilities of initiating a similar program in Hong Kong. The dream of initiating the Envisioning Innovation in Education (EIE) project eventually emerged.

Timing really is everything! We often joke that this program was meant to happen because we hosted the EIE information sessions just before the COVID-19 global pandemic set in. Honestly, we weren’t sure if schools would still apply for a 3-year program during those circumstances. Needless to say, our team was overjoyed to receive a sizable amount of applications. This signaled that despite the uncertainty of the moment, schools saw the value of a collaborative inquiry

designed to support innovation in education and were willing to dedicate time and resources to it. Thus began our learning voyage with 11 diverse and unique schools in Hong Kong!

No one could have predicted just how much the pandemic would impact learning. For the EIE project, one of our biggest challenges was that the Project Zero-based team was not able to visit Hong Kong as frequently as planned, and our team had to engage more than expected. Such deepened engagement was really a blessing in disguise, as it offered us an opportunity to work more closely with the school cohorts and gain a more realistic understanding of the opportunities before them—and the challenges they faced. Much of the credit goes to Queenie Hon and David Ng, our Project Coordinators, who stepped up beyond their “coordinator” role to become trusted companions for the cohort members.

We are grateful to witness how the provocations from the EIE project have taken root in participants’ hearts and schools’ soils in varying ways. Yet despite the diversity of schools in this program, we see some common threads of growth:

1. **Co-creating a Learning Community:** One of the comments we heard most often from the participants was how much they enjoyed being part of the EIE community—gathering at Learning Communities where they shared challenges, failures, and successes, learning from each other, and feeling a mutual sense of support. There was so much appreciation for the different contexts of the schools, the diverse disciplines represented, and the unique perspectives that each educator offered.
2. **Greater Self-Empowerment:** Cohort members seemed to have gained greater ownership of their Innovator identities. Both as an individual and as a team, many participants became more courageous and thoughtful in testing out new ideas in their classrooms and schools.
3. **Deepening Reflective Practice:** The three questions “Who am I? Who are my students? What is my context?” are simple yet profound. Through the EIE project, many cohort members have begun to engage in reflective practice in more nuanced, critical, and complex ways.
4. **Facilitating Professional Development:** Educators actively leveraged existing opportunities to share what they have learned with colleagues beyond the EIE cohort. Quite a few schools even took ideas from the Learning Communities to initiate fun and interactive professional development experiences for their colleagues.ⁱⁱ

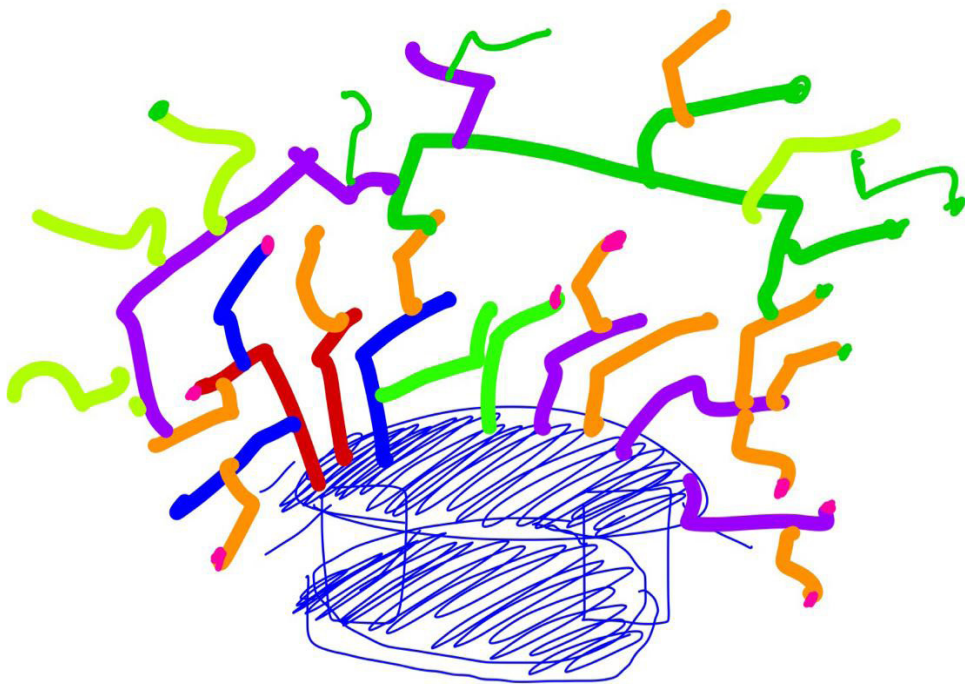
Reflecting on our own learning as an organisation, the ideas of Project Zero and the EIE project have deeply influenced how CEL designs and facilitates our programming. Outside of the EIE project, we now actively infuse elements of making thinking and learning visible into our initiatives. More importantly, we strive to continue cultivating safe and brave spaces for educators and principals to envision innovation in education.

Many things have changed in these past few years since the EIE project began, yet the questions we were pondering shortly into CEL's establishment remain front and centre for us. We are eager to continue envisioning, inquiring, and innovating with the EIE Alliance (an idea initiated by EIE participants to continue to learn and support each other), as well as the wider education community in Hong Kong and beyond!

¹To learn more about the Creating Communities of Innovation project, see <https://pz.harvard.edu/projects/creating-communities-of-innovation>

ⁱⁱMany of these lessons learned and the Envisioning Innovation in Education arc of experience will be discussed in the sections ahead.

INTRODUCTION



"What does innovation look like?"—Sketch by Yui Pang

1 Introduction

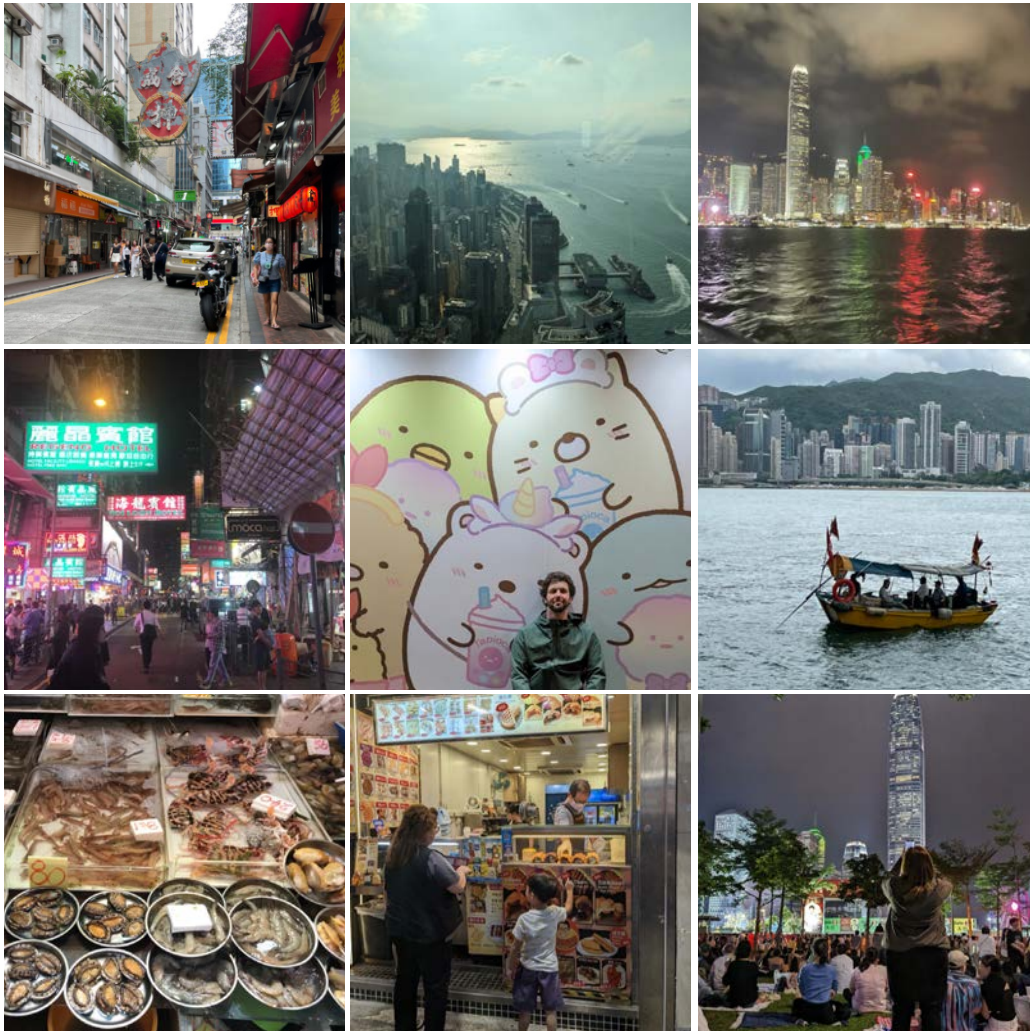
The city of Hong Kong is the setting for the Envisioning Innovation in Education project—a collaborative inquiry bringing together the expertise of a small team of educationalists from Project Zero—a research center at the Harvard Graduate School of Education in Cambridge, Massachusetts, USA—and a host of educators and administrators from 11 different schools across the Hong Kong educational landscape.ⁱ Funded and generously supported by CATALYST Education Lab, since 2020 the Envisioning Innovation in Education project has endeavored to support new approaches to teaching and learning across grade levels and content areas in a variety of school settings.ⁱⁱ We've written this book, *Envisioning Innovation in Education—Hong Kong: Experiments in Teaching and Learning*, to tell the story of inquiry-driven innovation in this unique and interesting part of the world.

We'll learn a little bit more about the Envisioning Innovation in Education initiative, Project Zero, CATALYST Education Lab, and a host of other key players in the pages ahead, but first, let's situate ourselves in the city where the project unfolds—Hong Kong...

If you were a tourist in Hong Kong, you may see the city through the lens of a collection of brightly colored postcards. Or, to be more in tune with the times, you may see this Special Administrative Region of China as being ripe for likable Instagram posts—images of the skyscrapers and towering apartment buildings; images of the lush mountains surrounding the city; images of hiking trails stretching up those hills, impossibly long escalators stretching up those hills, or even a funicular stretching up those hills; images of the citizenry quietly praying at a neighborhood temple, rhythmically doing Tai Chi in a park, or hustling to work; images of any number of boats scooting about the bay; images of frenetic markets selling every variety of creature from the deep—and every variety of fruit, and, of course; images of a thousand delicious dishes served at a thousand different restaurants.

Alongside the beauty of Hong Kong, we also recognize that Hong Kong is a fast-paced city. The region bustles with commerce and opportunities across industries, while also having one of the highest costs of living in Asia. The educators that embarked on the Envisioning Innovation in

Education journey navigate life and work in this beautiful and fast-paced city. Let's now situate ourselves in this particular setting and introduce ourselves to the educational landscape of Hong Kong.



Photographs of Hong Kong taken by the authors.



The Hong Kong Educational Landscape

To fully grasp the Envisioning Innovation in Education project, one must understand the Hong Kong educational landscape and the intricate factors contributing to schools' interpretation of, and approaches to, innovation.ⁱⁱⁱ To do this work, our team relied heavily on our Hong Kong-based Project Coordinators—whom you will meet shortly. Notably, the city's educational structures, competitive nature, the enduring impacts of COVID-19, and ongoing curricular adjustments contribute to attitudes and impacts affecting innovation in education.

A Fine Web of Educational Structures

The Envisioning Innovation in Education project mainly involves secondary schools in the Hong Kong education space. In the 2022-2023 academic year, there are 510 secondary schools operating under different systems throughout Hong Kong.^{iv}

- *Government schools*, directly operated by the government, and aided schools, commonly managed by charitable or religious bodies, are both fully subsidized by the government.
- *Direct subsidy scheme (DSS) schools* are government subsidized and charge school fees with flexibility in curriculum offered.^v
- *International schools* are fully private institutions offering foreign-based curriculum.

Local schools (i.e. government, aided, and DSS schools) offer a six-year primary and six-year secondary education. To complete secondary education, students take the Hong Kong Diploma of Secondary Education Examination (HKDSE); the results largely determine their admission into colleges and universities. For DSS schools which have flexibility within their curriculum, alternatives such as the International Baccalaureate (IB) are also offered on top of the local curriculum.

Within the public education domain, students transitioning from primary schools to secondary schools undergo the Secondary School Places Allocation (SSPA) Scaling Mechanism. The allocation of secondary school places depends on academic results of students in school-based Internal Assessments (IAs) in their Primary 5 (P5) second term and P6 first and second terms. Following the allocation to a secondary school and before the start of their first semester, students will complete the Pre-Secondary One Hong Kong Attainment Test (PS1HKAT), assisting schools to benchmark students.

The SSPA mechanism unofficially correlates with the school ranking system known as “school banding.” School bands range from Band 1 to 3. Band 1 schools are presumed to be the highest achieving (hence often perceived by the public as more reputable). Band 3 schools often host the largest number of students from ethnic minority groups, students from low-income families, and students with special educational needs.^{vi} This unofficial banding system has led to a public perception that a more favorably banded school can increase students’ chance of university admission.

As in many parts of the world, there is a relationship between family background and student

performance in Hong Kong. The Programme for International Student Assessment (PISA) has found that the strength of the relationship between socio-economic status (SES) and educational outcomes of Hong Kong students is weak.^{vii} Yet, local Hong Kong researchers have found that lower SES (resulting in fewer home educational resources and less sociocultural advantage) could have a negative impact on student achievement,^{viii} thus reinforcing the public's understanding and perception of schools based on their banding.

A Competitive Culture

In June 2023, the city of Hong Kong ranked seventh in the world for global economic competitiveness.^{ix} Efforts to cultivate a talented workforce has long been a priority in Hong Kong,^x resulting in a rigorous curriculum for teachers to deliver and significant pressure on students to excel.

Under the school-based management framework, local (government, aided, and direct subsidy scheme) schools are able to meet the specific needs of their students through greater autonomy in their daily operations, resources management, and planning for school development.^{xi, xii} As observed in the Envisioning Innovation in Education project, an institution's major concerns largely determine their capacity for innovation.

Addressing the Challenges of the COVID-19 Pandemic

Hong Kong was one of the last societies to lift COVID-19 pandemic measures.^{xiii} The impact of COVID-19—the global pandemic that pressed societies around the world into isolation—over three years resulted in poor mental health and exhaustion throughout the city, notably among students and educators. The flexibility and adaptability of schools were tested, and educators had to adjust their teaching methods to accommodate changing policies with as short as a few hours' notice.

Following government regulations during COVID-19, Hong Kong schools implemented various measures to continue teaching with minimal disruption. These measures included transitioning between online, hybrid, and in-person learning. These frequent shifts in schooling impacted students and teachers in various ways: educators felt the need to cover syllabus content with reduced lesson time while managing shorter student attention spans. Many students suffered from a lack of social interactions, lost opportunities to engage face-to-face with their teachers, and the suspension of meaningful extracurricular activities. These COVID-19-related conditions created

many challenges for innovation in education in Hong Kong—as they did in other educational settings around the world.

Local Shifts in Hong Kong Education

Simultaneously, shifts in the local curriculum have inspired new opportunities and challenges for educators to innovate. Beginning in September 2021, to cater to learner diversity, the government implemented the optimization of secondary school subjects. This led to a release of 100-250 hours of lesson time. Schools gained flexibility to plan more diversified learning experiences based on student needs. At the same time there is also an increased emphasis placed on values education and the introduction of National Security Education, aimed to foster students' civic awareness and responsibility.^{xiv}

A Holistic Take on Student Achievement

Hong Kong teachers, like teachers around the world, face the challenges of heavy workloads, packed school schedules, testing pressures, and socio-environmental stresses. Despite these challenges, we were consistently inspired and encouraged by the Envisioning Innovation in Education teachers' dedication and commitment to what their students are capable of today—and what they will be capable of tomorrow. Veronica Yau, principal of Fanling Kau Yan College, notes her teachers' experiments with the *See, Think, Wonder* thinking routine,

They (students) will use it to help their own learning. These are transferable skills—to inform their own learning, when they are in the university without the help of our teachers... this [secondary school experience] is the golden period to develop these lifelong learning skills.

The way we understand this message from Principal Yau is that the purpose of education is not to prepare students solely for high stakes exams, but to support them in becoming lifelong learners with a foundation for greater agency—and a greater sense of wonder for what is possible in the world.

Many of the educators participating in the Envisioning Innovation in Education project strove to balance performance-based aspirations with aspirations for growth and long-term achievement for their students as a focal point of their work in this project. In the pictures of practices featured in this book, you will see educators inquiring about ways to ignite a love of learning for their students (as well as their colleagues), and to engage them fully as learners. But before we get to

all of that, we reckon it will be helpful for us to share a bit about who we are and how this project came to be.

About Project Zero

As noted above, Project Zero is a research center at the Harvard Graduate School of Education set on the campus of Harvard University in Cambridge, Massachusetts. Project Zero was founded in 1967 by the philosopher Nelson Goodman. Back then, Goodman was prompted to engage in a research study to explore the cognitive affordances of the arts. Goodman believed that little was known about this concept at the time, and so named this initial endeavor *Project Zero*.^{xv} The name stuck, and while Project Zero has always had a foundation in arts teaching and learning, the breadth of its work has spread to other areas within the educational sector, including the roles that creativity and innovation play in schools and learning organizations.

About CATALYST Education Lab

Founded in 2018, CATALYST Education Lab is a non-profit philanthropic organization located in Hong Kong with a mission to transform the Hong Kong Educational landscape “into an engine of opportunity, innovation, and excellence—so that all young people can thrive in their college, career, and life, collectively contributing towards a better world.” The organization seeks to engage in this work “by facilitating professional development and change management” for “passionate educators and progressive schools.” The CATALYST Education Lab approach is to “connect schools together to foster collaboration, inspire educators on what is possible, and ignite innovation by supporting them to put ideas into action.”^{xvi}

How this Project Came to Be

The Envisioning Innovation in Education project was built on many foundations and past connections. One of those foundations was a collaborative inquiry that took place half a world away in the United Arab Emirates. This collaborative inquiry was called the Creating Communities of Innovation (CCI) project.^{xvi} The CCI project was a multi-year Project Zero initiative that brought together educators from a variety of teaching and learning environments to develop innovative approaches to their practice. Amongst the many outcomes from this project was a framework for what the research team called *inquiry-driven innovation*. Simply described, inquiry-driven innovation can be understood as the process of engaging in school-based change grounded in the

insights and puzzles gleaned from deep inquiry within one's teaching and learning environment.

One of the Project Zero-based principal investigators working on the Creating Communities of Innovation project was Edward Clapp. Edward was concurrently leading a playful project exploring maker-centered learning with an eager group of early childhood educators in Hong Kong. Situated within a network of Hong Kong preschools, this collaborative inquiry was called the *Agency by Design: Early Childhood in the Making* project.^{xviii}

While Edward was working with educators in the United Arab Emirates and Hong Kong, CATALYST Education Lab was in the process of developing into the organization it is today. Interestingly, part of CATALYST Education Lab's early work included regular trips for educators and administrators to the Boston/Cambridge area. During one of these trips the two parties met up at Project Zero to discuss the possibilities of working together. Following this favorable conversation, Edward and his colleagues met with CATALYST Education Lab at their offices in Hong Kong. After several further exchanges between Project Zero and CATALYST Education Lab the Envisioning Innovation in Education project was born.

Developed to further promote and investigate the practices of inquiry, innovation, and learning design amongst a cohort of educators, school administrators and a team of school principals, the Envisioning Innovation in Education initiative was launched to support CATALYST Education Lab in changing the education landscape throughout Hong Kong. Leveraging Project Zero's long history of professional development and collaborative inquiry, and CATALYST Education Lab's work recruiting schools that were interested in and committed to innovation, the Envisioning Innovation in Education initiative aimed to connect diverse schools to innovations in education, inspire new approaches to practice, and ignite local and system-wide change.

CATALYST Education Lab expressed the goal of transforming education in Hong Kong by rethinking professional development opportunities, as well as supporting schools in setting new strategic priorities, and establishing a plan of action. At the same time, Project Zero brought to the table over 50 years of experience investigating questions that challenge the status quo in education and exploring how to support educators in fostering deep, meaningful thinking and learning.

Edward and his colleagues were especially interested in building upon the Creating Communities of Innovation concept of inquiry-driven innovation within a breadth of school settings in a new cultural context—and with a funder with interests in innovation and changing the educational

landscape. Partnering with CATALYST Education Lab further provided an exciting opportunity to support an equitable professional development experience, bringing together a wide range of schools across the local and independent school spectrum.

Through their work in the United Arab Emirates, Edward and his colleagues had just witnessed the transformative power of bringing together educators and administrators from a range of school settings through the Creating Communities of Innovation project. At the same time, they had just experienced the eagerness to engage in playful learning experiences through their work with the Early Childhood in the Making project in Hong Kong. Both ventures had yielded innovative approaches to practice. The Envisioning Innovation in Education project offered the opportunity to combine and advance the frameworks and findings that emerged from both of these research projects—and further pursue school-based innovation on a greater scale with secondary schools in Hong Kong.

While both the Project Zero and CATALYST Education Lab-based teams approached the Envisioning Innovation in Education project with great enthusiasm, neither organization could know what time would bring. Here, it is important to note that most of the planning for the Envisioning Innovation in Education project occurred pre-pandemic. In other words, before the global crisis known as COVID-19 went into full effect. To begin, the Envisioning Innovation in Education team at Project Zero, was first meant to travel to Hong Kong in March of 2020 to further get to know CATALYST Education Lab, meet with the organization's advisory board, and support CATALYST Education Lab in selecting schools to engage in this initiative. The onset of the global pandemic prevented this initial trip from happening. Meetings with the CATALYST Education Lab advisory board and interviews with multiple school candidates interested in joining the project took place virtually. Due to a high volume of interest and enthusiasm, 11 participating schools were accepted to participate in this work based on a virtual application process.

During that time, two Project Coordinators were hired by CATALYST Education Lab to be the eyes and ears of the project on the ground in Hong Kong: Queenie Hon and David Ng. Queenie and David became the first point of contact for participants and liaised closely with the Project Zero team. In July of 2020 the project—which was then framed as a qualitative research study—began on a virtual basis without anyone really knowing how long the pandemic would last.

All partners were hopeful that COVID-19 would be a thing of the past relatively quickly. This was

not the case. As a result, CATALYST Education Lab and the Project Zero-based team needed to be quick on their feet to adapt the project to pandemic conditions. The project transitioned from a qualitative research study to a program of professional development within its first six months. Soon after, an intrepid team came together on the Project Zero end of the work which included, amongst others, Edward and his co-authors Lindsey Hicks and Devon Wilson.

A Note on Collaborative Inquiry

As mentioned above, Envisioning Innovation in Education takes a collaborative inquiry approach to the project. Widely employed by Project Zero, the collaborative inquiry approach combines the expertise of researchers and practitioners to develop inquiry focus questions and processes for pursuing those questions overtime, with the goal of developing usable knowledge that is specific to a particular context, while also being generalizable to others. This collaborative inquiry model engaged the teacher cohort and principal team—who we will introduce shortly—in an investigation of their practice and the design of innovative interventions to improve the experience and performance of students.

Meet the Authors

Just like many manuscripts out in the world, several people came together to craft the words on the pages that lie ahead—even beyond the authors listed on the front cover. Below, we share a little bit about the authors and influencers of this book—along with some brief notes on positionality—to give the reader a sense of where this work is coming from, whose perspectives are being represented (and whose perspectives may be missing).

The Project Zero-based Research Team

The primary authors of this book consist of the core team based at Project Zero. They include Edward Clapp, Lindsey Hicks, and Devon Wilson.

Edward P. Clapp, Ed. D.

Edward is a Principal Investigator at Project Zero where his research interests include creativity and innovation, design and maker-centered learning, cultural participation, and innovative approaches to arts teaching, learning, and practice. As with all things in his life and work, Edward brings an access and equity lens to his research. At the same time as being a researcher, Edward is also a lecturer on education at the Harvard Graduate School of Education. Originally from Long

Island, New York (he's a Mets fan), when Edward is not traveling around the world to connect with his global partners, you can find him at home on the Northshore of Massachusetts with his wife and two young children where he enjoys futzing around with any number of half complete home improvement projects, gardening (he's getting better!), crafting with his kids, trying to figure out how to sail, and going to the beach rain, (snow!), or shine.

Lindsey Hicks

Lindsey is a Practitioner Specialist on the Envisioning Innovation in Education project. Lindsey taught for many years in public elementary education as a special educator, reading specialist, and teacher leader. Lindsey has co-facilitated a study group on Reggio Emilia-inspired teaching and learning for over fifteen years and believes in the power of the study group as a model for professional development. Lindsey has devoted her teaching to equity and inclusion and the belief in the 100 languages of children. *Niente senza gioia!*

Devon Wilson

Devon is a Practitioner Specialist for the Envisioning Innovation in Education project, and a Project Manager for the Interdisciplinary and Global Studies Project at Project Zero. He is a graduate of the International Education Policy, and the Digital Media Design Master's Programs at Harvard, and has served as a Teaching Assistant for the Introduction to Computer Science with Python, Empowering Human Relationships Across Developmental Contexts, and Visible Thinking courses. Devon has over 15 years of experience working with educational projects in the US and China, including serving as a 3rd-6th grade teacher; grade level chair, and curriculum writer with Teach for China (美丽中国), a Lecturer at Beijing Normal University (Creative Writing and Spoken English), a Fulbright scholar, and a Program Manager for a young entrepreneur non-profit through the University of California, Berkeley.

Representation, Reflexivity, and Positionality

At Project Zero we take seriously issues of representation, reflexivity, and positionality. What that means is that we believe that who researchers, writers, and scholars are has an impact on their outputs. To this end, we believe that the social and cultural perspectives and background experiences of the individuals who create pedagogical tools and resources influence the very nature of those tools and resources. To this end, the primary authors of this book—Edward,

Lindsey, and Devon—find it important to state their positionality for the benefit of the reader. Here it goes: Edward Lindsey and Devon are white, educated, CIS-gendered (Lindsey is a woman, Edward and Devon are men), heterosexual, middle- to upper-middle class individuals born and largely raised in the United States.

We do not dispute the influences of our positionality and its effects on our outputs. Rather, we find it important to be transparent about our positionality so that our readers can best understand the social and cultural lenses that we bring to our work. Given our cultural blind spots and implicit biases, we sought to work closely with our project coordinators—David and Queenie—to best understand our work in Hong Kong through their local perspective.

We hope it is helpful for you to have this information in mind while you read the chapters ahead. As the specifics of our positionality intersect with the nuances of our identity, all of the social and cultural bits and pieces of ourselves naturally influence our blind spots and implicit biases—just as much as they bring the full character of who we are to life in this book.

The Envisioning Innovation in Education Project Coordinators

In a very active way, our Project Coordinators Queenie Hon and David Ng have also served as contributors to this work. While they have written specific sections of this book by themselves, both their ongoing engagement in this project and their close overview of this work have naturally woven their voices and perspectives into the fabric of this book.

Queenie Chun Ki Hon

Queenie is a Project Coordinator for the Envisioning Innovation in Education project. She holds a BSc (Hons) Psychology degree from the University of Bath, UK. Queenie has worked at the University of Bristol to support primary school children in literacy interventions; and at the Education University of Hong Kong to investigate youth's sense of belonging and secondary school students' aspirations for the future.

Queenie was a beneficiary of scholarships, and the first in her family to attend university. Inspired by her personal journey and the mentorship of passionate educators, she is committed to contributing to an equitable education ecosystem for all learners. She is a certified life coach empowering individuals to achieve their goals.

David Ki Chun Ng

David is a Project Coordinator for the Envisioning Innovation in Education project. He holds a Master's degree in Public Policy from the Lee Kuan Yew School of Public Policy, National University Singapore, and a Master of Arts in Sociology of Childhood and Children's Rights from the Institute of Education, University College London. David has over 10 years of experience promoting media literacy education in Hong Kong and the Asia Pacific region. Driven by the belief in youth participation in the digital environment, he has organized a variety of regional forums, workshops, roundtables, and training sessions for educators, NGO workers, and students at both regional and international levels. David is actively working to promote community engagement at various international platforms, including the United Nations Internet Governance Forum and International Telecommunication Union meetings.

Past Team Members

We would like to acknowledge that the work of our past team members has also informed the words that you'll encounter ahead. These individuals include S. Lynne Solis, Drew St. Lawrence, and Jason Brown. You may not notice it in the same way that we do, but—just like the sound of the ocean can be heard inside of a seashell—the whispered voices of these influential past team members can be heard in discrete sections of the chapters that lie ahead.

All of the Wonderful Voices!

In addition to the primary authors who pecked away at their keyboards to write this text, their colleagues David and Queenie in Hong Kong, and the whispers of past team members, a host of other voices can be heard within the pages ahead. This panoply of diverse voices includes all of our teacher colleagues in Hong Kong, the CATALYST Education Lab leadership team, and the many colleagues we have collaborated with over the years. Though not explicit authors in this work, we honor the voices that have supported our thinking most recently—and over time.

Who Should Read this Book

The Envisioning Innovation in Education project took place in Hong Kong, and the book you are either holding in your hands or viewing onscreen is a result of that work. Consequently, one may surmise that the primary audience for this book would be educators, administrators, parents, and funders participating in the Hong Kong educational landscape. While we understand that to be

true, we also feel that there may be insights to be found in the pages ahead for similar audiences who are located in other parts of the world.

Firstly, we view educators as being our main audience. Whether you are in Kowloon, Kuwait, or Kansas City, we hope that you see yourself, your curricula, and your students reflected in the pictures of practice presented in this book, find the tools and strategies useful, and overall find a path forward for developing an innovative approach to your practice.

For administrators, we hope that this book makes a case for the importance of innovation in education, provides a few key points on how to support inquiry and innovation in education within your school context, and inspires you to consider what it means to “lead for innovation.”

For curriculum designers, we hope that you engage with this book with ideas about how to structure curriculum in mind and with an angle towards supporting teachers and their students to engage in the process of innovation. To this end, we encourage you to see curriculum as a flexible thing, dynamic, malleable, and ever ready to be shaped to suit a new context, challenge, or opportunity.

For parents, we hope that this book helps you to further understand that today’s times are different from the ones that you (and many of us) grew up in, and that it is essential for us to adapt our approaches to teaching and learning in order to meet the challenges and opportunities of the day—and to best prepare our young people for success and fulfillment in life and work in the decades ahead. We further hope that this book may provide you with some resources you can use to extend your child’s learning in generative ways beyond the school day.

For the young people who may find their eyes on these pages, we encourage you to embrace the process of innovation alongside your teachers. In fact, it has been our experience that young people like yourselves are naturally innovative. We are excited to bring you into the experience of developing new approaches to teaching and learning that will have positive effects for you and generations to come. Innovation involves taking risks. Innovation involves trial and error. Innovation involves lifelong learning. We are all learners—and we especially look forward to learning from you.

When considering our friends who play funder roles, we hope this book supports your interests in pushing for new approaches to teaching and learning and helps inform the decisions you make as you develop new funding opportunities, craft requests for proposals, and consider candidates for the many important initiatives that you support.

Lastly, we hope that this book may appeal to our colleagues in academia as they research what's been done to support innovation in education, and as they craft research questions to support new inquiries.

How to Use this Book

Many will agree that the traditional way to read a book is to start at the beginning and read from cover to cover in a linear way. Indeed, one would say, this is how the work was meant to be read as this is how the authors arranged it. Certainly, our team was highly intentional in regard to the sequencing and flow of each part of this book. Over the course of constructing this work, the sequence changed now and again, and tweaks were made before the book was finally laid out in the way that you are experiencing it today.

That being said, we recognize that there are many ways to engage with a text. Busy educators may look first to the tools and strategies of this book for practices that they can bring into the classroom right away. Other educators may first look to the pictures of practice in this book, to see how the stories of the educators involved in the Envisioning Innovation in Education project may relate to their own classroom practice, and administrators looking to institute their own approach to innovation in education within their school setting may first look to the Arc of Experience section to glean ideas for structuring a long term professional development experience.

It may be helpful to think of this book like a jigsaw puzzle. There are many ways to engage with a jigsaw puzzle. Some may start by defining the outer perimeter of the puzzle first, and then fill in the remainder of the content from there. Some may group like colors together, or like shapes together. Some may use the picture of the puzzle on the box as a guide, whereas others may just dump the pieces on a table and hide the cover—letting an image emerge as they tinker with the pieces. Whatever approach you may have to putting together a jigsaw puzzle, chances are you'd agree that you get the most out of the experience by using each piece to put the whole puzzle together. We feel quite the same way about this book. However you choose to engage with it, whatever sections you choose to read first, or second, or last, we do hope you read the whole thing—to best bring the image and the story of the Envisioning Innovation in Education project to light.

A Roadmap to the Journey Ahead

Prior to this introductory chapter, *Envisioning Innovation in Education—Hong Kong* kicks off with a *Foreword* by Jennifer Ho and Angele Law, the core members of the leadership team at CATALYST Education Lab, who set the scene for this work.

Following this introductory chapter, we first share the *Arc of Experience* for the Envisioning Innovation in Education project. This includes an overview of the three active years of the project with a rationale for why we structured the project in the way that we did.

Having provided all of this context, we then introduce you to the educators and administrators who worked so closely with us during the active years of the project via the *Meet the Cohort* chapter.

From here, we offer a range of *Pictures of Practice* which serve as case studies of educators engaged in the work of the project. Oftentimes these pictures of practice offer thick description digging in deep to the process of inquiry-driven innovation within specific teaching and learning environments.

Following these in-depth pictures of practice we briefly share our work with a team of principals who were challenged with the question, “what does it mean to lead for innovation?” Having met with this team of school leaders over the course of three years, we share a summation of what *Leading for Innovation* looks like.

Next, in *Lessons Learned and Looking Forward*, we reflect on lessons that we have learned from our Envisioning Innovation in Education teacher partners from across the Hong Kong education landscape—with a special focus on mindset shifts. One of the facets of the innovator’s mindset that we observed was the disposition of looking forward. As such, we share where the work of the Envisioning Innovation in Education project is headed in Hong Kong—as well as offer our own take on what’s possible in the years to come in Hong Kong—and beyond.

To wrap things up, our on-the-ground Envisioning Innovation in Hong Kong Project Coordinators Queenie Hon and David Ng share their reflections on the project and their visions for taking the work forward from their own unique perspectives in the *Afterword*.

Towards the back of this book you will find a rich resource—the Envisioning Innovation in

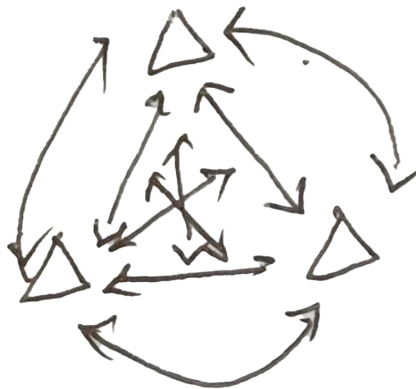
Education Toolkit. This collection of frameworks, tools, and resources is meant to offer educators easy access to the variety of pedagogical tools and strategies that either structured the project, were invented during the project, or were borrowed from other places to support the work of the project.

Just before reaching the back cover, you will find a healthy list of references and suggestions for further reading. Throughout this book, you will notice the occasional superscript floating after a clause or a sentence. These numbered markers refer to notes at the end of each chapter, which offer citations for concepts and ideas discussed in text, as well as opportunities to learn more about a given point of discussion.

That's the whole package, but it all starts with the *Arc of Experience* of the Envisioning Innovation in Education journey that is presented in the pages ahead. Let's jump in!

- ⁱTo learn more about Project Zero, visit the Project Zero website <https://pz.harvard.edu/>
- ⁱⁱTo learn more about CATALYST Education Lab, visit their website <https://www.celhk.org/>
- ⁱⁱⁱThe authors express their gratitude to Queenie Hon and David Ng for taking the lead on writing the Hong Kong Educational Landscape section of this chapter.
- ^{iv}Education Bureau. (2023). Figures and statistics. <https://www.edb.gov.hk/en/about-edb/publications-stat/figures/index.html>
- ^vGovernment of the Hong Kong Special Administrative Region. (2023, May). Hong Kong : The facts - education. <https://www.gov.hk/en/about/abouthk/factsheets/docs/education.pdf>
- ^{vi}Lee, D.H.L. and Chiu, C.S. (2017). School banding: Principals' perspectives of teacher professional development in the school-based management context. *Journal of Educational Administration*, Vol. 55 No. 6, pp. 686-701. <https://doi.org/10.1108/JEA-02-2017-0018>
- ^{vii}OECD. (2019). Students' socio-economic status and performance: PISA 2018 results (Volume II); Where all students can succeed. OECD iLibrary. <https://www.oecd-ilibrary.org/sites/f7986824-en/index.html?itemId=/content/component/f7986824-en#>
- ^{viii}Chiu, M. M. & Ho, E. S. C. (2007). Family effects on student achievement in Hong Kong. *Asia Pacific Journal of Education*, 26:1, 21-35. <http://dx.doi.org/10.1080/02188790600607846>
- ^{ix}Hong Kong's Information Services Department. (2023, June 20). HK ranked 7th in competitiveness. https://www.news.gov.hk/eng/2023/06/20230620/20230620_103241_227.html
- ^xEducation Bureau. (2023, October 18). Innovation and technology education. <https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/InnovationAndTechnologyEducation/resources.html>
- ^{xi}Government of the HKSAR Education Bureau. (2019, November 5). School-based management and school-based management governance framework. <https://www.edb.gov.hk/en/sch-admin/sbm/gov-framework/index.html>
- ^{xii}Education Bureau. (2022, November). Guidelines on the compilation of school development plan annual school report. https://www.edb.gov.hk/attachment/en/sch-admin/sch-quality-assurance/sse/Guidelines_on_the_Compilation_of_SDP_ASP_SR_en_2022.pdf
- ^{xiii}Cheung, E., & Ng, K. (2023, January 6). A look at Hong Kong's Covid-19 restrictions and their long-term effects. South China Morning Post. <https://www.scmp.com/news/hong-kong/health-environment/article/3205783/hong-kongs-covid-19-curbs-were-among-worlds-toughest-what-were-their-long-term-effects-city>
- ^{xiv}The Government Information Centre. (2021, February 4). EDB announces guidelines and curriculum arrangements for safeguarding national security and national security education. <https://www.info.gov.hk/gia/general/202102/04/P2021020400806.htm>
- ^{xv}To learn more about the history of Project Zero, see Gardner, H. (2013). Harvard Project Zero: A personal history. <https://pz.harvard.edu/sites/default/files/pz-history-9-10-13.pdf>
- ^{xvi}To learn more about CATALYST Education Lab, please visit their website <https://www.celhk.org/>
- ^{xvii}To learn more about the Creating Communities of Innovation project, see <https://pz.harvard.edu/projects/creating-communities-of-innovation>
- ^{xviii}To learn more about the Agency by Design: Early Childhood in the Making project, see <http://www.agency-bydesign.org/early-childhood-in-the-making>. You may also learn more about this work with young people in Hong Kong by exploring Clapp, E. P., Sollis, S. L., Ho, C. K. N., & Laguzza, K. (2020). *The maker-centered learning playbook for early childhood education*. Cambridge, MA. Presidents and Fellows of Harvard College. http://www.agency-bydesign.org/sites/default/files/AbD_Playbook.pdf

THE ENVISIONING INNOVATION IN EDUCATION ARC OF EXPERIENCE



"What does innovation look like?"—Sketch by Elvis Lam

2 The Envisioning Innovation in Education Arc of Experience

The educators and administrators that participated in the Envisioning Innovation in Education project engaged in an arc of experience that was both highly structured *and* fluid. On the one hand, the Project Zero-based team that designed the Envisioning Innovation in Education arc of experience put great forethought into the structure of that experience, often plotting out activities and events months—if not years—in advance. On the other hand, the Project Zero-based team was highly responsive to the needs of the cohort, taking a constructivist approach—constantly pivoting and tweaking the program design to respond to suggestions from our teacher colleagues, the Project Coordinators, and the CATALYST Education Lab team.



EIE educators gather in Year One of the project to explore the concept of innovation.

In this chapter we provide a general overview of this experience, including our rationales for the program design decisions we made along the way. The goal of this chapter is to offer a general (though not prescriptive) blueprint for developing a sustained professional development experience geared towards engaging participants in the practice of inquiry-driven innovation.

This chapter has four parts. First, we briefly present the overarching theme of inquiry-driven innovation which served as a guiding principle for the broader Envisioning Innovation in Education project and arc of experience. Second, we discuss the three-part process of change that guided the participants' arc of experience. Third, we introduce the various structural components of the

project. Lastly, we dive into the arc of experience itself—illuminating the activities of the project from one year/phase of work to the next.

Inquiry-Driven Innovation

The guiding principle that has grounded the Envisioning Innovation in Education experience is the concept of *inquiry-driven innovation*.

The concept of inquiry-driven innovation was originally established by the Creating Communities of Innovation project and their teacher colleagues in the United Arab Emirates, and then expanded upon by our Project Zero colleagues Liz Dawes Duraisingh and Andrea Sachdeva, who define inquiry-driven innovation as, “an ongoing process that empowers individuals and communities to pursue positive school-based change that is relevant and responsive to local contexts.”ⁱ

Throughout the Envisioning Innovation in Education project, inquiry-driven innovation has been defined by our project team as using sustained curiosity to intentionally explore everyday opportunities to implement new educational practices that address important challenges for today’s schools. Not only does the concept foreground inquiry in the innovation process, it also encourages participants to engage in an iterative process of slowing down, looking closely, and deeply inquiring about one’s teaching and learning environment before hastily instituting change. In the Year Two description of the project below, we will dive deeper into the tools and approaches that supported educators to engage in iterative cycles of inquiry in their educational settings.

Three-Part Process for Change: Envision, Inquire, Innovate

From the very beginning, the Envisioning Innovation in Education project was based upon a three-part process for change: Envision, Inquire, Innovate. Each of the three phases of work was the focus of a particular project year, with each subsequent phase meant to build upon the last—carrying through the themes from one year into the next. These three distinct phases of work largely drew on the model that was employed by the Creating Communities of Innovation project in the United Arab Emirates, which foregrounded the development of inquiry skills amongst a cohort of educators, before supporting them to establish an inquiry focus and engaging them in the process of innovation.ⁱⁱ

One of the many ways that the Envisioning Innovation in Education project differs from the Creating Communities of Innovation project is that it began with a yearlong Envision phase before

fully immersing the cohort members in the process of inquiry. Prior to diving into the “How?” phases of *Inquire* and *Innovate*, we felt it would be a great opportunity to first engage in an envisioning process to expand participants’ view of what is possible within the realm of teaching and learning, i.e. rethinking the “What and Why?” of *Envision*. We believed spending the first year to expose Hong Kong participants to selected Project Zero frameworks would support such a goal, and would be time well spent, before diving into the process of inquiry-driven innovation.



1. Envision: Beginning in year one of the project the teacher cohort engaged in an envisioning process by which they were introduced to various frameworks and pedagogical structures while being seeded with new ideas to expand their view of what’s possible within the realm of teaching and learning. Through this envisioning process, the teacher cohort was inspired to pursue both technical and adaptive change in their practice. This was an ongoing process that continued throughout the project.



2. Inquire: In year two of the project the teacher cohort was introduced to a variety of inquiry strategies to better understand their unique teaching and learning environments and to identify opportunities for experimenting with new practices. The teacher cohort drew upon these inquiry strategies throughout the project as they pursued inquiry focus questions and prototyped new pedagogical tools and strategies in their practice.



3. Innovate: In year three of the project the teacher cohort further inquired about innovations within their practice, considering ways they could connect with others and extend the reach of their project work.

Structures for Professional Learning

At its heart, the Envisioning Innovation in Education project was a program of professional development, and the Project Zero-based team employed what is widely known as a professional learning community model. The All Things PLC website defines a professional learning community as such:

An ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve. Professional

learning communities operate under the assumption that the key to improved learning for students is continuous job-embedded learning for educators.ⁱⁱⁱ

In other words, a professional learning community consists of a group of educators coming together over time to collaboratively develop skills and strategies to advance their practice in service of their students. We like to think that professional learning communities are places where educators can engage in a shared sense of purpose, try new things, take risks, experience support, give and receive feedback, and share ideas across a diverse array of colleagues working in a variety of different teaching and learning environments.

Our interpretation of a professional learning community included three core elements: a conceptual theme, full cohort learning community events, and school-based study groups and study group meetings.

Conceptual Theme

As the literature on professional learning communities suggests, without a center of gravity to hold it together, a professional learning community may quickly fall apart. The conceptual themes that we brought to the Envisioning Innovation in Education professional learning community were the phases of work for each particular year. In other words, for Year One the conceptual theme was *Envision*, for Year Two it was *Inquire*, and for Year Three it was *Innovate*. This helped to ground the work of the cohort with a shared sense of purpose. The inquiry focus questions raised and pursued by teachers overtime also led to important shared conceptual themes, many of which are explored in the Pictures of Practice chapters in this book.

Full-cohort Learning Community Events

Learning communities were events that brought the full cohort of educators from all 11 schools together. They took place three to four times per year, and were full-day events designed and facilitated by the Project Zero-based team with the support of our colleagues from CATALYST Education Lab, especially the Project Coordinators Queenie and David. During the Learning Community events, educators from across the wide breadth of the Envisioning Innovation in Education cohort had the opportunity to work in mixed-school groups as well as in school-based study groups.

Learning communities have long been a part of the Project Zero approach to collaborative inquiry.

We incorporated learning communities into the Envisioning Innovation in Education experience in order to create opportunities for the cohort to come together and bond as a community. They were also occasions for us to introduce new content to the participants, provide pedagogical provocations to push the thinking of the cohort forward, and engage them with relevant hands-on activities. Given the great diversity of the participating schools, learning communities also allowed participants to learn from one another across diverse school contexts, something that is quite rare in other Hong Kong professional development opportunities. By sharing ongoing learnings and experimentations, opportunities and challenges, joy and struggles, while receiving feedback from others, participants were able to be truly supported and inspired by one another.

School-based Study Groups and Study Group Meetings

Like professional learning communities, the study group model is a widely employed approach to professional learning within the field of education. At Project Zero, study groups and study group meetings are core elements of the organization's popular Summer Institute.^{iv} This effective structure bleeds into much of what the research organization does, including its approach to collaborative inquiry.

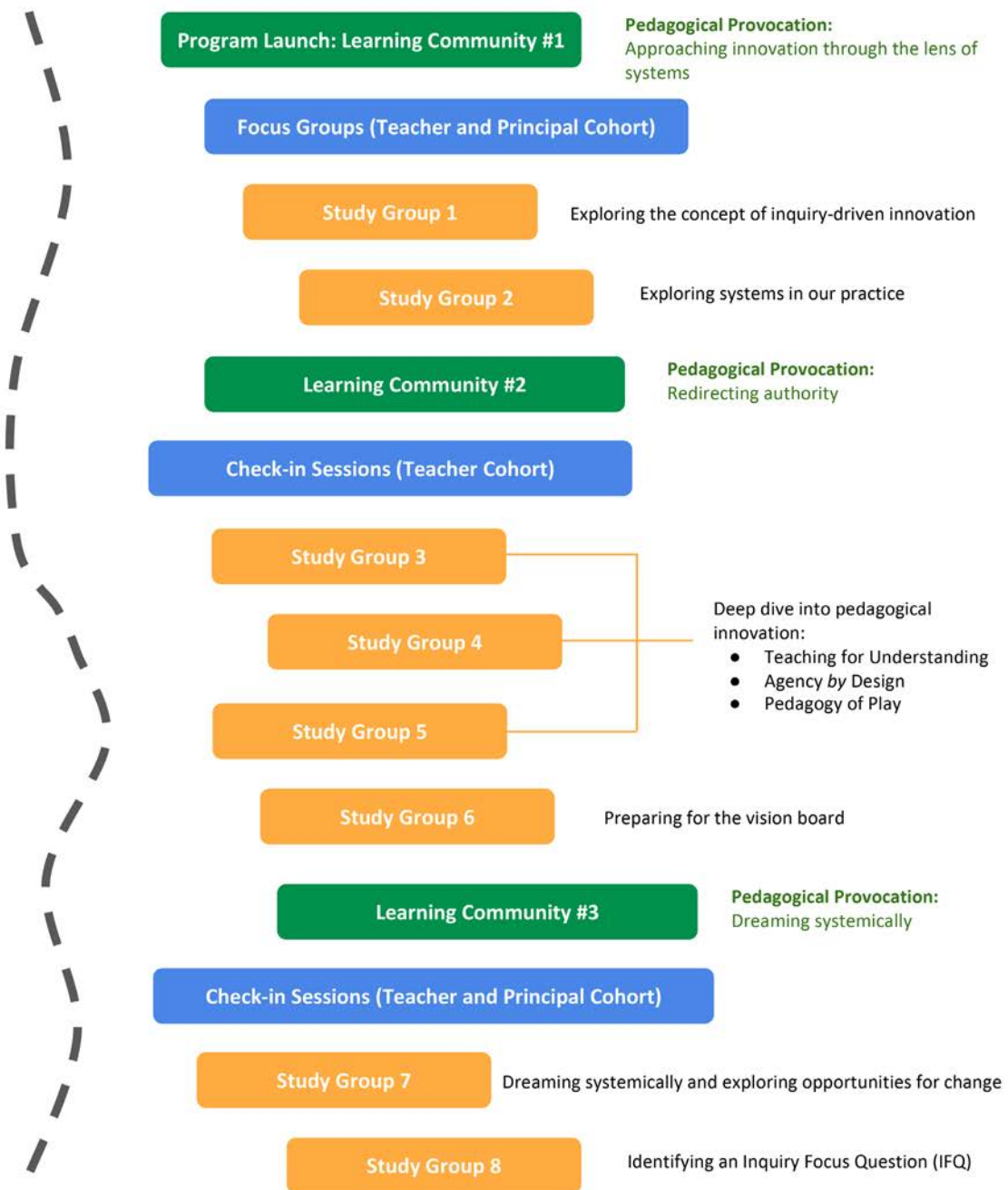
A study group can be understood as a small group of people coming together periodically to systemically examine their practice and interventions, look collaboratively at documentation, offer one another support, and strategize for next steps throughout the process of inquiry-driven innovation. In the Envisioning Innovation in Education project, study groups were school-based and consisted of four to six members. Each study group has consisted of a Teacher Cohort Leader, an educator in a leadership position within the school, as well as other educators from diverse subject areas and grade levels (see the "Meet the Cohort" chapter for more information).

Study group *meetings* can be described as the periodic gatherings of a study group. Throughout the Envisioning Innovation in Education project, study groups were encouraged to meet two to three times between full-cohort Learning Community events (approximately every 2-3 weeks). Study group meetings were initially structured by the Project Zero-based team, but self-facilitated by the cohort members (typically with guiding support from the Teacher Cohort Leader). The Project Coordinators for the Envisioning Innovation in Education project helped coordinate study groups across schools and guide them to resources introduced at recent cohort-wide learning community gatherings. Study group meetings provided time and space for participants to

connect with their school-based colleagues. In such smaller and more intimate settings, the study group meetings served as a safe and brave space for members to discuss project concepts and materials, grapple with how the learnings can be adapted in their specific school contexts, as well as offer and receive feedback from each other on ongoing experimentations. Without an inquiry-based study group in place, educators often focus on lesson co-planning with colleagues from the same discipline, but rarely have opportunities to delve into intellectual and reflective dialogues about teaching and learning with colleagues from different disciplines. The introduction of study group meetings in the Envisioning Innovation in Education project attempted to allow educators to experience the benefits of engaging in the latter.

Study group *guidelines* are the structures used to run or facilitate a study group meeting. During Year One of the project, the Project Zero-based team carefully crafted the study group guidelines for the cohort, with blocks of time and specific tasks assigned for each unique study group meeting. For example, a study group session would typically start off by checking in as colleagues to build rapport within the cohort and review the goals of the session. From there study groups could proceed in a variety of directions, that might include: discussing a reading related to educator's inquiries (read by study group members in advance); facilitating an interactive learning experience that relates to a fellow educator's ongoing inquiry project, or; looking closely together at a piece of student work produced from recent inquiry cycles. At the end of the meeting educators summarize highlights from the meeting before sharing tasks, prompts or next steps to be completed before the next session. As time went on, the study group guidelines offered by the Project Zero-based team became less specific, providing more agency for each school-based study group to structure and facilitate its study group meetings.

YEAR 1: ENVISION



Year One: Envision

Year One of the project was marked by a year of envisioning. During this first year, educators participated in one in-person (program launch) and two virtual Learning Community events, followed by an eight-session study group arc of experience, plus one focus group and two “catch-up sessions” with the Project Zero-based team.^v In addition, the Project Zero-based team met with school principals for one focus group at the beginning of the year and another at the end of the year to reflect on the project and what it means to lead for change and innovation.

Constructing a shared vision of learning with three Project Zero Frameworks

Three popular Project Zero frameworks were introduced to participants throughout the year to construct a shared vision of learning and stimulate participants’ thinking regarding different pathways towards inquiry: Teaching for Understanding, Agency *by* Design, and Pedagogy of Play. Participants were introduced to a variety of tools and strategies from these frameworks and encouraged to experiment with them in their practice.

There were many reasons why we chose to introduce these three frameworks during the first year of the project. As one of the most popular and foundational frameworks from Project Zero, Teaching for Understanding resonates with educators in a variety of settings. Teaching for Understanding is an approach to designing curriculum, instruction, and assessment that goes beyond the simple acquisition of information to helping students develop transferable knowledge and skills that they can apply in situations and contexts they may have never encountered before.^{vi}

The Teaching for Understanding framework, developed through collaborative research with practitioners, raises four key questions to pursue in the design and facilitation of learning experiences:

1. Generative Topics: What topics are most important for my students to understand?
2. Understanding Goals: What about these topics needs to be understood?
3. Performances of Understanding: What kinds of learning experiences will best help students develop and use understanding flexibly and thoughtfully?
4. Ongoing Assessment: How will I (and my students) know how well and how much they have understood?

Consistently pursuing these key questions during the design and facilitation of learning experiences guides students and educators towards pursuing deep, lasting, and useful learning (see section A1 of the Toolkit for more information).

The Agency *by* Design Framework for maker-centered learning focuses on cultivating a sensitivity to design, and a capacity to shape one's world through building, tinkering, re-designing and hacking. With its emphasis on the three core capacities of Looking Closely, Exploring Complexity, and Finding Opportunities, we chose this framework mainly because it helps promote agency as well as systems thinking. Early on in a focus group discussion, when asked about how they hope the educational landscape in Hong Kong will look differently in the future, many Envisioning Innovation in Education participants expressed the desire to shift the teacher-student dynamics—to increase agency for students as self-directed learners, and teachers as facilitators of learning. They also expressed the need for different stakeholders in the education space to re-examine the purpose of education. As will be described below, we included systems thinking and redirecting authority as provocations in Year One, both having roots in the Agency *by* Design framework (see section A2 of the Toolkit for more information).

The decision to introduce participants to the Pedagogy of Play framework was also multi-faceted. Our primary rationale for selecting this framework was in response to participants wanting to enhance students' learning motivation, with a hope to increase student engagement in the classroom. The framework invites educators to reflect on three key questions: What does it mean to have a pedagogy of play and why is it important? What does playful learning look and feel like in classrooms and schools? How do educators set up the conditions where playful learning thrives? We also made sure to infuse the EIE project with a sense of whimsy and play, to emphasize that teaching and learning could be generative and productive, while also being joyful—and maybe even a little bit mischievous. The framework's key indicators of wonder, choice, and delight have been adapted by educators around the world, and we were confident these themes would resonate with our teacher colleagues in Hong Kong as well (see section A3 of the Toolkit for more information).

Pedagogical Provocations

Consistent with the ideas represented in each framework, participants were further prompted with pedagogical provocations to encourage them to think beyond what they are used to in their classrooms. Two provocations that stand out from the first year of the project are systems

thinking and redirecting authority.

Our rationale for emphasizing systems thinking was grounded in the reality that no innovation takes place in isolation. Changes in practice are situated within broader systems. Based on our past work, we also understood that thinking systemically about one's practice, and supporting young



Educators explore the parts, purposes and complexities of a windup toy (images above and below).

people to be systems thinkers, were often seen as a game changer for teachers and administrators. There are systems at play within classrooms, within curricula, within schools, and within the regional educational landscape. In order to effect change within these systems, it is important to first look closely at those systems, explore their complexity, and then find opportunities to redesign those systems. During the program launch, to introduce the provocation of "Approaching Innovation in Education through the Lens of Systems," participants were invited to look closely and explore the systemic complexity of a toy. Through observing, dissecting, and analyzing the toy's parts, purposes, and complexities, participants were encouraged to take a similar systems-based approach in looking at their educational context, and considering the possible effects of different classroom or administrative interventions (see sections D2-D4 of the Toolkit for more information). This served as one of the most memorable experiential activities for many participants in the first year of the project.

people to be systems thinkers, were often seen as a game changer for teachers and administrators.

There are systems at play within classrooms, within curricula, within schools, and within the regional educational landscape. In order to effect change within these systems, it is important to first look closely at those systems, explore their complexity, and then find opportunities to redesign those systems. During the program launch, to introduce the provocation of "Approaching Innovation in Education through the Lens of Systems,"



At the third Learning Community event, a tool called Dreaming Systemically was introduced. This tool is an accumulation of many resources to support educators in thinking about their practice—and more broadly about innovation in education—from a systems thinking perspective. It served as a good resource to transition from the Envision phase to the Inquire phase by considering

various opportunities and thresholds for change (see Toolkit Resource B3 for more information). Sourcing from this systemic analysis, educators were encouraged to pursue initial steps and experiments in practice to support the innovations they were beginning to envision.

Having first emerged as a finding from the Agency *by* Design project, *redirecting authority* prompts educators to return problems to the people that have them, and to place the responsibility for learning back in the hands of young people. By embracing the concept of redirecting authority, educators were encouraged to take a more inquiry-based approach to engaging their students by using their expertise to guide and support students in their own search for knowledge and understanding, thereby fostering greater individual and collective agency. Redirecting authority towards educators means consistently encouraging them to consider their own agency in researching and pursuing educational innovation, and to utilize their study group colleagues in their shared explorations. During the second Learning Community event, participants were given scenarios which described a situation where a student is asking for information or help from a teacher. They were asked to discuss pedagogical strategies or tools that can be employed in this scenario to redirect authority, and encouraged to employ similar tools and strategies in their own teaching and learning environment.

Transitioning from Year One to Year Two with an Exhibition of Practice (Vision Board)

As a bridge to the Inquire (Year 2) phase of the project, participants were individually asked to craft and share a vision board to consolidate their learnings, insights, and puzzles thus far. The goals for the vision board were to make visible and celebrate the work of participants, and provide them with an opportunity to share the system they focused on, initial explorations they facilitated relating to a desired change in that system, and documentation collected. Sharing the vision boards during the learning community in small cross school groups offered an opportunity for feedback and cross-pollination of ideas throughout the cohort. Reflecting on and summarizing their experiences with the vision board supported participants in visualizing the area of growth or focus they would like to inquire about in the coming academic year. Throughout the Envisioning in Innovation project, we created multiple occasions for participants to exhibit their practice.

Title Name, School, Grade/Subject Taught, Date		
System: <i>What is the system or area of growth that you have been focused on or would like to focus on moving forward in study group sessions?</i>		
Population: <i>Who are the people/students you have been intending to impact by exploring innovations in this system/area?</i>	Documentation: <i>Samples of images, audio, video, text, observation notes, student work, or other artifacts that show what your explorations have looked like over time.</i>	Puzzles: <i>What are some new questions, challenges, or puzzles that have emerged for you as you have been experimenting with your practice?</i>
Outcome(s): <i>What specific changes have you been hoping to bring about as a result of your explorations into this system?</i>		Next Steps: <i>What are some ideas, strategies, approaches that you would like to explore next as you try to further bring innovation into this system?</i>
Intervention(s): <i>What strategies or changes in practice have you engaged in to bring about your intended outcome(s) for your focal population?</i>		
Insights: <i>What are some key insights or a-ha moments you have had as a result of experimenting with your practice?</i>		

Sample vision board template provided to participants.

YEAR 2: INQUIRE

Learning Community #4

Inquiry Strategy introduced:
Documentation & reflective practice

Check-in Sessions (Teacher Cohort)

Study Group Sessions

Reflecting on inquiry strategies, refining IFQs, and discussing inquiries

Learning Community #5

Inquiry Strategy introduced:
Slow looking & reflective practice

Check-in Sessions (Teacher and Principal Cohort)

Study Group Sessions

Reflecting on inquiry strategies, refining IFQs, and discussing inquiries

Learning Community #6

Inquiry Strategy introduced:
Looking at student work and reflective practice

Check-in Sessions (Teacher Cohort)

Study Group Sessions

Reflecting on inquiry strategies, refining IFQs, and discussing inquiries

Learning Community #7

Taking stock (of Years One and Two) and imagining the next steps of participants' learning journeys

Check-in Sessions (Teacher and Principal Cohort)

Study Group Sessions

Revisiting the inquiry strategies and identifying a common IFQ for the coming year

Year Two: Inquire

The second year of the Envisioning Innovation in Education project was devoted to the Inquiry phase of the work. During this phase, participants were introduced to a variety of Project Zero approaches to inquiry and encouraged to experiment with them in their classrooms to surface a greater understanding of their students, their learning environments, and their curriculum. During this phase of work, the Envisioning Innovation in Education participants established inquiry projects to learn more about their teaching and learning environments. Each inquiry project was structured around a specific inquiry focus question that served as their anchor in understanding more about their teaching and learning environment. An online learning management system was introduced for participants to track their progress engaging in inquiry cycles (explained further in the following section).

The participants also connected with the Project Zero-based team via virtual “check-in sessions.” To better support the inquiry work, study groups were assigned to specific Practitioner Specialists from the Project Zero team. The check-in sessions functioned as opportunities for study groups to check-in with their Practitioner Specialist, solidify and extend understanding of Project Zero ideas that were introduced, share their recent inquiries, and work through any questions, puzzles, or roadblocks that they may have been experiencing. The Practitioner Specialist, in turn, acted as a coach and supported the study group members by offering feedback and providing advice for moving forward. Aligned with the *redirecting authoring* project theme, Practitioner Specialists also consistently offered emerging puzzles and challenges back to the study group to think about first, encouraging them to raise their own ideas and approaches, rather than presenting themselves as the arbiters of knowledge and best practice. Additionally, the Project Zero-based team facilitated two focus group discussions with the principal team to explore the school leaders’ perspectives on supporting inquiry in their schools, reflecting on the role of inquiry in their leadership practice, and establishing a schoolwide culture of inquiry.

During the first half of Year Two, two Learning Community events engaged educators in interactive activities in-person while the Project Zero-based team facilitated through Zoom. With the COVID-19 surge in Hong Kong that took place during the second half of the inquiry phase, Learning Communities pivoted to two fully virtual sessions. Each of the four Learning Community events conducted during Year Two of the project took a deep dive into one of four inquiry strategies (introduced in the following sections) with cohort members.

Inquiry Focus Questions & Inquiry Cycles

Inquiry Focus Questions were the anchor of the exploration during the Year Two *Inquire* phase, and the *Inquiry Cycle* was the process that participants went through in pursuit of their inquiry focus questions.

An *Inquiry Focus Question* is a question or area of growth that an individual pursues by experimenting with new approaches for inquiry-driven innovation. An effective inquiry focus question should be one that is both grounded in practice and inherently interesting to an educator. This helps an educator narrow down the types of change in practice they would like to try out in the system (see Toolkit Resource B1, *Inquiry Focus Guidelines*, for more information).

Throughout the Envisioning Innovation in Education project, there were multiple opportunities for participants to reflect on and revise their Inquiry Focus Questions. We introduced the concept of an Inquiry Focus Question towards the end of Year One in the third Learning Community event to prepare participants for Year Two. At the fourth Learning Community event, the first whole cohort, in-person gathering in Year Two, participants were asked to review and share their drafted Inquiry Focus Questions with cross-school participants, in order to clarify the focus of their inquiry, their rationale, and to receive feedback.

Adapted from the *Agency by Design* project, an *Inquiry Cycle* supports an educator in designing, documenting, assessing, and reflecting on their inquiry work. To investigate their inquiry focus, participants would first plan their inquiry: What are initial learning experiences you may facilitate to support your inquiry? What inquiry strategy (defined in the following section) will you use to support your inquiry? After the facilitation of the learning experience, participants would reflect: What did you do? What did it look like? What did you learn? What did your students learn? How does it inform your inquiry? What will you do next/differently? (see section B2, *Inquiry Cycle Guiding Questions*, for more information).

Inquiry cycles are built upon a Try-Share-Revise process, where educators are encouraged to:

- *Try*—Facilitate learning experiences to support their inquiry.
- *Share*—Examine documentation generated from the learning experiences with a small group of colleagues interested in inquiry driven innovation. Share “What did the experience look like?” and “What might the teacher and students have learned through the experiences?”

- *Revise*—Reflect on how the experiences you facilitated has informed your inquiry, and what you would like to do next to continue your inquiry.

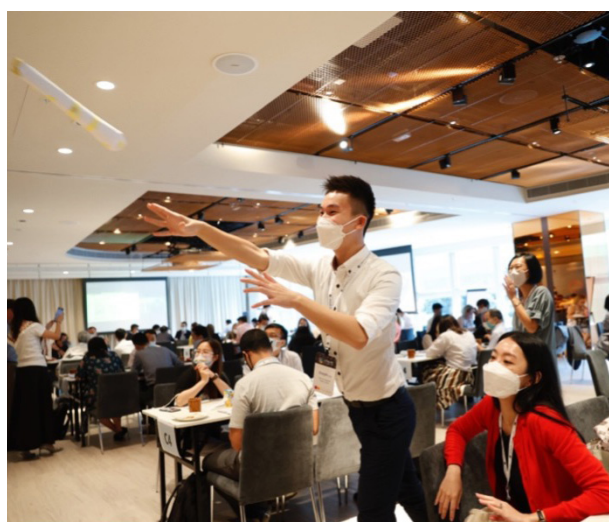
Envisioning Innovation in Education participants supported each other's inquiry projects by sharing insights and puzzles, discussing experiences and reflections, and providing and receiving feedback in study group meetings and learning community settings. This process facilitated the cross-pollination of ideas and learnings and inspired next steps.

Exploring Inquiry Strategies

To further inspire new approaches for inquiry, four focal inquiry strategies were introduced: documentation, slow looking, looking at student work, and reflective practice.

The practice of documentation has a long history at Project Zero. Largely rooted in the work of preschool teachers in Reggio Emilia, Italy as investigated through Project Zero's Making Learning Visible project, the process of documentation provides educators with a window into the learning experiences of their students,^{vii} and avails them the opportunity to find new pathways forward in support of student learning. Throughout the Envisioning Innovation in Education project, the approach to documentation highlighted in Visible Learners was utilized by the cohort members.^{viii} This approach to documentation includes four elements: observe, record, interpret, share. Our rationale for introducing this approach to documentation was to offer participants a trusted process for documenting student learning and thinking that was both retrospective and prospective.

During the fourth Learning Community event, participants went through a playful experiential activity called the Ten Cent Design Challenge to practice and reflect on the benefits of documentation.^{ix} Participants in the role of "learners" had to come up with a strategy to transport a ten cent coin across the room with available materials, while participants in the role of "documenters" observed the learners and documented observations around the learning that took place. The post-



Educators work together and document strategies used in the Ten Cent Design Challenge.

activity debrief helped participants reflect on the role and benefits of documentation (see Toolkit Resource C2, 10 Cent Design Challenge, for more information).

The second inquiry strategy that was introduced to the cohort members was *slow looking*. Largely championed by Project Zero researcher and former director Shari Tishman, slow looking encourages teachers and students to slow down the work of teaching and learning.^x We introduced Envisioning Innovation in Education participants to this inquiry strategy so that they



Educators work together and document strategies used in the Ten Cent Design Challenge.

would have the opportunity to better realize the intricacies involved in the process of teaching and learning, notice more than they would have otherwise, and discover unseen or overlooked opportunities for growth—and for innovation (see Toolkit Resource D1, What is Slow Looking?, for more information).

At the fifth Learning Community event, participants were introduced to the concept of slow looking through close observation of works of art, utilizing the *See, Think, Me, We* thinking routine to share ideas and support thinking about the piece of art (see Toolkit Resource F3, *See, Think, Me, We*, for more information). After discussing how slow looking might support the inquiry process, participants were introduced to four “slow” experiences they could practice in their educational contexts to support their inquiry projects (see Toolkit Section D for more information).

The third inquiry strategy introduced to participants was *looking at student work*. Like documentation and slow looking, looking at student work has a long history at Project Zero. In fact, Project Zero Principal Investigator and former Director Steve Seidel has been leading educators through the practice of looking at student work on a monthly basis for nearly 30 years.^{xi} Looking at student work was introduced to participants in the Envisioning Innovation in Education project because looking together at student work prompts educators to slow down and look deeply and carefully at artifacts of student thinking and learning. Almost any artifact of student learning can be explored through this inquiry strategy: drawings, collage work, essays, poems, math problems, and more. This process allows educators to identify student strengths and to come together to

support one another in suggesting next steps to further student learning (see Toolkit Section E for more information).

During the sixth Learning Community event, the Envisioning Innovation in education cohort members were introduced to looking at student work by having them experience the Collaborative Assessment Conference (CAC), which was developed by Steve Seidel and his colleagues at Project Zero.^{xii} In using the CAC protocol, participants collectively looked at a piece of student work, going through a step-by-step process that involves looking closely and describing the work, raising puzzles, and speculations before receiving more contextual information from the presenting teacher regarding the piece of student work. In the final stages of the CAC protocol, the presenting teacher shared their insights listening in to participants' discussions, responded to questions on a voluntary basis, and the group collectively considered the implications for

What does this work make you think about? What questions does this work raise for you?

A. Snapshot
Document your image in the box below:

This photo was taken during sunset when I was on the way home after a long day of school. I like that it's pretty and it's a nice view of the city. I like the colors of the sky and the buildings. I like that it's a nice view of the city and the buildings. I like that it's a nice view of the city and the buildings.

B. Library Response
Use the space below or in form of an attachment, create your personal response to your chosen image.

The architecture of the city is so beautiful. I like the way the buildings are built. I like the way the buildings are built. I like the way the buildings are built. I like the way the buildings are built.

A teacher shares student work using the Collaborative Assessment Conference.

teaching and learning from engaging in such a process (see Toolkit Resource E2, the Collaborative Assessment Conference, for more information).

The fourth inquiry strategy introduced was *reflective practice*. Contrary to the inquiry strategies that were presented before, reflective practice does not have the same long history at Project Zero. Instead, the work of reflective practice—in the way that it was presented to the Envisioning Innovation in Education cohort—was newly developed to address issues of diversity, equity, and

inclusion in education. Our rationale for introducing this was for participants to better understand who they are and what unique lenses they bring to their work as educators.^{xiii} Building on the principle of reflexivity from the world of qualitative research, the inquiry strategy of reflective practice prompted educators to engage with the questions: *Who are you? Who are your students?* and *What is your teaching and learning context?*^{xiv} (see Toolkit Resource F1, *What is Reflective Practice?*, for more information).

The concept of reflective practice was introduced to participants through multiple Learning Community events. During the fourth Learning Community event, participants worked with a revised version of the *Looking Ten Times Two* thinking routine that encouraged them to reflect deeply about “Who am I?,” “Who are my students?,” and “What is my teaching and learning context?” (see Toolkit Resource D4, *Looking Ten Times Two*, for more information). In the sixth Learning Community event, participants had a closer look at reflective practice through a hands-on Subjectivity Specs Activity. After revisiting educator’s *Looking Ten Times Two* responses to reflect on the various aspects of their identity, participants were asked to adorn a pair of novelty glasses (with craft material) to make visible the various aspects of their identity, and reflect with other participants on how the various parts of their identities inform how they might see themselves, their students, and their teaching and learning context (see Toolkit Resource F2, *The Subjectivity Specs Activity*, for more information).

Transitioning from Year 2 to Year 3—Charting our Learning Journeys

To support the participants in taking stock of their experiences from Years One and Two and celebrate what they had done, participants engaged in a hands-on Learning Journey mapping activity. In preparation for this activity, participants were asked to take part in a three-step reflective process. Participants were asked to:

Step 1: Think back on your time so far in the project (referencing your inquiry cycle documentation and reviewing resources you utilized during the first two years.)

Step 2: Choose at least 3-5 key moments that stand out on your Envisioning Innovation in Education journey. Key moments could include meaningful interactions, challenges, accomplishments, turning points, or any other noteworthy experience: not only successes, but also puzzles and frustrations that make you ponder, reconsider, or think differently.

Step 3: Reflect on the key moments you have chosen. What did they look like? What makes them

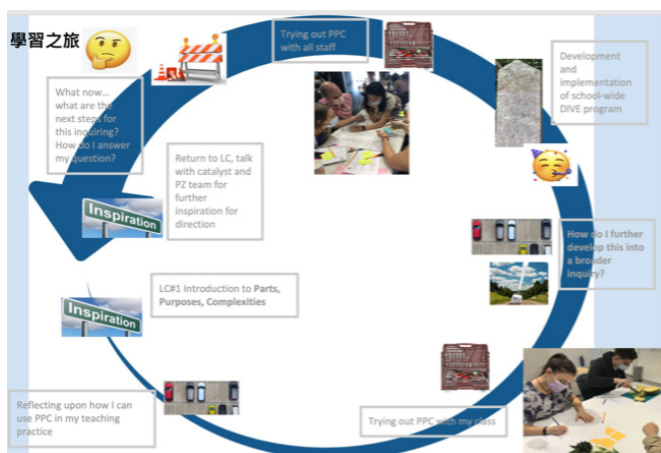
noteworthy? What feelings do they bring up? How have they impacted your practice? Jot down these reflections on a sheet of note paper.

Arriving with these pre-work reflections in mind, participants began by creating a pathway on a digital slide (or blank piece of paper) which represented the shape of their learning journey. Some paths spiraled in an upward direction, some zig zagged, some moved in more linear fashions.

Participants were then asked to use the 3-5 key moments they had considered in their reflections and to link each of their key moments to an associated learning journey icon. Participants were asked to choose from icons provided below or rather to create their own:

- Roadblocks: A moment when you encountered an unexpected challenge or difficulty.
- Inspirational Signs: A moment when you have received inspiration or inspired others.
- Fork in the Road: A moment when your inquiry provided multiple paths forward or changed direction.
- Toolkit: A moment when you used or adapted an EIE tool, or you designed your own EIE-inspired tool.
- Milestone: A moment when you saw progress in your work.
- Parking Lot: A moment when you stopped to contemplate an idea that you expect to use in the future.

Participants then were asked to add the moments (and associated icons) to the blank learning journey road map they had started. For each key moment participants were asked to add a couple of sentences of text to explain the significance of the moment and its connection to the



icon(s) selected. And if participants had extra time, they could add documentation associated with the key moments (e.g., images, excerpts of student work, hyperlinks, etc.).

After creating their map, participants had the opportunity to reflect on the patterns in their Learning Journeys and receive ideas, feedback, and support from one

Educators design Learning Journey maps to share key moments of their EIE experiences at the end of Year Two.

another. After looking into the past, participants were encouraged to look ahead towards their first steps in the future through a *Compass Points* activity, reflecting on areas of excitement,

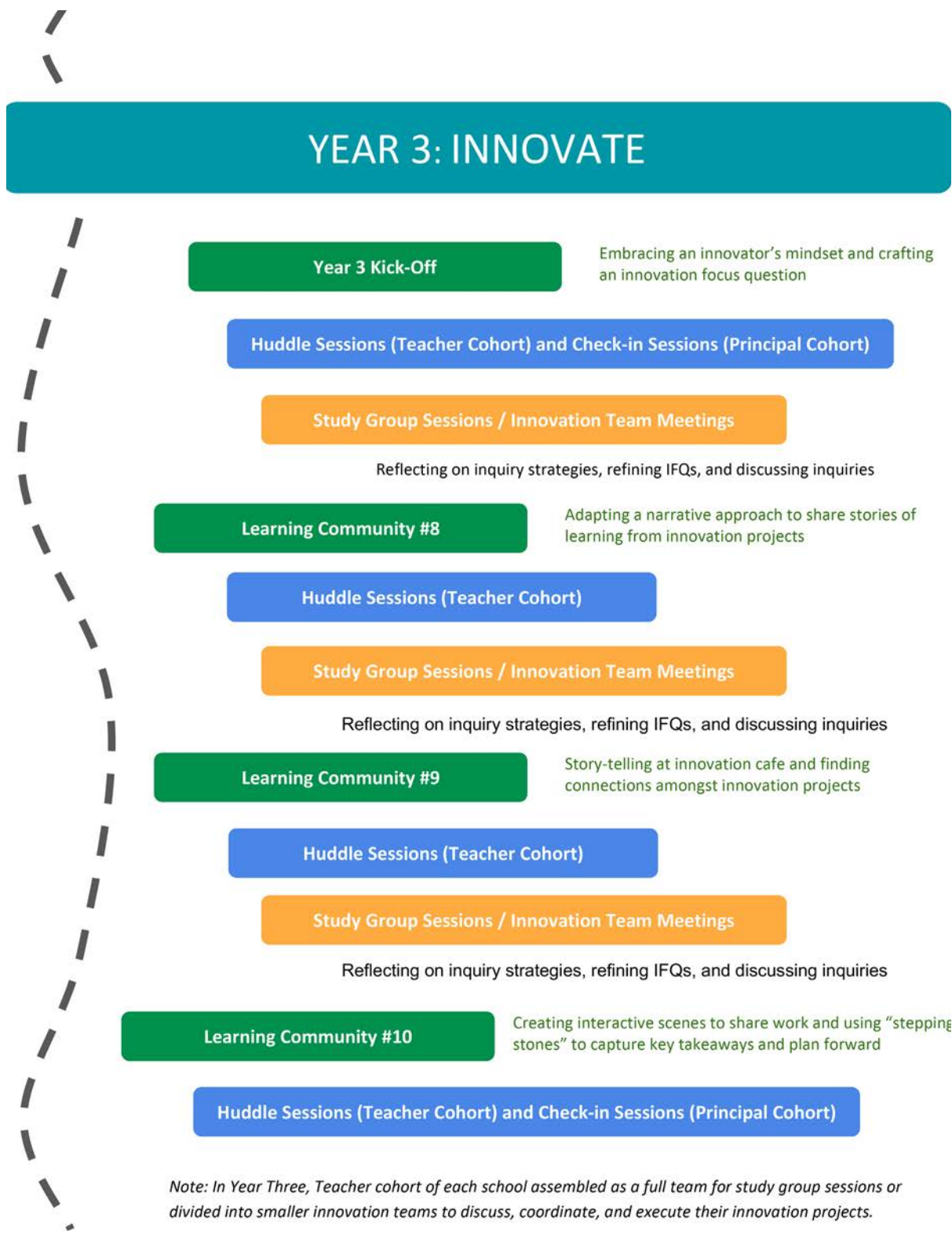


wonder, need, and strategies that came to mind as they looked ahead (see Toolkit Resource G1, *Compass Points*, for more information). This learning experience and facilitation of *Compass Points* provided a valuable opportunity for the Project

An example of a Learning Journey map.

Zero-based team to check in

with participants about their journey and progress thus far, and to support them in looking ahead to the final year of the project.



Year Three: Innovate

The third year of the project was marked as the Innovation phase of the work. Having explored a variety of Project Zero frameworks and dreaming systemically during Year One, and then having facilitated inquiry projects, experimenting with various tools and inquiry strategies in Year Two, during Year Three participants were prompted to further inquire about innovations with their practice, considering ways they could connect with others and extend the reach of their project work. Here, the project borrowed a strategy from the Creating Communities of Innovation project and took a *new to you* approach to innovation. In other words, instead of prompting participants to come up with entirely new pedagogical strategies that the rest of the world had never seen before, they were encouraged to experiment with pedagogical practices that were new to them—or in some way pushed the boundaries of their work. Building on the inquiry strategies experienced in Year Two, participants worked in innovation teams (i.e. a smaller group of participants within the Teacher Cohort that had the same/similar innovation focus) to develop innovation projects. Participants in the project documented their work, received feedback, and then further experimented with their practice.

During the course of the third year, participants met in-person for one half-day “Year 3 Innovation Kick-Off” event and three full-day Learning Community events. Towards the end of the academic year, the Project Zero-based team made a visit to Hong Kong to conduct school visits and facilitate the final Learning Community event in person. Throughout the year, the Project Zero-based team transformed the more reflective check-in meetings from Year Two into future-oriented, planning “huddles.” The learning management system was revised to organize materials and resources into a “self-service” toolbox for participants to gain inspiration from, and also continued to serve as a space for educators to document their work and share it with others. School-based study group meetings continued but were more open-ended than they had been before. The Project Zero-based team introduced a host of tools and practices in Year Three, many emphasizing storytelling and expanding the innovation project reach. Overall, the opportunity for participants to share their work and tell their stories increased during the Innovate phase of the project.

Participants chose an innovation focus with their innovation team and embarked on two or more inquiry cycles for their projects. The participants’ projects developed with each iteration as they learned from feedback, tools, and conversations.

Developing a Narrative-based Approach to Inquiry-Driven Innovation

The journey that the Envisioning Innovation in Education cohort members had been on over the three years of the project became an exciting story to be told during the third year of the project. As our teacher colleagues became immersed in their innovation projects, the Project Zero-based team invited educators to take a narrative-based approach towards inquiry-driven innovation. Here, we drew on approaches to practice that considered where teachers were on their inquiry-driven innovation journeys, where they had been, and where they intended to go next.^{xv} This episodic approach to describing one's learning journey as a story relied on narrative as a technique to tell that story. Our rationale for taking a narrative-based approach drew upon the idea that stories have the power to draw us in and connect us. We each have a story to tell—and our own way to tell it.

During the Year Three Kick-Off Event, to prompt participants to start crafting their stories, the cohort members were asked to consider the following story elements: Characters (Who is involved in your change in practice? Who does your change affect?), Setting (Where is the innovation taking place?), Problem (What are you trying to solve or improve in your classroom or school and why?) and Action (What are you going to do to solve the problem or make an improvement?)

In the eighth Learning Community event, participants engaged in a Playing with Narrative experiential activity where they crafted a "story of learning" by combining, sequencing, and relating all materials given to them in a "mystery bag" of pictures and objects. They were then encouraged to craft the "First Chapter" of their innovation story while building on their early inquiry cycle work, and had the opportunity to share the draft with other participants through creative forms of storytelling. After this Learning Community, participants were encouraged to continue crafting their "next chapters" (sharing about What did you do? What did the experience look like? What did you learn? What did your students learn? What will you do next?) and further their experimental practice in their respective contexts.

In the ninth Learning Community event, to create a more informal professional development experience and establish a more relaxed story-telling setting, the space was transformed to simulate a casual cafe environment, and the agenda was playfully presented in the form of a restaurant menu. Five members of the Envisioning Innovation in Education cohort, who volunteered in advance, shared their innovation stories so far in a storytelling format. In addition to this cohort wide sharing,

all participants were also asked to bring “a page from their notebook,” sharing with fellow educators about their experiences engaging in their most recent cycles of inquiry.



Participants use a narrative approach to share their innovation stories in Year Three of the project.

At the tenth and final Learning Community event, a three-act structure (mimicking a play) was used for the event agenda. During Act One participants engaged in a Learning Journey Continued activity (extending the Learning Journey mapping activity crafted at the end of Year Two with additional key moments generated during Year Three). In Act One, innovation teams shared their



Educators share their innovation cycle work with fellow educators through an interactive scene.

innovation cycle work with other participants through an interactive scene or experience (as opposed to a formal presentation) with the support of innovation storyboards which were similar to Exhibition Boards (see Toolkit Resource C3, Exhibition Board Sharing Guidelines and Template,

and Toolkit Resource G3, *Sharing Our Stories of Innovation*, for more information.)

During the Final Act, participants created a collage of “stepping stones” (with the prompt of “I used to think... Now I think... Now I would like to...”) to envision their next chapters of their innovation journey. In the pages ahead, we’ll have the opportunity to meet the educators and administrators who comprised the Envisioning Innovation in Education cohort. We’ll then have the opportunity to learn about their journeys and read some of their stories.

ⁱTo learn more about Liz and Andrea's exploration of inquiry-driven innovation, see Dawes Duraisingh, L. & Sachdeva, A. R. (2021). *Inquiry-driven innovation: A practical guide to supporting school-based change*. San Francisco, CA: Jossey-Bass. Page 4.

ⁱⁱTo learn more about the Creating Communities of Innovation process, please see the Creating Communities of Innovation Process Diagram <https://pz.harvard.edu/sites/default/files/CCI%20Process%20Diagram.pdf>

ⁱⁱⁱTo learn more about professional learning communities, visit the All Things PLC website <https://www.allthingsplc.info/about> or see DuFour, R. (2004, May). What is a professional learning community? *Education Leadership*, pp. 6-11. <https://www.allthingsplc.info/files/uploads/DuFourWhatsAProfessionalLearningCommunity.pdf>

^{iv}To learn more about the Project Zero Classroom—Project Zero's Summer Institute—see <https://pz.harvard.edu/professional-development/events-institutes/project-zero-classroom-2024>

^vCatch up sessions are quarterly occasions for the teacher cohort from each school to interact with the Project Zero-based team. These meetings helped to build more intimate, personal connections and for the Project Zero team to offer insights and suggestions for moving forward.

^{vi}See Project Zero. 2023. Teaching and learning for understanding. <https://pz.harvard.edu/professional-development/events-institutes/teaching-and-learning-for-understanding>

^{vii}See Project Zero & Reggio Children. (2001). *Making learning visible: Children as individual and group learners*. Cambridge, MA: Project Zero.

^{viii}To learn more about the Visible Learners approach to documentation see Krechevsky, M., Mardell, B., Rivard, M., Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. San Francisco, CA: Jossey-Bass.

^{ix}This activity is adapted from the Visible Learners Toolkit (Krechevsky et. al, 2013).

^xTo learn more about Shari Tishman's approach to slow looking, see Tishman, S. (2017). *Slow looking: The art and practice of learning through observation*. New York: Routledge.

^{xi}To learn more about Steve Seidel's monthly looking at student work meetings, see <https://pz.harvard.edu/projects/rounds>

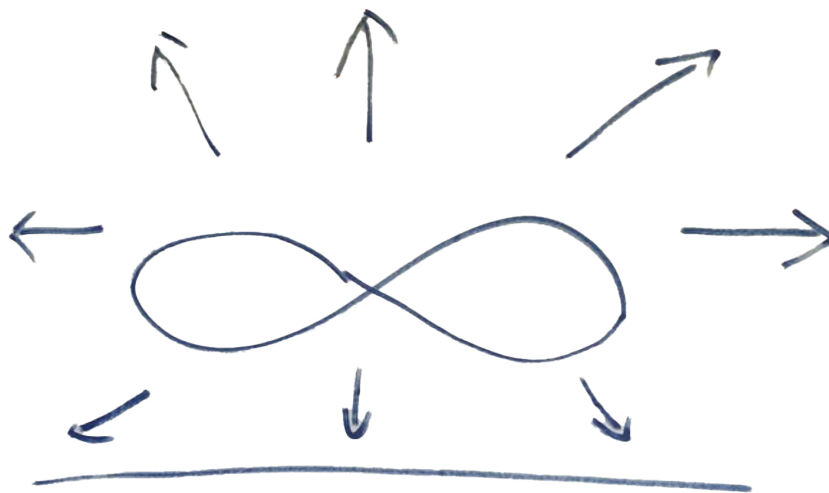
^{xii}To learn more about the Collaborative Assessment Conference, see http://www.makinglearningvisibleresources.org/uploads/3/4/1/9/3419723/modified_collaborative_assessment_conference_protocol.pdf See also, Blythe, T., Allen, D., & Powell, B. S. (1999). *Looking together at student work*. New York: Teachers College Press and Blythe, T., Allen, D., Powell, B. S. (2015). *Looking together at student work: A companion guide to assessing student learning, second edition*. New York: Teacher's College Press.

^{xiii}See for example Patnaik, E. (2013). Reflexivity: Situating the researcher in qualitative research. *Humanities and Social Sciences Studies*, 2(2), 98-106.

^{xiv}The "critical lens" questions were initially surfaced by Edward Clapp and Amber Kamilah with support of their colleague Carrie James. See Clapp, E. P. & Kamilah, A. (2019). Critical lenses for progressive education (encyclopedia entry). In M. A. Peters & R. Heraud (Eds.) *Springer encyclopedia of educational innovation*. Singapore: Springer Nature.

^{xv}To learn more about the concept of looking backward to move forward, see Clapp, E. P. & Rains, J. (2024). *The participatory creativity guide for educators*. New York: Routledge.

MEET THE COHORT



“What does innovation look like?”—Sketch by Kimmy Nga Kam Lie

3

Meet the Cohort

Teachers and administrators from 11 different schools across the Hong Kong educational landscape came together to form the Envisioning Innovation in Education cohort. In this chapter we briefly introduce the schools and cohort members who completed this journey with us, sharing their individual inquiry focus questions that guided their inquiry project work as well as the collective innovation foci selected by each school-based study group in the Innovation phase of the project.



Group photos from in-person and hybrid Learning Community events (images above and below).



Chinese International School (CIS) is a private international school founded in 1983 offering K-12 bilingual and intercultural curriculum to over 1,500 students. In August 2022, CIS inaugurated “Vision ‘33,” the school’s roadmap for the period leading up to their 50th anniversary in 2033. It entails three pathways to excellence: each learner flourishing, new paths discovered, and bridges for good. To meet the goal of each learner flourishing, the school established the Innovation Lab to create a systematic process for all teachers to create, share, and innovate. This paved the way for the cohort’s collective innovation project on envisioning what the Innovation Lab could look like.



Sean Lynch
Principal



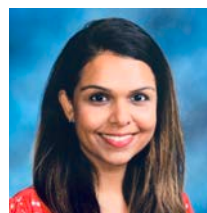
Edwin Lagos
Teacher Cohort Leader
STEAM Coordinator

Inquiry Focus Question:
To what extent can current school structures provide direct real-world connections to our curriculum?



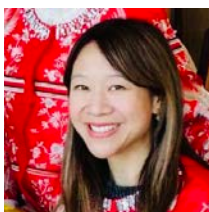
Janelle Codrington
International Baccalaureate
Diploma Programme Coordinator,
Theory of Knowledge

Inquiry Focus Question:
How might providing a range of professional development opportunities to staff enhance teaching and learning?



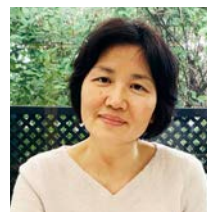
Anjali Nainani
International Baccalaureate Diploma
Programme Coordinator,
Theory of Knowledge

Inquiry Focus Question:
How can educators develop and provide opportunities for student agency through everyday tasks, to enhance their learning and understanding?



Alison Wong
Head of Arts, Head of Film
& Media

Inquiry Focus Question:
How can the concept of ‘shared success,’ that is so central to the Arts and to Chinese philosophy, be accessible to all areas and stakeholders of our school?



Cathy Zhang
Primary School Chinese Teacher

Inquiry Focus Question:
How can students be strategic learners and be self-motivated to learn Chinese effectively?

Collective Innovation Focus in Year 3:

How can we equip and empower teacher leadership to promote a culture of innovation?

Chinese YMCA College (CYMCAC) is a government aided, Chinese medium of instruction, Christian secondary school established in 1952. It values Information and Communication Technology (ICT) education and offers Computer Literacy as a mandatory subject for junior students. Regardless of their focus on Arts or Science, senior students can opt to take ICT as an elective for their Diploma of Secondary Education (DSE) public exams. Since 2017, CYMCAC has committed to host the “Odyssey of the Mind Hong Kong Regional Tournament,” a global educational initiative originating from the United States aimed at fostering student proficiency in STEAM, creativity, and innovation. CYMCAC aspires to bring STEAM education and creative thinking to their students and across Hong Kong.



Gyver Kwok-leung Lau
Principal



Gabriel Hoi Yin Lee
Junior History Curriculum
Coordinator

Inquiry Focus Question:
*How can I enhance students’
motivation in History?*



Kimmy Nga Kam Lie
Teacher Cohort Leader
Department Head of Chinese

Inquiry Focus Question:
*What strategies can teachers
acquire to enhance students’
reading and writing ability?*



Sam Chun-kit Leung
Department Head of Technology

Inquiry Focus Question:
*How to address learning diversity
in computer programming?*



Dr Jeff Siu Chung Au
Senior Biology Curriculum
Coordinator

Inquiry Focus Question:
*How to develop students’
scientific literacy?*



Yui Yuk Yee Pang
Computer Literacy Curriculum
Coordinator

Inquiry Focus Question:
*How to increase students’
learning motivation?*

Collective Innovation Focus in Year 3:

To promote learning through reading, students will integrate and apply the knowledge and skills acquired from various subjects.

Fanling Kau Yan College (FKYC) is a government aided Christian secondary school founded in 2000, located in the Northern district of Hong Kong catering to high learner diversity. FKYC operates on the local curriculum in the Chinese medium of instruction, enriched by school-based adoption of the Leader in Me program, Invitational Education model, and 10+ years of Self-Regulated Learning (SRL). FKYC's innovation focus of promoting Making Thinking Visible in a whole school approach aims to enhance students' SRL. Known for their Open Class, the school welcomes school colleagues as well as outside educators into their classrooms for observation and discussion. They believe in the motto: "No one is perfect, but a team can be."



Veronica Kit Ying Yau
Principal



Chris Ming Him Ho
Geography Panel Head; Senior School Development Officer

Inquiry Focus Question:
How can we use thinking routines and teaching for understanding strategies to deepen students' understanding?



Grace Pik Wan Tse
Teacher Cohort Leader
English Panel Head; Senior School Development Officer

Inquiry Focus Question:
How to deepen students' thinking through curriculum planning?



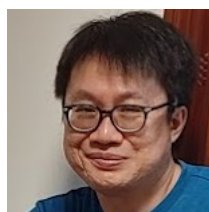
Jolly Sau Man Lam
Chinese History Teacher

Inquiry Focus Question:
How to create the successive understanding performance on the historical skills among students in order to progressively help them access the challenges in deepening thinking on the extended essay?



Jordi Kiu Ho Mok
Music Panel Head, Religious Studies Teacher; School Development Officer

Inquiry Focus Question:
How can deep learning enhance students' creativity?



Chun Ying Au
Chinese History Panel Head, Chinese and Religious Studies Teacher; Senior School Development Officer

Inquiry Focus Question:
How to make use of thinking routine to facilitate the development of a learning community?



Amy Kam Yip Wong
Mathematics Panel Head; Senior School Development Officer

Inquiry Focus Question:
How can we uncover students' thinking and understanding?

Collective Innovation Focus in Year 3:

- 1) How to empower teachers to apply thinking routines in a whole school approach?
- 2) How can FKYC students make learning visible to support & reveal the depth/complexity of their learning?

HKCCCU Logos Academy (Logos) offers a through-train primary and secondary school education. Operating under the direct-subsidy scheme, Logos has the flexibility to craft its unique eleven-year school-based curriculum. Secondary school students have the option to pursue the local Diploma of Secondary Education (DSE) or International Baccalaureate Diploma (IBDP). Logos has a strong emphasis in Positive Education, with aims to develop positive learning attitudes and well-being of students and staff. It also promotes self-directed learning, nurturing students to be lifelong learners.



Dr Richard Chak Hong Lee
Principal



Daniele Norman Ng
Head of English Department

Inquiry Focus Question:
How can choices be utilized to motivate students to read?



Dr Gary Cheuk Kin Wan
Teacher Cohort Leader Head of Gifted Education; Head of Positive Education

Inquiry Focus Question:
If we would like to create simple toolkits for teachers and students to facilitate active learning, what should be included?

Collective Innovation Focus in Year 3:

How to effectively share the EIE vision and tools with other colleagues and to encourage and engage them in innovation in education

Hong Kong International School (HKIS) is a private K-12 international Christian school founded in 1966 with over 2,800 students and 500 faculty and staff. It operates on the American, standards-based curriculum and has two campuses providing space for extensive athletics and well-being programs. HKIS' strategic goals include: 1) broadening and enriching learning opportunities to meet the needs of each learner, 2) engaging in a culture of health and wellbeing, 3) improving practices for decision-making using technology and data, and 4) creating a culture of environmental sustainability. The cohort's innovation focus is driven by its first strategic goal.

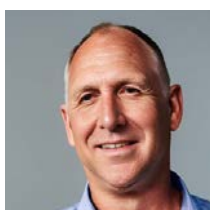


Dr Ron Roukema
Head of School



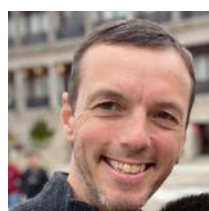
Alastair Jackson
Middle School Associate Principal

Inquiry Focus Question:
How do we create a shared understanding of desired outcomes, align instructional and assessment strategies, and enrich authentic learning engagements to empower student agency?



Scott Williams
*Teacher Cohort Leader
Instructional Coach*

Inquiry Focus Question:
How might the use of learning designs build teacher leader capacity to effectively support collaborative teams to implement standards based grading and reporting?



Tom Banaszewski
Middle School Language Arts Teacher

Inquiry Focus Question:
How can I develop and consistently implement scaffolding strategies to extend skills, provide opportunities for student choice during assessments, and increase equitable and thoughtful contributions from students?



Betsy Lewis-Moreno
High School Humanities Teacher

Inquiry Focus Question:
What opportunities can I create that differentiate resources, process and product, and allow students greater agency based on their learning profiles and interests?

Collective Innovation Focus in Year 3:

How might impactful collaborative practices across divisions broaden and enrich opportunities to meet the needs of each learner?

Munsang College (Hong Kong Island) (IMSC) is an English medium of instruction, government aided school founded in 1999 grounded in the Christian faith. It operates on the local curriculum and aims to foster self-motivated students devoted to making valuable contributions to the community. Their innovation focus has been driven by the school's major concern to enhance students' learning effectiveness and self-directed learning.



Dr Patrick Chi Shing Yim

Principal

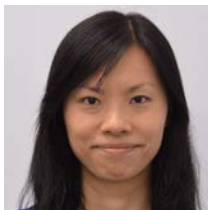


Eric King Yuen Leung

Technology Education Panel Head

Inquiry Focus Question:

How to improve students' computational thinking skills in Tech Ed and ICT?



Yuk Yan Tsang

Teacher Cohort Leader

Deputy Principal

Inquiry Focus Question:

How can connectivism play a role in enhancing students' motivation for acquiring the English Language?

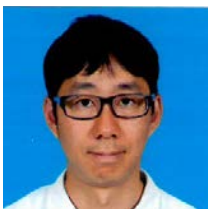


Frederick Ka Leong Poon

Mathematics Panel Head

Inquiry Focus Question:

How can we encourage students to think mathematically in their daily lives and to find the relationship among topics that they have learnt?



David Dat Wing Leong

Physics Panel Head

Inquiry Focus Question:

How to tackle mechanics misconceptions?

Collective Innovation Focus in Year 3:

How can we give students more authority and choice in their learning, and when is it a good time for a teacher to intervene?

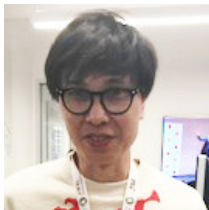
Marymount Secondary School (MSS) is an English medium of instruction, government-aided Roman Catholic all-girls school founded in 1927, sponsored by the Christian Life Community (CLC). It has an affiliated primary school. MSS promotes six core values to students: Reverence, Gratitude, Compassion, Integrity, Perseverance, and Wisdom. The school offers a holistic education with a focus on pastoral care, including religious education, values formation, leadership development, all round education (extra-curricular activities) and world classroom programmes. MSS also implements unique school-based curriculum, such as JUMP, LEAD+, SEED, and LIFE. Its mission is to comprehensively foster students' moral, intellectual, physical, social, aesthetic, and spiritual aspects of life.



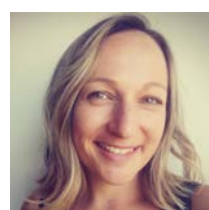
Dr Daphne Ho
Principal



Stanley Ho Tai Mak
Curriculum Committee Head
Inquiry Focus Question:
How can we incorporate MSS core values into daily learning and teaching?



Kyle Wing Keung Chan
Teacher Cohort Leader
Vice Principal
Inquiry Focus Question:
How to make use of thinking routines in daily teaching?



Lauren Minnie
Native English Teacher
Inquiry Focus Question:
How can we empower students to find purpose and passion in their learning?



Caroline Jane Li
English Literature Panel Head
Inquiry Focus Question:
How to celebrate learning creatively?



Joanne Suet Hing Chan
Guidance Team Head
Inquiry Focus Question:
How to support students to ask good questions?

Collective Innovation Focus in Year 3:

Promoting a Visible Thinking Culture at MSS: Coaching System for New Staff

Salesians of Don Bosco Ng Siu Mui Secondary School (SDBNSM) is a government-aided Catholic secondary school established in 1972. It caters to students from a diverse cultural background, including both local and ethnic minority students. The school aim is to nurture effective learning and the holistic development of students through i) Hardware: Creating diversified real-life learning venues, such as gym room, cafe, and elderly life simulation and experience zone; ii) Software: offering professional curriculum and learning experience design, and iii) Soulware: Embracing Salesian Preventive System in education and fostering a trustful teacher-student relationship. SDBNSM strategically positions itself as i) A Future School, enhancing students' problem solving skills and resilience for the future, ii) A Community School, building close ties with the local community, and iii) A Wellness School, prioritising physical and mental well-being of students.



Kin Man Li
Principal



Dominic Chi Yan Leung
Academic Master

Inquiry Focus Question:

What can be done to empower students in the learning process, assessment, and co-creation of learning environments that contribute to enhanced learning effectiveness?



Natalie Yan Yi Chan
Teacher in Charge of Wellness@NSM

Inquiry Focus Question:

What can be done to empower students in the learning process, assessment, and co-creation of learning environments that contribute to enhanced learning effectiveness?



Eddy Ka Chun Yan
Teacher Cohort Leader
English Panel Head

Inquiry Focus Question:

What can be done to empower students in the learning process, assessment, and co-creation of learning environments that contribute to enhanced learning effectiveness?



Celest Wing Yin Chan
Assistant Principal (Learning & Teaching)

Inquiry Focus Question:

What can be done to empower students in the learning process, assessment, and co-creation of learning environments that contribute to enhanced learning effectiveness?

Inquiry Focus Question (IFQ) in Year 2 & Collective Innovation Focus in Year 3:

What can be done to empower students in the learning process, assessment, and co-creation of learning environments that contribute to enhanced learning effectiveness?

Saint Francis of Assisi's College (SFAC) is a government-aided Catholic secondary school founded in 1977, located in the Northern district of Hong Kong. Due to its proximity to the Mainland China border, the school also serves a large population of cross-border students who commute daily between Mainland China and Hong Kong. The SFAC team's innovation focus addresses their school-wide goals of catering to learner diversity, enhancing learning motivation and fostering students' confidence. To achieve these goals, SFAC offers a wide variety of other learning experiences beyond the classroom setting for students, such as cycling challenges, volleyball tournaments, social innovation design competitions, and the Young Innovators Bazaar.



Anne Wai Yu Ma
Principal

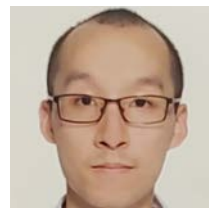


Tsun Long Fan
Liberal Studies Teacher
Inquiry Focus Question:
How to cater to learner diversity, and promote students' learning motivation?



Virginia Yuen Kwan Wong
Teacher Cohort Leader
Vice Principal and Mathematics Teacher

Inquiry Focus Question:
How can we promote visible learning by cultivating students' listening and communication skills?



Tik Chi Lau
Mathematics Teacher
Inquiry Focus Question:
How to enhance students' learning motivation, especially with lower performing students?



Wing Wah Sheung
Design & Technology Teacher;
General Affair Chairperson

Inquiry Focus Question:
How to enhance students' in-class participation and engagement?

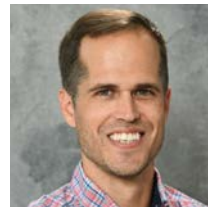
Collective Innovation Focus in Year 3:

How can thinking routines and documentation be used to improve students' learning and understanding? How can we promote a culture of thinking at SFAC?

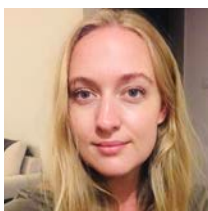
The Harbour School (THS) is a K-12 international school on the American standards-based curriculum. It believes in a personalised approach to learning with different graduation pathways. Students are trained as critical thinkers invested in the projects on which they work, individually and in groups. Unique curriculum features include co-taught transdisciplinary courses, Project Development, Independent Study Modules (ISMs), and a robust internship program. Students mature in a socially conscious, progressive, and inclusive learning community supported by real-world application of academic content. THS' student-centered approach underpins the cohort's innovation focus.



Dr Jadis Blurton
Head of School



Sam Crickenberger
High School Science Teacher
Inquiry Focus Question:
What defines differentiated hands-on, minds-on learning in high school biology?



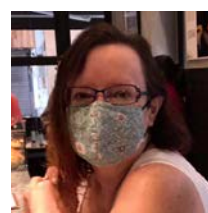
Alison Kutlaca
*Teacher Cohort Leader
High School Co-Principal*
Inquiry Focus Question:
How is School Culture Created, Sustained, and Enhanced in Practice?



Natalie Mierczak
Vice Principal, Primary and Middle School
Inquiry Focus Question:
How do we promote a culture of sharing at a school?



Jennifer Crickenberger
Curriculum and Instructional Coach
Inquiry Focus Question:
What does effective coaching look like at an innovative school?



Jennifer Stroud
Middle and High School English Teacher
Inquiry Focus Question:
How do we give students choice and agency over their learning in the Literacy classroom?

Collective Innovation Focus in Year 3:

How do we strengthen our school's culture of deeper learning, student agency, and sharing?

Wah Yan College Hong Kong (WYHK) was founded in 1919 as an English medium of instruction, government aided Catholic boys' school. Sponsored by the Society of Jesus (the Jesuits), WYHK values compassion, creativity, critical thinking, and liberty, with a mission to nurture progressively competent, spiritual, and ethically discerning individuals. The school has prioritized self-directed learning as one of the school's major concerns in their three-year school development plan (2020-2023). In 2021, it introduced the bring-your-own-device (BYOD) policy, which explains the cohort's innovation focus of leveraging e-learning and thinking tools for self-directed learning.



Davis Wai Lun Chan

Principal



Karl Chan

History Panel Head, Student Advancement Committee Chairperson, Discipline Vice Chairperson

Inquiry Focus Question:

How to redirect authority to students in History learning?



Kiki Wan Ki Kung

*Teacher Cohort Leader
English Teacher, Teaching & Curriculum Development Committee Vice-chairperson*

Inquiry Focus Question:

How can teachers adopt BYOD effectively to facilitate student-centred learning and increase teaching efficiency?



Chris Kwun King Lee

Technology Education Coordinator, Computer & IT Department Head, IDEEA (Innovation, Design, Engineering, Entrepreneurship, Arts) Panel Head

Inquiry Focus Question:

How to empower students to take ownership of their learning?



Joseph Ka Ho Chan

Putonghua Panel Head, Chinese Assistant Panel Head

Inquiry Focus Question:

How to enhance learning effectiveness through the use of e-tools?



Rita Suk Yee Tang

Chinese Assistant Panel Head, Learning & Reading Promotion Committee Chairperson

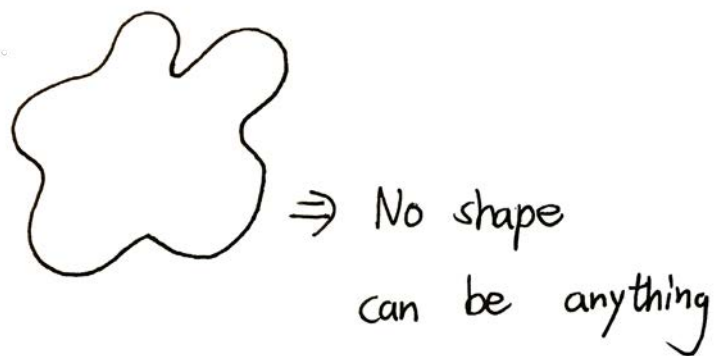
Inquiry Focus Question:

How to redirect authority, for students to take ownership, and integrate drama in teaching and learning?

Collective Innovation Focus in Year 3¹:

- 1) How can WYHK teachers and students adopt thinking tools and routines in order to increase students' motivation in self-directed learning?
- 2) How can we redirect authority to cultivate students as self-directed learners in Chinese Language, and Chinese Literature, through the use of different thinking tools and teaching strategies?

PICTURES OF PRACTICE



"What does innovation look like?"—Sketch by Rita Tang

4

Introduction

The following pictures of practice are stories of learning. They are stories of innovation and how the educators in the Envisioning Innovation in Education (EIE) project interpreted new concepts, strategies, and tools to support inquiry-driven innovation in their classrooms. They are also stories of co-learning and connection, how educators learned with and from their colleagues, how they learned with and from their students, and how relationships and communities of learning were built in the process.

The pictures of practice are organized into four sections. The sections represent areas of innovation that became central to the educators' inquiries in pursuit of educational innovation: student and teacher agency, documentation, whimsical and playful learning, and in-school professional development.

Cultivating student and teacher agency is a topic that sparked interest and resonance from the very beginning of the project. Developing student agency, defined in varying ways by the participants, was the focus of many of the inquiry projects. Many teachers found over time that the inquiry cycle they engaged in for their projects provided a useful model for promoting student agency in their classrooms. Additionally, the development of increased teacher agency supported innovation by allowing teachers to express their experiences, points of view, and determine the focus and direction of changes in their instructional approaches.

Documentation, the practice of observing, recording, interpreting, and sharing to enhance student learning and to inform teaching was introduced as an inquiry process to support educators' inquiry and innovation projects. Documentation was a relatively new inquiry process for many teachers and allowed them to innovate in the way that student and teacher thinking was expressed and made visible, thus deepening student and teacher knowledge of each other and understanding of diverse perspectives. The examples cited in this section illustrate how documentation of student thinking helped to deepen and share the innovative experiments in learning that teachers were inquiring about.

Whimsical and playful instructional approaches shared in this section illustrate how educators strove to change their teaching and learning tone, environment, and mindsets to positively impact student learning experiences and to create the conditions for innovation. Playful approaches to instruction help to relieve the everyday stresses in the classroom and can improve teacher-student, student-student and teacher-teacher relationships.

Supporting teachers capacities through professional development was another motivating reason schools cited for participation in the Envisioning Innovation in Education initiative. As the project progressed, educators saw the value in the tools and strategies utilized in the Envisioning Innovation in Education project to support effective in-school professional development. They strove to design ways to share these ideas and support innovation with their school colleagues through teacher-led professional development opportunities.

The following pictures of practice tell the stories of educators' inquiries in these four areas, the impact that was observed, the innovations that took place, and the lessons learned through the process.

Our intention and hope is that these stories represent and celebrate the diversity of the thoughtful work of the educators who envisioned innovation in education in Hong Kong. We also hope that these stories reveal that there are many ways to innovate and effect change in one's context, and inspire you to take those first steps to inquire and innovate in your own classrooms and your school setting.

Student and Teacher Agency

*How might increased student and teacher agency
impact student motivation and learning?*

In Jenny Stroud's middle school Literacy classes at The Harbour School, it is her hope to help students become more independent thinkers and people who can guide their own learning. Wing Wah Sheung at Saint Francis of Assisi's College seeks to deepen student learning and motivation in his Design and Technology class. At Hong Kong International School, Betsy Lewis-Moreno explores student agency in her English classes, "What opportunities can I create that differentiate resources ... and allow students greater agency based on learning profiles and interests?" At Wah Yan College Hong Kong, teachers examine the link between agency, play, and school culture. Lauren Minnie at Marymount Secondary School strives to cultivate student empowerment, asking, "How can we empower students to find purpose and passion in their learning?" Lauren further inquires, "How can we empower teachers and shift mindsets and attitudes to embrace student agency?"

There are, as described briefly above, varied understandings and approaches to support students in becoming independent and active learners. Self-direction, independent thinking, active learning, and student empowerment are capacities that educators in the Envisioning Innovation in Education (EIE) project hope to cultivate in their students. All of these capacities may fall under the general umbrella of student agency. But what is student agency? As we have learned, the word agency is not widely used in education settings in Hong Kong. In fact, it is a concept that may be difficult to translate into many cultural settings. Not because the concept of agency does not exist across cultures, but because there may not necessarily be a word for it. Even throughout the West, the Anglophonic concept of agency does not translate from one language to the next. In Spanish, for example, the word *agencia*, does not have connections to empowerment and self-determination, it's a place you go for a special service, like to buy plane tickets or book a vacation.

The concepts of 'student agency' and 'redirecting authority' were introduced to teachers during the *envision* phase of the Envisioning Innovation in Education project.ⁱ These concepts were drawn from the Agency *by* Design framework for maker-centered learning, which foregrounds the goal of empowering young people to shape their worlds. While the Agency *by* Design team has its own approach to describing agency,ⁱⁱ for the purpose of this book, we lean into the work of

Albert Bandura and define agency as the ability “to effect change by one’s actions. With agency, students have greater control over their own learning.”ⁱⁱⁱ Greater student control over learning is a condition for innovation and supports change in the broader school culture and community.

In discussing the purpose of cultivating student agency, Hong Kong educators often expressed a hope that through an increased level of agency, students’ engagement and intrinsic motivation would be positively impacted, and that the more self-directed processes of learning would support students not only in secondary school but in learning environments after graduation as well. Inquiries into more student-centered teaching approaches are a departure from a traditionally teacher-directed method of instruction and support teacher efforts to positively effect change in the learning experiences of students and teachers.

In the Envisioning Innovation in Education project, teachers envisioned what they hoped teaching and learning in their settings to be. They inquired into specific aspects of their practice and innovated to effect change in their teaching and in their mindsets. Teachers experimented with tools for re-directing authority, shifting relationships to information and knowledge, and empowering themselves as well as their students. In the *Where are the Pirates?* pedagogical tool introduced in Year One of the project, teachers were encouraged to look for a means to connect to their students’ interests and spark wonder, and to create environments of curiosity and excitement for learning (see Toolkit Resource B5 for more information).

It may be no surprise that teacher agency supports student agency. Throughout the Envisioning Innovation in Education project, cultivating agency was not limited to the work of young people. Increased teacher agency was also a goal of the project. At the beginning of the EIE project, certain teachers would look towards the Project Zero and CEL facilitators, asking what the facilitators were expecting teachers to inquire about and innovate in their classrooms through the course of the EIE project. Over time participating teachers learned that the Project Zero team’s goal was to guide teachers to their own self-directed inquiries and to craft projects that were meaningful to them in their respective educational contexts. The process of re-directing authority back to teachers themselves in individual learning experiences, as well as the design and implementation of inquiry projects, were empowering to teachers who participated in the project, encouraging many to consider ways they could re-direct authority and have students take ownership of their own learning processes.

In the pictures of practice that follow we celebrate teachers' efforts to cultivate student and teacher agency in various ways: through redesign of instruction in support of independent, meaning and purposeful learning, examination of the learning environments, and by offering varied ways for students and teachers to express their understanding of their learning.

Pictures of practice featured in the following section include:

- A. Providing Opportunities for Cultivating Student Agency in Planning, Assessment, and Production
- B. Supporting Student Agency, Motivation, and Confidence in Design and Technology Classrooms
- C. Cultivating Agency in the Humanities Classroom
- D. Student Agency and the Power of the Passion Project.
- E. "Is it Possible to Change the Teaching and Culture of a School with a 100-Year History?"
Cultivating Teacher and Student Agency

A. Providing Opportunities for Cultivating Student Agency in Planning, Assessment, and Production

Jennifer Stroud – The Harbour School – Literacy

In Jennifer (Jenny) Stroud’s middle school Literacy classes, it is her hope to cultivate students to be more independent thinkers and people who can guide their own learning. In describing working with the middle school age group, Jenny reflects,

Middle schoolers love to think that they are big, bad, and independent ... They’re at that phase transitioning from being a child dependent on parents to being a free thinking person and it’s a difficult journey for them to take but I feel that agency works so well and starts to give them choices and take control of their own lives for the first time, even if it’s in small tiny increments within my classroom.

Shared unit planning

A central part of Jenny’s effort to cultivate student agency includes involving students in the planning and direction of units. “It should not always be about me (or parents) getting them interested—I want them to do it.”

In describing her process, Jenny shares, “Before I start a unit with the students, we discuss what objectives I am planning, what resources I have, and what options I think I can give them (while staying within both the US Common Core curriculum and the requirements of the school.)” Jenny provides space for students to raise ideas and resources relating to the unit, and often will develop a list of books that students can choose from as they progress into the unit.

In one instance, Jenny listened to student input prior to the start of a coming unit, and decided to change course,

I recently was scheduled to teach narrative writing (historical fiction) to Grade 8. In a casual discussion with one of my classes they made their lack of excitement for this unit clear. I invited them to suggest what they would prefer—and we discussed genres and what I had available. Gothic horror was an old unit I wrote years ago and I haven’t taught for a few years,

but the students were excited for it. I am teaching the same core skills in a challenging genre and I have some excited and invested students.

In considering student interests and engagement prior to the start of a new unit, Jenny is inquiring about questions central to the “Where are the Pirates” tool, explored with teachers during the *envision* phase of the EIE project (see Toolkit Resource B5 for more information).

Shared assessment planning

Jenny also inquired about involving students in the creation of grading rubrics and plans for assessment.

Showing them a completed, absolutely top of the range argumentative essay, getting to break down exactly what made it so special and then creating the grading rubric based on what they saw in that essay... I was actually very impressed with how hard my students in that class were willing to push themselves to get to that rubric goal because they felt they were the ones that created the point.

Towards the end of the year, Jenny opened up discussion about the current unit which included a five-paragraph essay as the final assessment for the unit.

We'd done a lot of five paragraph essays. So another Friday morning, I sat down with the classes—explained what we should be testing for, and this is what I have to check that you have evidence of the learning. We ended up brainstorming and coming up with combining into groups—each group had someone who did a different author and they're doing huge presentations, but it's individual work essentially.

The discussion continued and then,

They decided they needed to do another section which was comparing and contrasting the different dystopian elements. They turned what should've been a five paragraph essay into a seven paragraph essay. And compare and contrast—not the easiest thing, particularly when you've got four books in the mix. I was proud that they pushed themselves into this. They came up with the idea they're on board with it. They're excited about it.

On the second day of the in-class working time, I had my laptop connected to my smart TV so

they can see what I'm working on and I'm creating the marking rubric using elements from the argumentative writing unit. Argumentative writing because they're analysing dystopian literature and I'm modifying it to meet the project they designed, and I get a voice out of the wilderness.

"Mrs. Stroud. I think you need to put this in as well."

"Okay you want to be graded on the artistic elements?"

"Yes we should be."

"Okay," and

"Mrs. Stroud, what are the stars next to these two sections?"

So I remind them that craft and elaboration are double value sections. Another debate and I find myself putting a star next to organisation—and they are right, pulling together different authors' work into one board and a cohesive display requires some creative organisation.

Fast forward two days, I'm walking around the classroom complaining I'm bored because they're working too hard and I look over Alan's shoulder and he's got the marking rubric up. "I'm just checking that my work matches what we're supposed to do." I couldn't be more proud. I don't think he's ever looked at the marking rubric in my class before, but they all had input to the rubric, and so they have ownership and now they are striving to achieve... I have some excellent boards from this final project with really strong evidence of learning and a bunch of students who worked really hard to get to the place that they believe they need to be. Intrinsic motivation wins every time.

Learning about students and providing supplemental learning opportunities

As students commenced their argumentative writing and associated research, Jenny had the chance to observe students' progress and process. During this stage, she observed that many students in her current Grade 7 class did not "know how to do an efficient Google search or extrapolate evidence to analyze next steps/future problems." Jenny shared this challenge with her colleagues and decided to add in a couple of lessons focused on the topic of cultivating fundamental research skills. In reflecting back on this experience Jenny shared, "What's interesting is if it wasn't for student agency, if we just went about our usual prescribed topic, this issue would not have been revealed, and we can imagine how this can be problematic down the line."

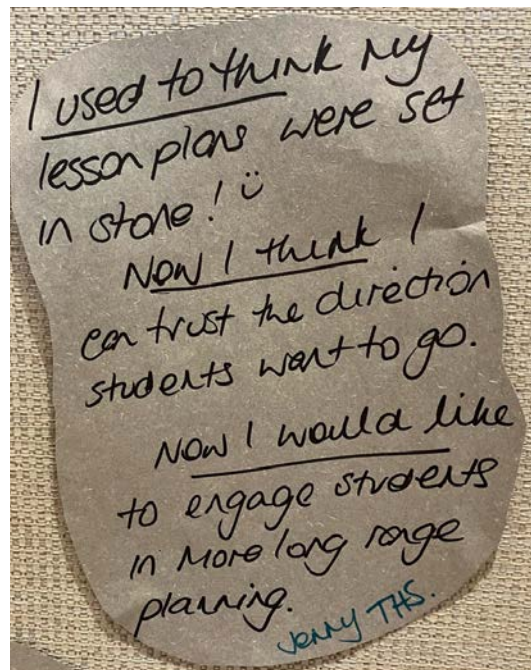
Final note—finding big and small opportunities for student agency

In Jenny's classroom, moments for student agency come in small moments where she may resist overdirecting students as they prepare to use a thinking routine, or larger moments as she decides to give the role of casting in the coming play (and eventually set design) over to her students, placing herself in the role of a thought partner, discussing ideas and questions with students along the way.

In sharing her experiences inquiring about student agency in the classroom, Jenny playfully warns fellow educators to be careful, because once you start giving students agency over their learning, they're going to want more of it. And that's a good thing!

In looking back at her inquiries about student agency during the Envisioning Innovation in Education project, Jenny reflects,

Finally, I feel that the agency I am giving them, the choices in their learning, brings the focus on their learning—it's not mine, it's not their parents. And this is part of my role as the teacher. I hope that this agency continues beyond the classroom, that they start to feel they have choices in their lives that are also just theirs.



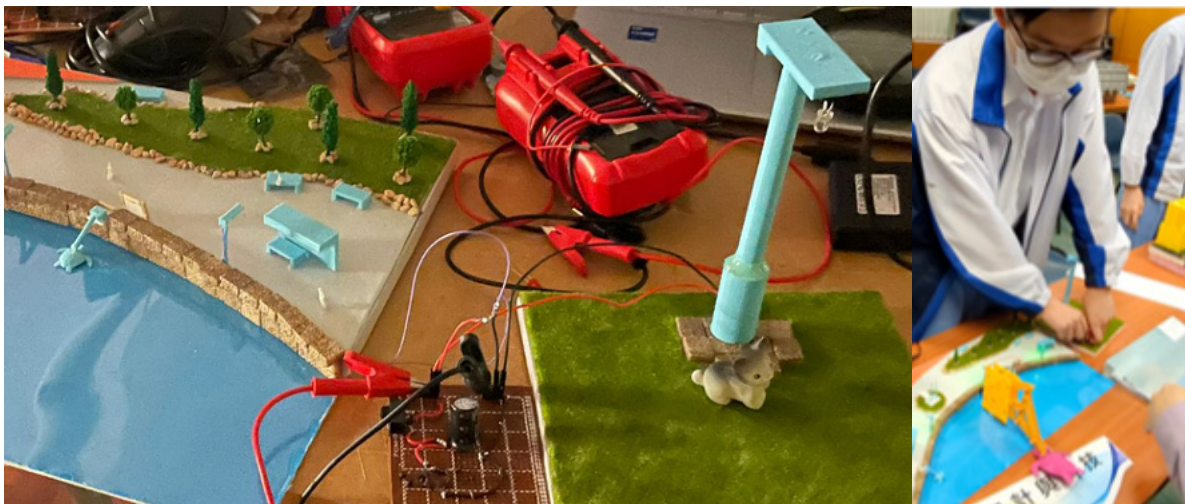
Jenny's end of project, I used to think, Now I think, Now I would like to, sharing.

B. Supporting Student Agency, Motivation, and Confidence in Design and Technology Classrooms

Wing Wah Sheung – St. Francis of Assisi’s College Hong Kong – Design and Technology

Towards the end of the academic school year, students gather in a meeting room at St. Francis of Assisi’s College (SFAC), exhibiting design and technology projects they worked on over the year.

It is widely known that many of today’s popular energy sources can have negative environmental impacts. “I made this design because some non-renewable energies can ruin the environment,”

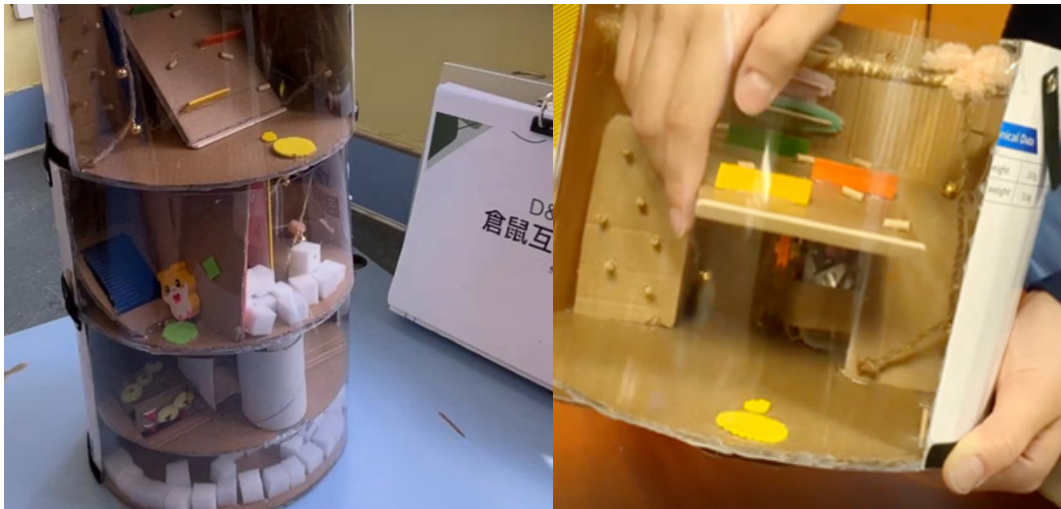


Student exhibition of hydraulic energy project.

says an SFAC senior form student working on a project focused on capturing Hong Kong Bay hydraulic energy from sea turtle art installations.

Another student showcases a different kind of project she created, with a focus on innovations to items in her own home. “The idea for my design came from the fact that hamster cages are often very small and narrow, and there are no opportunities for the hamster and owner to interact with one other. So I made this design comprised of four parts that you can pick and organize as desired..”

As students in Wing Wah Sheung’s Design and Technology course at SFAC share their end of year project work, there is a sense of excitement and pride in the air. Students share concept drawings, motivations for creating their projects, and various technical implementations and design choices that help their project’s function.



Student exhibition of an interactive hamster home project.

SFAC is located in the North District of Hong Kong and caters to children from grassroots families. Many students start secondary school with fewer forms of success by traditional academic measures (e.g. entrance examinations) and formal learning may not have always been a positive experience. Principal Anne Ma describes that a central goal for all students during their tenure at SFAC is to guide them to “understand their potential, discover their strengths, and develop confidence.”



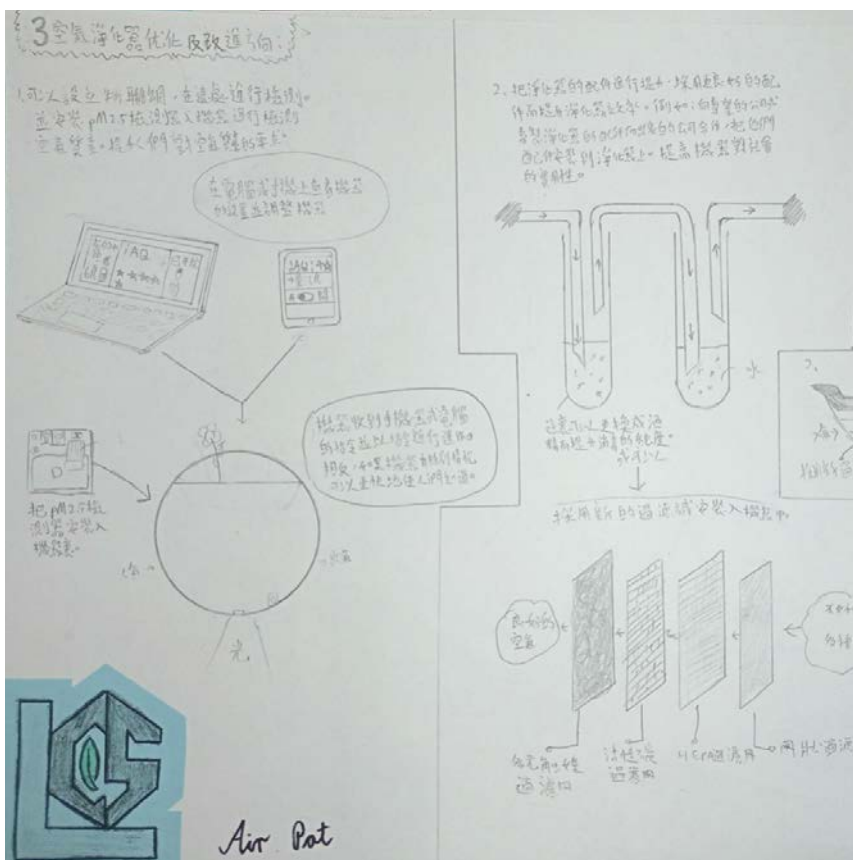
A student group's ending competition design for an elevator that can raise a can of Coke 20 centimeters (approximately 8 inches).

At the very beginning of the Envisioning Innovation in Education (EIE) project, Wing Wah Sheung sought to improve student learning and motivation in his Design and Technology class. Wing Wah

paid special attention to student experience overtime in his inquiry projects, finding that with the right factors in place, students can be very motivated and proactive during the learning process.

Selecting generative topics focused on resolving community issues

In many units, Wing Wah proposes an issue or design competition topic and encourages students to ideate possible approaches to resolving the issue. In recent years, projects addressing environmental issues have included approaches to air purification, increasing the efficiency and use of solar devices, and addressing other issues and opportunities raised by students. This focus on finding “generative topics,” accessible to students and providing opportunities for multiple points of connection and entry, aligns with Project Zero’s research on Teaching for Understanding (see Toolkit Resource A1 for more information), which was introduced to Wing Wah and his colleagues during the envision phase of the Envisioning Innovation in Education project.^{iv} Teaching for Understanding places the crafting of “Generative Topics” at the forefront of unit design. Through the creation of generative topics for investigation, Wing Wah finds that students are able to propel their ideation and project work forward together. In a unit on air purification, Wing Wah



A student group's design proposal for approaches to air purification.

invited students to begin by ideating designs and approaches for purification. Wing Wah shares, “Unexpectedly, students can use those seemingly abstract design thinking tools in their design. Moreover, when discussing and throwing out opinions, there were no quarrels in the groups, and the division of labor formed naturally.”

Wing Wah shares further, “Just following the notes to teach design is pretty dull. If learning is based on a meaningful project, students’ learning and motivation will increase. In the meantime, teachers give appropriate feedback to students, and students can construct their own knowledge.”

Relationship building and openness to students’ ideas in project-centered classrooms

Central to Wing Wah’s approach to project-based robotics is an emphasis on relationship building with students. To support student interactions and relationship building in his classroom, Wing Wah draws from the work of Zineb Djoub in synthesizing five suggestions he follows, shown as steps on the path below:⁴

To build up relationship, teacher and student trust each other.



Talk to them after class about their interests and concerns.

Call them by their names and encourage them to speak, even a few words. Correct gently their mistakes where necessary and praise their efforts and achievement.

Do not force them to speak. Show them clearly that you like listening to them, their ideas do really matter for you and they make a great difference to their learning.

Being doubtful of your reaction to their responses or initiation, they will hesitate to say a word even if they have a lot of ideas to share.

Be patient, because students need to be familiar with you and mostly feel more comfortable voicing their ideas.

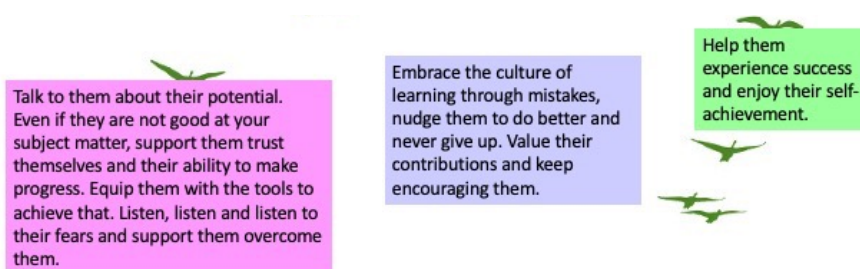


Student-teacher relationship building quotes selected by Wing Wah.

Central to these steps is an inclination towards patience, resisting responses that may shut down students’ sense of agency, balancing praise with gentle feedback, and getting to know what matters to individual students over time.

Embracing a culture of learning through mistakes

Acknowledging students' past experiences, Wing Wah shares, "Experiencing failure in the past can also result in students' lack of self-confidence and the conviction that they are unable to reach success, so failure is foreseeable." In working with students in this context, Wing Wah draws again from the work of Zineb Djoub offering a few suggestions focusing on the tone and nature of student interactions that foster their confidence in the subject, and school in general.^{vi}



Key quotes selected by Wing Wah on the topic of success, learning through mistakes, and moving forward as learners.

In reflecting about students' performance, Wing Wah shares "I try to give students a sense of success in their junior form, to let them have a good learning experience in their mind. You can see from the students' exhibitions, they all have a successful engineering project, and it's a milestone of their learning."

Sharing with large groups

A consistent element in Wing Wah's Design and Technology class is that students are encouraged to share their work with their schoolmates, through competitions and the wider community.

"They are all excited that their classmates are exploring their innovation work—they feel very happy that classmates can play with their design work." Wing Wah notes that he has observed authentic presentations impact other subjects including English, as students prepare to express their ideas to multilingual audiences. In addition to classmates and within competition environments, Wing Wah also creates opportunities to share students' projects with parents and community members. "We educate adults to show them it is not a toy, it is a real design thinking project."



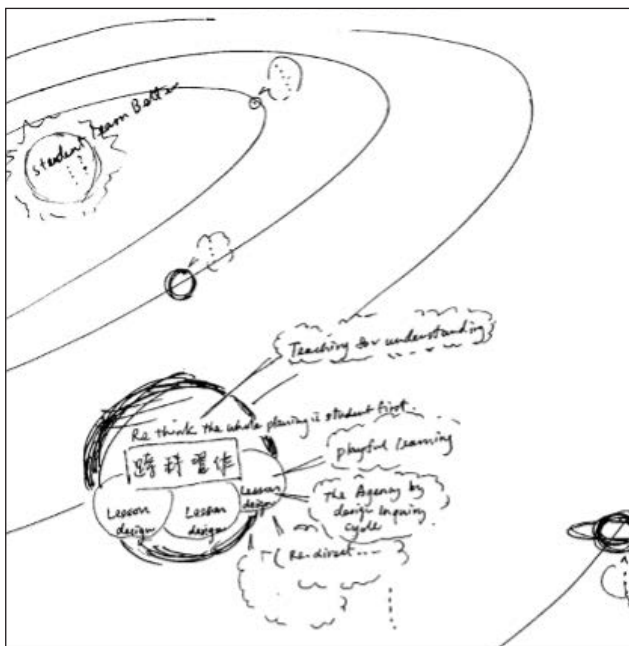
SFAC students review their classmate's project exhibitions.



Students share recent project work with parents and the greater community.

Framing better student learning at the center

In looking back at his experience in the Envisioning Innovation in Education project, Wing Wah shares that the process has given him a greater sense of confidence in his role as a teacher, “I know more about what is education and the flow of knowledge. I know more about the mechanisms to support student understanding.” Through his inquiry project process, Wing Wah has come to appreciate the benefits from pre-semester planning and updating of his current inquiry focus, working alongside his subject team in the process. In a visual representation, Wing Wah puts the goal of “students learn better” at the center of the universe. Wing Wah now regularly draws upon principles of the Pedagogy of Play, Agency *by* Design, and Teaching for Understanding in his lesson design and planning. (See these project frameworks included in Section A of the Toolkit for more information.)



Wing Wah's visual representation of aspects that support student learning in his classroom.

A final playful note

In a public exhibition of student's final projects, Wing Wah shares proudly, “I know they are very professional, I realize that.” Yet when sharing documentation throughout the year, Wing Wah also celebrates moments that are playful and impromptu, such as the image below where students created their own shoes in response to sudden heavy rain. The photo also captures an intrinsically motivated moment for these students, when they requested to return to school during the holiday period to work on their design prototypes. “This photo reminds me that when students love their work, no matter how bad the weather is, it can't stop them from learning. They will be eager to overcome challenges creatively... I will keep this photograph forever ” Wing Wah shares.



Students arriving during a rainstorm to work on projects.

C. Cultivating Agency in the Humanities Classroom

Betsy Lewis-Moreno - Hong Kong International School (HKIS) - High School Humanities

Betsy Lewis-Moreno, a high school Humanities and English teacher at Hong Kong International School (HKIS), seeks to disrupt and “hack” existing routines and systems to find new ways to give students choice and to introduce new texts and topics in her classes. Betsy seeks ways to balance content and skills instruction with opportunities to try new approaches and strategies in her classes.

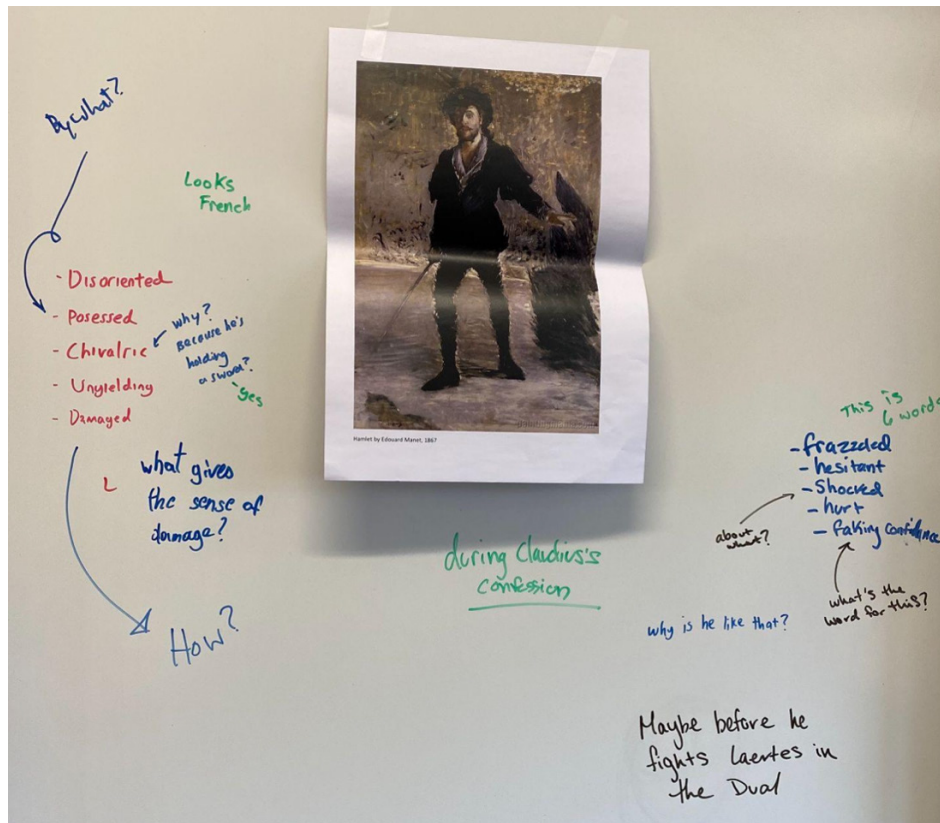
Betsy is inspired to work with her department colleagues to find learning opportunities that are authentic and meaningful for her students. She describes her students as motivated, engaged, and creative. She adds that her students are also willing to take risks and try new things. Betsy comments, “Each year teaching brings new challenges and requires new approaches. It’s never the same.”

Betsy chooses to focus on differentiation and student choice in assessment in her inquiry into her practice. Betsy’s inquiry question guides her work in her classes, “What opportunities can I create that differentiate resources, process, product, and allow students greater agency based on learning profiles and interests?”

Betsy has the flexibility at HKIS to choose texts and strategies with which to address big topics such as equity, politics of fear, immigration, the American dream, and mental health. She introduces a range of genres, mystery, graphic novels, and Shakespeare, through which to explore these topics. Throughout her inquiry process, Betsy uses reflective practice and documentation, processes that she has been exploring in the Envisioning Innovation in Education project, to gather, share, and reflect on student ideas.

Cultivating agency through a slow looking exercise providing choice and voice

Betsy designs a slow looking exercise in her senior class study of Hamlet that provides her students with opportunities for choice, discussion, creative self expression, and reflection. These instructional approaches help to cultivate student agency by increasing student participation and offering multiple ways for students to express their understanding of the topic. In the study of



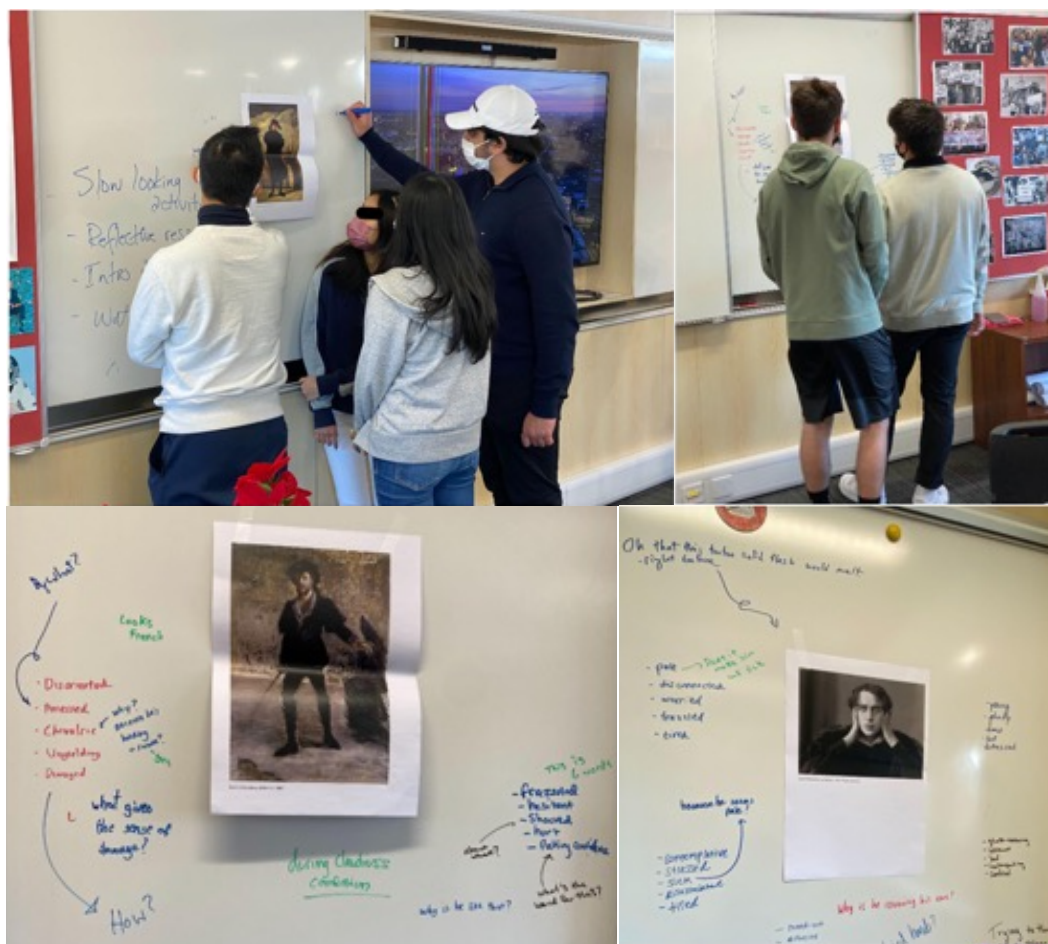
Students jot down impressions of an image of Hamlet on the classroom white board.

Hamlet, Betsy displays a variety of images of Hamlet from 19th-21st century artists. Students select an image, study it for sixty seconds, and write 5 words or phrases on the white board to describe the image. This process is repeated twice—a riff on the Project Zero thinking routine *Looking Ten Times Two*.^{vii}

Students use the white board to record their impressions of the images of Hamlet which prompts discussions about Hamlet's character. Students are able to see their own thinking as well as the thinking and diverse perspectives of their classmates. Betsy shares her observation of the students' process and the use of images in her teaching,

The students were drawn to the more somber images of Hamlet and to Hamlet's character and his indecision. Using images is a valuable way to tap into student thinking, provide choice, and make connections to other disciplines, such as European History and Art History.

As Betsy reflects on the innovations in her practice, she wonders how to extend the use of images and slow looking in other units of study: How could I have students find, create, and share images to demonstrate their understanding, connect the images to their own writing, or combine slow looking with other mindfulness practices?



Students in Betsy Lewis-Moreno's English class on Hamlet discuss their impressions of images of Hamlet. The visual representation of ideas on the whiteboard allows the students and Betsy to revisit and discuss the ideas and diverse perspectives prompted by the images.

Cultivating agency by grappling with challenging topics: A Seat at the Table

Betsy offers a variety of texts for students in her interdisciplinary sophomore class to choose from in a unit about groups that have historically been marginalized in the United States. Opportunities to delve into challenging and meaningful topics provide students with a safe space to grapple with their views on these topics. Betsy offers her students choice in the direction for this unit of study, empowering them to explore, discover, and voice their perspectives on the experiences of a specific marginalized group. Exploration of topics that are personally meaningful helps to cultivate students' sense of self and their agency.

Betsy describes the Seat at the Table study,

Students spend eight weeks learning how groups such as women, LGBTQ+, Black-, Asian-, Hispanic-, and Native Americans have been marginalized and had to fight for equality in America. Three or four students are experts for a designated group and give presentations for the 100-year journey (1865-1965) and the present day (since 1990). They each also role-play a character from their group in a civil rights trial (1965-1985 period) and read a contemporary memoir.

Betsy explains that students explore marginalized groups and their own attitudes about those groups. They are guided by essential questions such as, Why is it important to understand American slavery? How and why do people respond to injustice? To what extent did the Civil Rights Movement succeed? and Why does it matter who tells the story?

Betsy continues, "Students are able to select topics based on personal interests. During the course of the study, students research and role-play and gain valuable knowledge of the topic as well as themselves."

Cultivating agency through teacher knowledge of students

The observation, recording, and sharing of students' thoughts about their topics give Betsy a window into her students' identities, interests, and cares. With this knowledge of her students, Betsy is able to tailor her instruction to the specific interests of her students. Teacher knowledge of their students' interests and student knowledge of their peers can have significant impact on student relationships, motivation, learning, and agency.

One of Betsy's students who investigated the experience of LGBTQ+ persons in the United States reflects on her experience;

Learning about the experiences of people like me in history made me happy. Yes, I learned about the terrible things that happened to them, how they were criminalised, murdered, and shunned by society. But that was the first time I was allowed to look up these things where I didn't have to seek it in my own time, where I got to talk about it with others and teach them

about people like me without fear. So I enjoyed this unit a lot. And it really has helped me learn about other minorities I haven't really sought out. And it's made me really address that. That I have the bias to look into black and LGBTQ+ problems much more than others.

Another student reflects on her research into the experience of Asian Americans in the United States,

In Hong Kong, I am the majority. I am an Asian in an Asian city, I don't stand out from the millions of others in Hong Kong but as someone that is part of an American education-based school and as someone that is looking to attend a college in America, I have to think about my life in the US and how I fit in on the other side of the world. Even until recently, I thought that I would naturally fit in America, after all it's "the land of the free," the country that everyone can pursue their happiness, a nation that has always preached equality for all. Through this unit, I learned about the dark history of America and the constant struggles minority groups faced throughout American history.

Further reflections

Betsy reflected on her own and her students' learning during the units of study described,

I learned that taking away a familiar structure leaves students unsettled ... I will create more opportunities for talking about the readers' experiences when one's expectations are challenged. Students learned that being an active reader requires lots of thinking. (The students) were surprised at the range of approaches to their projects and how much one's interests or beliefs influenced their understanding, even among a group that has a lot in common ... They learned to take risks with their own approaches to tasks and to texts in their writing.

Betsy's design of the Hamlet and Seat at the Table units provides students with multiple entry points into texts and topics and instructional approaches that support their growing agency. Opportunities to choose and explore personal topics, share ideas with peers, engage in thinking routines, and slow looking offer new ways to engage with material and classmates. Students understand curricular concepts, developing a sense of self, knowledge of their peers, and their agency. As Betsy observes above, new instructional approaches may unsettle her students and may take them out of their comfort zone. For Betsy, this disruption is a good thing, for it leads to new and deeper understandings, both for Betsy and her students.

D. Student Agency and the Power of the Passion Project

Lauren Minnie – Marymount Secondary School (MSS)
 – High School English Language and Literature

Form 3 English students at Marymount Secondary School (MSS), a local girls' school in Hong Kong, enter the large school auditorium. They hastily lay out materials for their Passion Project exhibits, chess boards, sketch pads, iPads. The Passion Projects represent the girls' research in self-selected topics. Some girls studied how to play chess and others how to sketch with emotion. Still others studied how to hand sew plushies. The girls are eager to share their projects with other students, teachers, and visiting Project Zero team members. Excitement crackles in the air!



Students in Lauren Minnie's English class set up their Passion Project exhibits.

The Passion Projects were the innovation of high school English Language and Literature teacher, Lauren Minnie. "Welcome to the 2023 Passion Project Exhibit!" Lauren announces, "Visit the display booths. Ask questions. Engage with your audience and have fun!" Attendees hush as a student's soft voice in the corner rises, "Wise men say, only fools rush in, but I can't help, falling in love with you..." The power of song unleashed.

Voice and choice: Laying the groundwork for the Passion Project

In the Envisioning Innovation in Education (EIE) project, Lauren avidly pursued learning without boundaries. Drawing on her background in maker education and design thinking, Lauren focused on redesigning the ninth grade (Junior) English language program. Through the Passion Project and other writing tasks designed to develop English language and vocabulary, Lauren also hoped to increase student agency and motivation by (1) increasing opportunities for student voice and choice, (2) changing the classroom environment to be more interactive, and (3) incorporating Project Zero's thinking routines and slow looking into instruction and curriculum.

Lauren had long innovated in her practice. She noticed that both teachers and students often had difficulty with instructional approaches that differed from the lecture-based approach they were accustomed to. As part of her EIE inquiry into her practice, Lauren posed the question: "How can we empower students to find purpose and passion in their learning?" Lauren further wondered: "How can we empower teachers and shift mindsets and attitudes to embrace student agency?"

Lauren believed that the pandemic had created a landscape ripe for innovation. Teachers were more willing to experiment with their practice. The Envisioning Innovation in Education project brought opportunities for collegiality and interacting with a professional learning community that Lauren hoped would support her experimentation.

Lauren developed the Passion Project unit over two years. She experimented with different types of task design and assessment in order to support the skills the students needed for the independent nature of the project. The students were engaged in the unit over the course of a full academic year. They had voice and choice during the course of the project. They chose a topic to explore, researched the topic independently, chose how to demonstrate their understandings, and designed their own assessment rubrics.

Prior to launching into the Passion Project, Lauren designed self-paced writing tasks to help her students prepare for the self-paced aspect of the project. She gave her students opportunities to reflect on the self-paced activities and the changes taking place in their English class. The student reflections make visible their growing sense, their strengths, and their agency:

"I like to work at my own pace."

"I like to do my work at school and do less at home. I have so many tutors at home."

"I was proud that I came up with my own idea."

"I am proud that I have a clear plan and goal for my writing."

"I found I have many ideas ... and am creative."

"My laptop broke overnight and I discovered my capacity to remain chill in the face of stupid things."

"I never thought students could design their own rubric."

"I am having loads of fun!"

Lauren reflected on the students engagement with the changes in her teaching approach,

I found that the students saw value in the self-paced activities and saw the potential for taking charge of their learning. They were open to experiencing a change in my teaching approach. And they saw the classroom as a safe place, a place of nurture, and support.



Students' documentation of their exploration of personal interests in preparation for the Passion Projects.

Cultivating agency through self-selected topics: The Passion Projects begin ...

To begin the Passion Project unit, Lauren introduced pedagogies, tools, and strategies that would support the students' independent research and help develop their agency. The strategies included inquiry questions, slow looking, thinking routines, and opportunities for student self reflections.

To help generate ideas for the Passion Projects, Lauren invited students to explore their personal interests and explain why a particular interest was important to them. Lauren designed tasks for the students to understand the purpose and motivation behind the projects and to help the students identify their unique journeys. Infographics helped to illustrate the students' projected learning journey.

The students' interests were varied. One student expressed her interest in music, "Music is important to me because it cures me. I also want to make music as a way to give back to the community." Another student expressed her desire to set up an Instagram page. "I want an Instagram page so that I have a platform to express my new and strange thoughts."

Lauren reflected on her students' interests,

I learned that the students were able to be curious and that they needed room to exercise their curiosity. They enjoyed the new practices, even though the practices were often challenging. I wanted to seek manageable transitions for systemic change.

During the EIE inquiry-driven innovation process, Lauren had chosen an area of her practice to examine and crafted a guiding inquiry focus question. After Lauren's students explored their interests and passions, Lauren invited them to compose guiding research questions. Lauren encouraged the students to consider how the project could present a space to explore a new area of interest, or examine a familiar interest in greater depth or in a new direction. One student chose to examine her connection to others. Her inquiry question was: "How can I balance logic and emotion to communicate better with others and feel content with who I am?" Another student asked "How can I become a great chef?" Still another student inquired, "How can I sew plushies by hand?"

The roles of teacher and student shifted during the Passion Project unit. Lauren changed her role from a creator of structured short-term tasks to a thought partner, checking in with students and thinking with them as their long-term projects progressed. Lauren introduced her students to a new form of digital portfolios in which to contain their ideas. The students created personal rubrics to monitor the quality and progress of their work. During the process of the Passion Project, the students conducted independent research, wrote, and discussed their progress in English, which was one of Lauren’s curricular goals.

Similar to the exhibitions that Envisioning Innovation in Education educators take part in (see Toolkit Resource C3 for more information), towards the end of the year, Lauren invited students to take part in a public exhibition, showcasing the outcomes of students’ Passion Projects, developed throughout the year.

Lauren reflected on the impact of the Passion Projects,



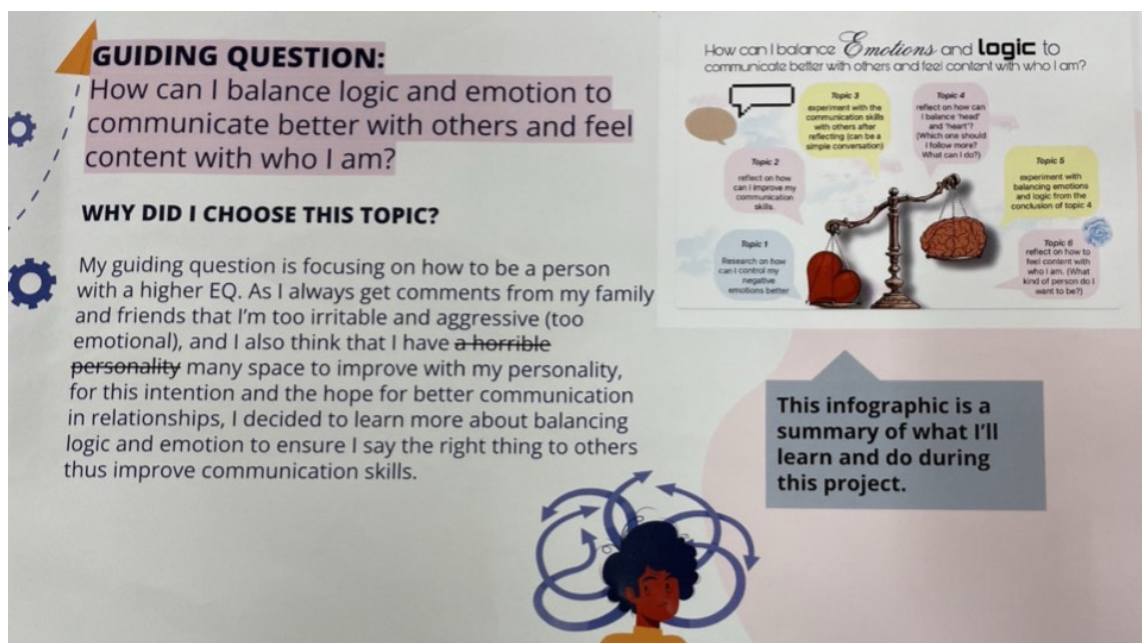
Lauren’s progress points are relevant and interesting in that they don’t seem linear to me. I wonder how this might impact her ability to guide her work- will it be helpful to jump in and out of different skills and knowledge according to her mood, or will it begin to feel overwhelming? I feel that she needs to connect more deeply with her purpose for her project product.



A student’s infographic to illustrate her projected learning journey.

I found that the students were generally enthusiastic about designing their own projects. We seemed to have created a great relationship of trust in the class. When the students were confused, I asked them to trust the process. There was an awesome energy and atmosphere in the class. It felt a million times more engaging than the usual teacher-directed writing lessons.

Lauren assessed the Passion Projects further,



A student's Passion Project poster on communicating with others for the exhibit.

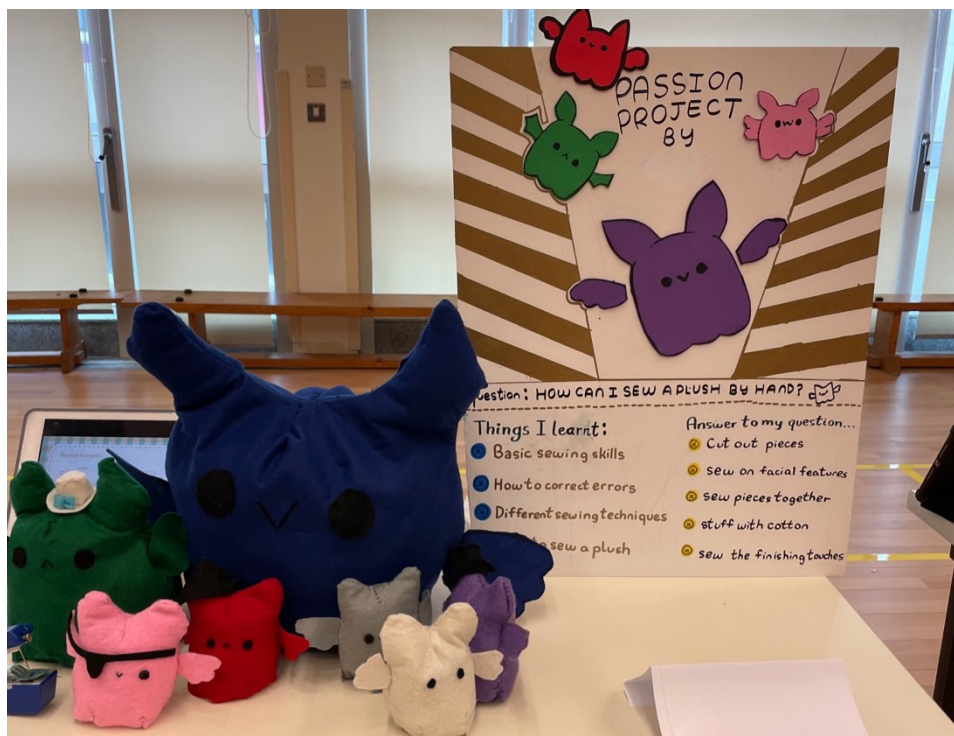
In terms of this class it was fantastic! The kids were receptive and the learning was visible and the progress tangible. It was amazing but I feel a factor of that success was that each day I looked at their individual progress and gave them little bits of feedback so that each student had some personal stimulation. It was such a success story of the power of visible learning and agency!

Lauren pondered next steps for future writing projects,

In terms of what's next, I need to think about the level of scaffolding that I provide and where I could have stepped back. I also want to find strategies for students who relied on teacher examples and were less engaged.

Reflections on the Passion Project

At a year-end meeting with members of the Catalyst Education Lab and Project Zero-based team, the MSS Envisioning Innovation in Education study group members reflected on their innovation work. Kyle Chan, the MSS vice principal and study group leader, discussed the benefits of the Passion Project and how it connected to the focus of the school initiatives in student empowerment, nurturing students, and integrity. "One of the goals of the Passion Project exhibit was to give the students an opportunity to engage with an audience. The exhibit also introduced new teachers to the project methodology."



A student's display of her passion project on how to hand-sew plushies.

Stanley Mak, MSS study group member and the curriculum committee head, also shared,

The strength of the project is as a process of self understanding which gave the students an authentic and active role in their learning, elements of agency. The project also allowed learners of differing abilities to participate equally and to share strengths and interests.

Lauren reflected that in order to help students become more agentic and take control of their learning, she would have to change the overall classroom environment, from the physical space

to lesson design and methods for student expressions of understanding. To do this, she would need to:

- Shift the teacher and student roles so that learning is shared.
- Give students the opportunity to think about big ideas, for these ideas to connect to their lives, and to see themselves as thinkers and learners (and not just test takers).
- Create opportunities for voice and choice and student participation in lesson design, methods of expression of understanding, and assessment.

Sharing and sustaining innovation

Lauren shared the Passion Project approach and strategies with colleagues at MSS and in the EIE cohort in a mini-exhibit. The teachers found the project “inspiring” and an “alternative way of learning.” They saw the value in the students’ ownership of their learning and motivation. Teachers noted the strength of thinking routines to slow down and deepen student engagement and understanding.

Visiting teachers were eager to have their own students engage in a similar inquiry process and independent study. They noted a shift in their thinking. One teacher remarked, “I used to think that Hong Kong students were not so motivated to think deeply. Now I think it’s a matter of guidance and trust in the students.” Another teacher wondered, “How can we engage in this work across departments and subject areas? and How can we adapt project work for our less able students?”

The MSS EIE study group sought to introduce their MSS colleagues to EIE concepts and grow a school community of visible learners and learning. According to Lauren, the students who participated in the Passion Project found personal strengths and a new sense of agency, purpose, and control in their learning. Innovative changes in Lauren’s instructional approaches helped students to enjoy and deepen their understanding of the English language, their classmates, and themselves. For Lauren and her Form 3 English students, new relationships had formed and there was excitement for continued innovation at MSS.

For the following school year, the MSS team planned to expand the Passion Project to different grade levels. They hoped to integrate the many EIE innovative strategies with the school’s initiatives in other areas, such as community service, project based learning, the school’s coaching system, Pastoral Care, and well-being for teachers.

A final note: Supporting teacher agency supports student agency

During the inquiry stage of the Envisioning Innovation project, participants were tasked with creating a physical exhibition board in order to share their inquiries at a gathering with EIE colleagues across Hong Kong (see Toolkit Resource C3 for more information). Lauren was initially excited by the prospect of sharing her ideas but then struggled with the task. Lauren explains,

At first I was excited by the task. But then I found it daunting. I found it hard to minimize my ideas onto a physical board. I became frustrated because I had difficulty getting the desired materials for the board. I also wondered whether it was worth the time to create a physical board. Then I wondered, "Is this what my students experience?"

I wanted the panel to reflect that work and connections I had made at EIE. I was not happy with my board at first but then I realized that the board was not about the product but about the process of pulling together my ideas. By the end of the learning community gathering, I felt like the exhibition board was a good snapshot of what I had been doing. It was helpful for others and for me. It helped me to clarify next steps. The board was also a celebration of the work I had been doing. So at first I didn't like it and then I loved it!

For many of the teachers in the EIE cohort, the Project Zero inquiry tools and strategies were new. Teachers, like their students, often grappled with novel ideas. In the envision year of the project, some teachers desired examples and wondered what and how they would innovate in their practice. In the inquiry and innovation years of the project, teachers experimented with new approaches and thinking routines. They shared their ideas and were inspired by the ideas of their colleagues in the EIE project.

Teachers, like their students, slowly experienced a shift in their thinking and mindsets. They began to experience what was possible for themselves and their students. Teachers' experiences of thinking outside of their comfort zones created space to think and learn in new, innovative, and exciting ways. As Lauren shared, the road to innovation is not always smooth. There are periods of doubt and frustration. However, as teachers' confidence in their new practices grew, they, like Lauren, saw the impact of the innovations on their students' motivation, understanding, agency, and enjoyment of their learning. And the changes were worth it!

E. “Is It Possible to Change the Teaching and Culture of a School with a 100-Year History?” Cultivating Teacher and Student Agency

Wah Yan College Hong Kong

“Is it possible to change the teaching and culture of a school with a 100-year history?” Principal Davis Chan at Wah Yan College Hong Kong (WYHK), a local boys’ Jesuit school, asks during a moment of reflection at a year-end community gathering of the Envisioning Education in Education (EIE) project. The WYHK study group members respond with a resounding, “Yes!”

“Ahoy, mateys! Welcome aboard the PZ Pearl!” Swashbuckling crewmembers Kiki Kung, Karl Chan, and Captain Chris Lee (WYHK teachers) boisterously address crew members (fellow participants) during an EIE community gathering. “We are now setting sail to unlock, yes unlock, the treasure chests you have before you. You have just a few minutes to ask questions before setting sail ... ” Pirate hats, mustaches, eye patches, and pirate hooks adorn the WYHK crew as they embark on a riotous adventure to share their innovative secrets with an amused conference room of EIE participants and guests.



Pirates Chris, Kiki, and Karl share their innovative strategies with EIE colleagues.

Meanwhile in another room, the statuesque figures of WYHK Chinese teachers Rita Tang and Joseph Chan, draped in flowing robes and in low, serious stage voices, turn to a room full of colleagues and invite them to participate in the re-enactment of a scene from the Chinese novel, “The Heaven Sword and Dragon Saber” 《倚天屠龍記, a famous martial arts novel series written by Jin Yong. Traditional music plays. There is (nervous) laughter from

the participants. “Who will join the stage?” Rita and Joseph show excerpts from their teacher-made video of WYHK teachers posturing as characters in another classical story as a means of introducing the narrative to their students in a fun and active way. Adorned in classical costumes, wielding swords and bows and arrows, chasing, dashing, darting, fighting, lunging, flying across the screen ... the teachers re-enact the story.^{viii} (For more information on the “Creation of Scenes” in professional development settings , see Toolkit resource G3).

The point of all this energetic and humorous play acting? To share innovative and playful approaches to teaching and learning that support student and teacher agency.



Dressed as characters in a classical Chinese story, Rita and Joseph share their teaching innovations with fellow EIE participants.

WYHK teachers combine multiple teaching approaches, playful learning, documentation, and professional development opportunities, to transform and share their teaching and learning innovations. High school English teacher, Kiki Kung explains,

Back in the first year of the EIE project, our school cohort members realised that a teacher-centered approach is quite common in our classrooms. We wanted to make some sort of change/transformation which benefits different stakeholders in our school community. Something that would echo our school's three-year goal—to nurture our students to become self-directed learners.

Cultivating student agency through collaboration and a shared vision

Wah Yan College Hong Kong, a Jesuit boys' school, has a long history of transformation, having adapted to societal and educational changes during its 100-year history. In the innovation year of the EIE project, WYHK study group members explored the use of thinking routines in their classes to promote student agency. They wondered, "How can teachers and students in WYHK adopt thinking tools and routines in order to increase students' motivation in self-directed learning with achievable goals?" Again Kiki explains,

After a year or two of experimenting and applying thinking routines and tools in our own classrooms, we came up with solid plans for our innovation projects. (We) aimed at introducing thinking routines to teachers and students of cross-curricular research projects ... sharing with colleagues in department meetings about applying learning tools in our classrooms, and sharing materials of design thinking principles through a school-wide channel.

The long term outcome—Students become empowered to take authority in learning.

The inquiries of the WYHK study group teachers shifted during the course of the EIE project. Kiki explored ways to "strengthen and enhance playful learning in an English module on Jobs and Work." A class of juniors used the thinking routine, *Parts, Purposes, Complexities* to explore different types of employment. Combining concepts from the Pedagogy of Play—wonder, choice, and delight—and new ways to have students interact, such as gallery walks, the students expressed

[Kiki Kung] - Documentation #2

Parts, Purposes and Complexities

In an online lesson on Zoom, students enjoyed the autonomy by choosing their own groupmates to explore two jobs: 'barrister' VS 'barrista'

They worked on the topic of 'Jobs and Work' by comparing different job nature and duties.

This helped a great deal with their follow-up task, which was the advice letter (composition).

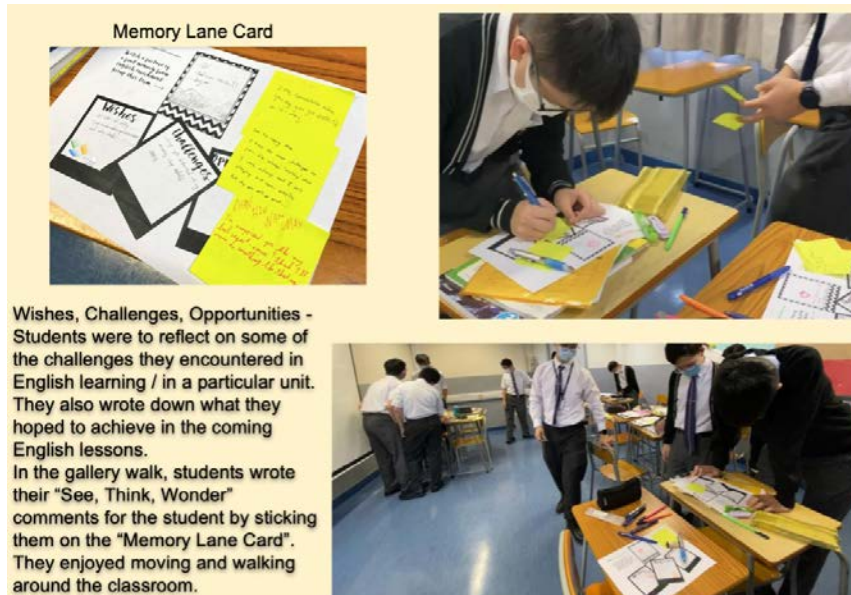
Parts	Purpose	Complexity
<p>Part 1: Barrister</p> <ul style="list-style-type: none"> Part 1: Barrister Part 1: Barrister 	<p>Purpose 1: Barrister</p> <ul style="list-style-type: none"> Purpose 1: Barrister Purpose 1: Barrister 	<p>Complexity 1: Barrister</p> <ul style="list-style-type: none"> Complexity 1: Barrister Complexity 1: Barrister
<p>Part 2: Barrista</p> <ul style="list-style-type: none"> Part 2: Barrista Part 2: Barrista 	<p>Purpose 2: Barrista</p> <ul style="list-style-type: none"> Purpose 2: Barrista Purpose 2: Barrista 	<p>Complexity 2: Barrista</p> <ul style="list-style-type: none"> Complexity 2: Barrista Complexity 2: Barrista

and shared their learning with growing confidence.^{ix} The classroom was active and lively.

When classes shifted to online learning, the students used the *Wishes, Challenges, Opportunities* thinking routine to express new challenges to their learning and to their goals of improving their English vocabulary (see Toolkit Resource E3 for more

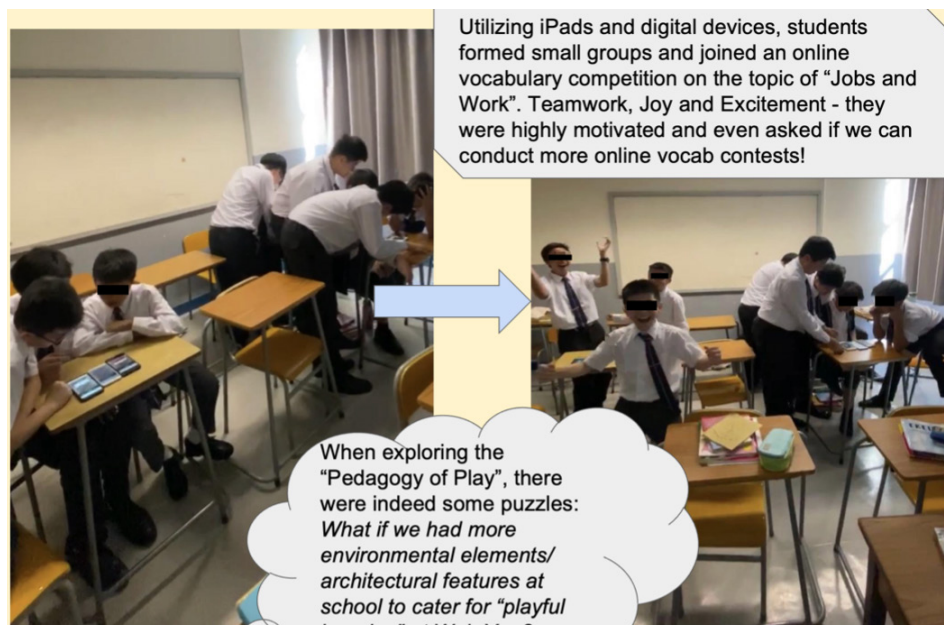
Students share their ideas through a gallery walk.

information). They were given voice and choice in the selection of groups they worked in and shared their learning online. The students were excited and motivated by the opportunities to connect with their classmates online.



Students use thinking routines when their classes shift to online learning.

Kiki wondered, "What if we had more environmental features at school to cater for playful learning?"



Students engage in an online vocabulary competition.

During the exploration of the use of thinking routines in support of enhanced student agency, high school history teacher, Karl Chan, also examined the obstacles to change. He asked, "What are the controllable factors to change? What tools support change?" Karl mirrored the inquiry

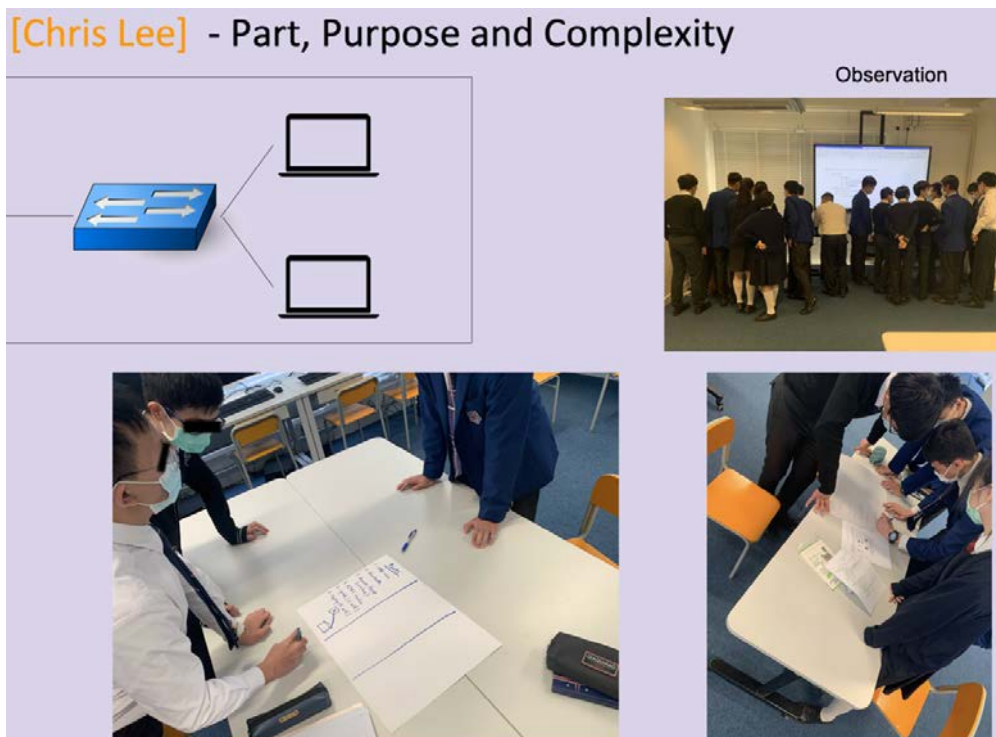
approach that he was practicing in his own teaching with his students. Karl explains,

Instead of lectures about historical details, I gave the students an inquiry question to research, What are the causes of WWI? I made a video and fact pack to introduce the students to the topic. The students worked in small groups. Each group had to make a case for a specific cause of the war. They then debated the causes. The students came up with the arguments that I would have taught them on their own.

Karl initially found that there were multiple obstacles to the change in his teaching. The WYHK teacher-directed learning culture had not prepared students to take the lead of their own learning. Language barriers and learner diversity, a reality that many teachers in the project referenced, were also obstacles. Through trial and error, Karl altered his teaching method. He differentiated his instruction and gave his students choices of materials. He narrowed the scope of the topic and provided more scaffolding and support. He met with his students in small groups and one on one conferences. Lessons were designed to give students more choice in determining their own groupings. Karl experimented with a variety of tools to engage and support his students—info videos, games, debates, online collaboration tools such as Google Suites and WhatsApp. Karl observes,

I learned that the kids at first were not used to so much authority. The information they had to process was too much. They also were not comfortable arguing a case. I ran the lesson a second time with more support. The kids learned how to cooperate on research, how to argue a case, and the details of WWI. The debate was very motivating and I was encouraged by the engagement of the students.

Technology teacher, Chris Lee, also worked to create student-centered activities through open-ended and creative tasks. Chris's students chose topics to research, such as the perils of malware in computers, and had voice and choice in how they would present their findings. Chris was pleased with the quality of the student videos created to demonstrate their understanding. He compared the quality of student presentations before and after the shifts in his teaching, "It seems that both students had a good understanding of the topic, but the students this year were able to create more presentable videos ... with more clarity."



Students use thinking routines to explore elements of computer systems.

Cultivating student agency through shifting teacher and student roles

High school Chinese language and literature teachers, Rita Tang and Joseph Chan, also worked together to cultivate student agency in their context by introducing thinking routines and voice and choice in their lessons. Rita explains,

As local Chinese language teachers we realized that there is a need to strike a balance between fulfilling exam requirements and cultivating our students to be self-directed learners who can still have great interest and capability to raise questions on their own while studying the DSE (senior exam) syllabus.

In short, (we) explored ways of teaching to redirect authority back to our students with thinking routines and devices while not giving up on helping our students to meet requirements of the DSE. It is hoped that our students will enjoy the learning journey and gain more ownership of their learning.

Joseph explained that the school focus on growth mindsets and teacher flexibility were aspects of the WYHK school culture that encouraged innovation. The school support of teacher

experimentation gave teachers the time and space to connect, share, and learn with their colleagues. In his classes Joseph sought to mix traditional teaching with e-teaching tools and to make lessons more interactive. He used Padlet to create novel activities for the students to share their reading, writing, and speaking of Chinese. As he tried these new approaches, Joseph noticed a shift in the roles in the classroom. Joseph explains,

Changes in my teaching approach caused a shift in roles. I become an observer. The students are learning to work on their own and to create presentations using e-tools. The e-tools impact student motivation. The students also are learning to study on their own. They are writing book reviews using Flipgrid. I love this new practice a lot ... The previous ways of doing a book review is all by written form, while now I can witness all of my students acting like YouTubers, sharing their loved books with me, how amazing!

In their reflections about their EIE experiences, the WYHK study group members spoke about the changes they noticed in their students and themselves. They remarked on the increased motivation, engagement, and agency of their students. The students participated more. There was more dialogue, between the students and between the teachers and the students. The teachers were able to step aside, to observe and listen to their students. Rita shared that the atmosphere in her classes was active and lively. She stated that she got to know her students better and found that they were capable of much more than she had imagined. The engagement of the students led to deeper learning and deeper connections to the material. The shift in the instructional approach gave students of differing abilities multiple entry points to lessons and they were able to engage in the lessons from wherever they were in their learning journeys.

The WYHK study group members also found that their EIE experiences had changed their view of the possibilities of professional development. They voiced their eagerness to share the tools, strategies, and the positive impact of their experiences on their teaching with their WYHK colleagues and their colleagues across Hong Kong. At the year-end EIE community gathering, where EIE teachers across Hong Kong created interactive scenes through which to share their learning stories, Wah Yan College Hong Kong Principal Davis pondered the question noted above: "Is it possible to change the teaching and culture of a school with a 100-year history?" Having experienced the changes in their English, history, IT, and Chinese language domains, WYHK study group members, Kiki, Chris, Karl, Rita, and Joseph answered the question with a resounding "Yes!"

Kiki, Chris, Karl, Rita, and Joseph combined multiple approaches in their different departments—whimsical and playful learning (wanting students to enjoy their learning), documentation (using documentation to revisit and share learning with students and colleagues for analysis and reflection), and professional development (sharing experiences across departments) to cultivate teacher and student agency. The teacher agency that the study group members experienced through the Envisioning Innovation in Education project supported them in developing new approaches to practice, which in turn supported student agency. And the team’s playacting and swashbuckling for students and colleagues? These dramatic encounters enhanced the teaching and learning experiences all the more!

F. Student and Teacher Agency— Lessons Learned:

Teachers inquired about cultivating student agency in their classrooms and created a variety of learning experiences and designs across subjects which allowed students' voice, choice, and active participation in their learning. In these pictures of practice, we see that there are many ways that promoting student and teacher agency supported innovation during the project. Overall teacher takeaways from these experiences include that providing opportunities for *teacher agency* can:

1. Support student confidence and a positive attitude towards learning through in-depth project development.
2. Encourage students to take ownership of in-class assessments, project work, and artistic creations.
3. Support students in taking intellectual and creative risks that may be less available in lecture-driven learning environments.
4. Support motivation and provide learning opportunities across disciplines, such as developing English presentations for a robotics project exhibition.
5. Allow students to express themselves more fully, cultivating student to student, and teacher to student relationship building in the process.

During the EIE project, teachers also exercised their agency to conduct inquiry work and execute innovation projects. By creating opportunities for *teacher agency*, educators can:

1. Feel empowered, encouraging many to consider ways they can re-direct authority and have students take ownership of their own learning processes.
2. Develop confidence in taking reasonable risks and experimenting in their practice.
3. Develop innovative instructional approaches to unpacking curriculum content that are active, student-centered, and support students' flexible understanding of material.
4. Build and deepen relationships with colleagues through the shared challenges and opportunities of teaching and learning.
5. Experience anew the joys of teaching and learning.

During the project educators observed that innovative approaches to teaching and learning were often new for students. For example, when sharing innovations in their lessons, teachers were encouraged to move away from familiar PowerPoint presentations that described what they did. They were encouraged to instead share the stories of the learning that were taking place (see Toolkit Resource G3 for more information). Similarly, students have the tendency to lean towards familiar modes of independent project work, such as presenting facts they found online via PowerPoint presentations. Many teachers from the EIE project found it important to encourage students to try novel ways to express their understandings, through other means including model development, art, drama, role-play, e-tools, games, and other project work. The Project Zero team additionally provides scaffolds, such as exemplars of teacher and student project work, to encourage risk taking and the use of alternate ways of expressing the learning taking place.

Opportunity to Reflect :

1. Think about your classroom or context. What opportunities to cultivate student agency are currently present in your setting? What does supporting student agency look and feel like?
2. Think about your educational context. What opportunities to cultivate teacher agency are currently present in your setting? What does supporting teacher agency look like?
3. What further opportunities may exist to cultivate student and teacher agency in learning environments you are involved with? What might you do to add additional element(s) of agency into your learning environment?

Related Resources :

Feel free to explore the following resources as you continue to inquire about agency in your learning environments.

Toolkit Resource A2—The Agency *by* Design Framework

The Agency by Design framework for maker-centered learning focuses on cultivating a sensitivity to design, and a capacity to shape one's world through building, tinkering, re/designing, and hacking

Toolkit Resource B1—Inquiry Focus Guidelines

Guidelines for crafting an inquiry focus

Toolkit Resource B2—Inquiry Cycle Guiding Questions

Guiding questions to support Try-Share-Revise inquiry cycles

Toolkit Resource B6—Surface a Wonder, Follow a Wonder

A tool for supporting curiosity through student-centered-learning

Toolkit Resource E3—Wishes, Challenges, Opportunities

A tool for considering inspirations, opportunities, and challenges

Toolkit Resource G1—Thinking Routines for Reflecting on the Current Progress and Direction of Inquiry Project Work

Think, Puzzle, Explore

A thinking routine that sets the stage for deeper inquiry

Compass Points

A thinking routine for examining propositions

I used to think, Now I think, Now I'd like to...

A thinking routine for reflecting on how one's thinking has changed during the inquiry process, and envisioning next steps

ⁱA discussion of student agency follows below. To learn more about the concept of redirecting authority see pp. 70-73 of Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). *Maker-centered learning: Empowering young people to shape their worlds*. San Francisco, CA: Jossey-Bass.

ⁱⁱThe Agency by Design research team view agency through the lens of making. This new view on agency has led the team to coin the term maker empowerment: a sensitivity to the designed dimensions of objects and systems, with the inclination and capacity to shape one's world through building, tinkering, re/designing, or hacking. To learn more, see Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). *Maker-centered learning: Empowering young people to shape their worlds*. San Francisco, CA: Jossey-Bass. See especially chapter 3.

ⁱⁱⁱBandura, A. (2006). Towards a psychology of human agency. *Perspectives on Psychological Science* 1(2), 164-180.

^{iv}To learn more about the Teaching for Understanding framework, see resource G1 in this book's toolkit, and Wiske, M. S. (1998). *Teaching for understanding: Linking research and practice*. San Francisco, CA: Jossey-Bass.

^vDjoub, Z. (2023). 6 Reasons for students' resistance to participation in class. EduLearn2Change. <https://edulearn2change.com/article-6-reasons-for-students-resistance-to-participation-in-class-and-ways-to-deal-with-them/>

^{vi}Djoub, Z. (2023). 6 reasons for students' resistance to participation in class. EduLearn2Change. <https://edulearn2change.com/article-6-reasons-for-students-resistance-to-participation-in-class-and-ways-to-deal-with-them/>

^{vii}See Project Zero's Thinking Routine Toolbox for more information. <https://pz.harvard.edu/resources/looking-ten-times-two>

^{viii}See Yong, J. (1961-63). *The heaven sword and dragon saber*. Hong Kong: Ming Pao.

^{ix}To learn more about the gallery walk activity, see <https://pz.harvard.edu/sites/default/files/Gallery-Walk.pdf>

Documentation

How might the practice of documentation be used to enhance student learning?

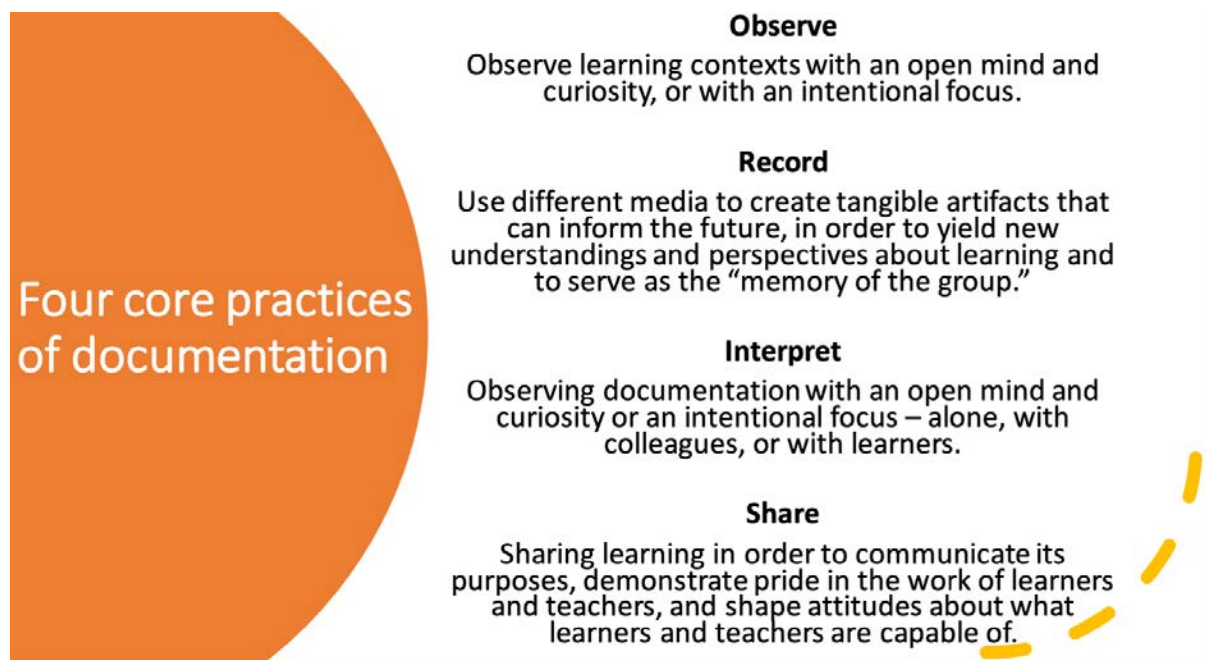
In Sam Crickenberger’s biology classroom, students are asked to record and share their ideas, puzzles, and emergent understandings regarding big questions they explored over several weeks such as, “What happens when ethanol burns?” In Caroline Li’s classroom, students share photographs and drafts of creative presentations, allowing for discussion and feedback on student work. Chris Ho experiments with the practice of slow looking, giving students the opportunity to look closely and document their budding theories about geological phenomena. Betty Cheng is excited to use documentation to make visible her students’ learning as they explore visual text in her English classrooms. Edwin Lagos investigates the use of sketchnoting in his computer science classes to help make students’ understanding visible, exploring alternative forms of assessment in the process. At teacher-based study group gatherings, the effective use of thinking routines across subjects and the documentation of student work are discussed as teachers ponder the questions “What learning may be taking place?,” “What do we appreciate and wonder about the learning experience being shared?” and “What suggestions might we have for next steps?”

The practice of documentation draws from the rich educational context of Reggio Emilia, Italy. As the founder of the Reggio Emilia approach to early childhood education, Loris Malaguzzi, shares,

Stand aside for a while and leave room for learning. Observe carefully what children do. And then, if you have understood well, perhaps teaching will be different than before.ⁱ

As Malaguzzi suggests, documentation begins with close observation. At Project Zero, documentation is described as, “the practice of observing, recording, interpreting, and sharing in different media the processes and results of learning in order to deepen and extend learning.”ⁱⁱ

A core tenet of documentation shared by the Making Learning Visible initiative at Project Zero, is that “Documentation is not only retrospective, it is also prospective; it shapes the design of future contexts (and direction) for learning.”ⁱⁱⁱ As Project Zero researchers note, “In order for documentation to be useful, teachers have to do something with it. Teachers use documentation practices to deepen learning—their own, their students’, their colleagues’, parents’, and even the larger publics.”^{iv}



Four core practices of documentation.

The practice of documentation links closely to innovation and the pursuit of providing opportunities for authentic thinking, cultivating students’ thinking dispositions (habits of mind), and making thinking visible during the learning process. As Ron Ritchhart shares in the book, *Making Thinking Visible*, “Teachers must be vigilant observers and listeners. When teachers capture students’ ideas, they are signaling that those ideas and thoughts have value and are worthy of continued exploration and examination.”^v

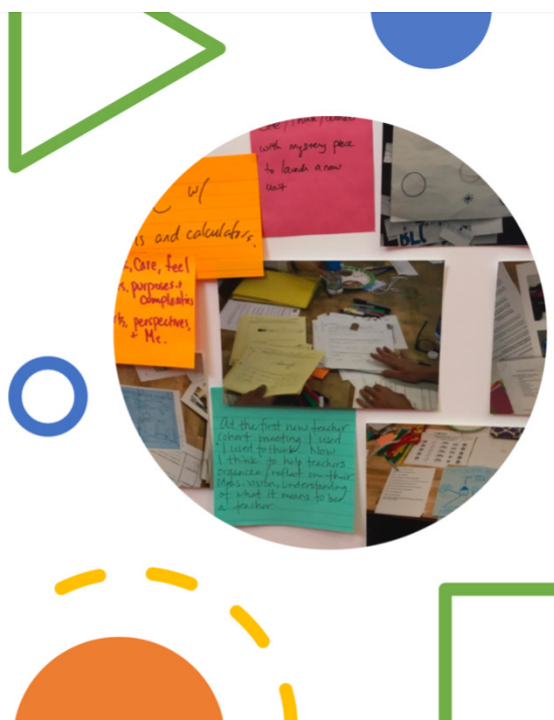
As many Hong Kong educators seek to move away from pedagogical approaches that “teach to the test,” the process of documentation offers a range of alternatives for understanding and supporting student learning outside of traditional worksheets, quizzes, and exams.

In order for the practice of documentation to be most effective, it may be helpful for it to be grounded in a specific question. In the Envisioning Innovation in Education project, documentation was introduced as a method for supporting educator’s inquiry projects—where each project was based on an inquiry question, something the participants wanted to learn or explore about their students or practice.

During the early years of the project, creating physical exhibition boards featuring documentation from Hong Kong educators’ inquiry projects to share during cohort-wide learning community meetings felt cumbersome to some. In time, teachers noticed how the practice of documenting

Some ways you might document

- Take photographs or video
- Write down quotes of what students say
- Write down your own reflections as an educator
- Create a classroom journal or portfolio
- Any other way that you might use to capture learning (your learning, or students' learning)!



Some ways you might document.

and looking closely at each other's work with discussion protocols such as Appreciate, Wonder, Suggest or the Collaborative Assessment Conference, allowed them to engage in the inquiry process as learners together (see Toolkit Section E for more information). Sharing and interpreting documentation was innovative and new to many teachers, allowing them to celebrate their inquiry work, positioning them as co-learners alongside their peers and their students.

Documentation supported the innovative paths that teachers were inquiring about in their teaching. Educators observed students in new ways. They recorded student thinking, collecting evidence and traces of learning. They shared the learning taking place with their students, colleagues, and the broader EIE community, deepening relationships and seeing new perspectives. Through documentation teachers told stories of learning that were engaging, meaningful, and purposeful.

Numerous participants sought to explore the practice of documentation further, asking, "How might the practice of documentation be used to enhance student learning and guide instruction?" The following pictures of practice illustrate moments when educators explored the effective use of documentation in their classrooms and in doing so created the conditions for and experiences of novel, meaningful, and innovative teaching and learning.

Pictures of practice featured in the following section include:

- A. Phenomena Walls—Documenting Student Thinking About Big Questions
- B. Documenting Student Analysis of Visual Text
- C. Celebrating Learning—Documentation as Celebration
- D. Slow Looking in High School Geography Classrooms
- E. Sketchnoting—Seeking to Align Assessment, Documentation, and Understanding

A. Phenomena Walls–Documenting Student Thinking About Big Questions

Sam Crickenberger – The Harbour School – High School Biology

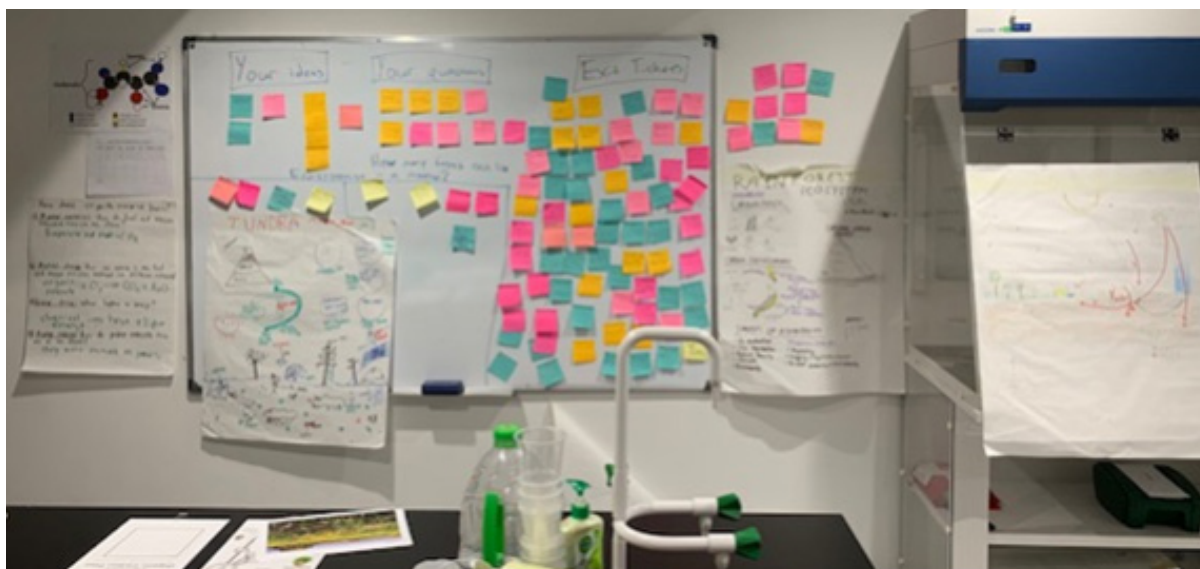
“What types of evidence could scientists gather to determine if life evolved from a common ancestor? How could they gather it?”

“What happens when ethanol burns?”

“How many foxes can fit in a meadow?”

“What shapes the characteristics of all living things?”

“What is a scientific phenomenon you would like to explore in depth over the coming academic year?”



Student documentation posted during an investigation in Sam’s biology classroom.

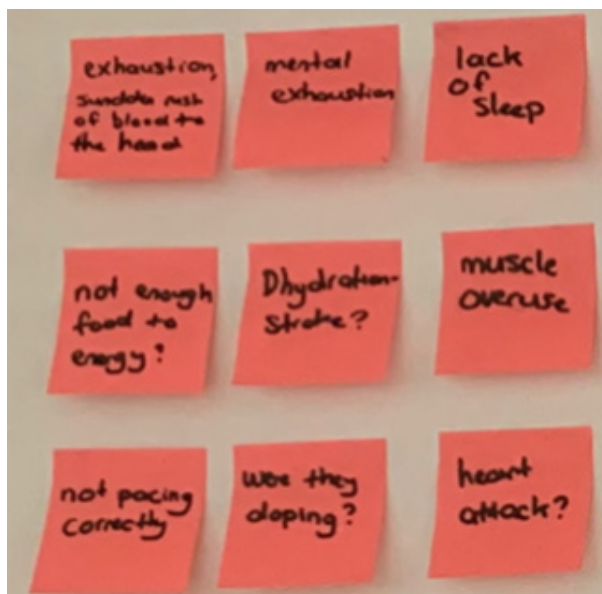
When walking into Sam Crickenberger’s high school biology classroom, rather than being expected to listen to lengthy biology lectures, students are expected to investigate important biology questions and provide the answers themselves. This inquiry-based emphasis draws on Sam’s ten years of work as a marine biologist and a desire to “empower students to see themselves as math/science practitioners as part of the learning process.”

In the Envisioning Innovation in Education (EIE) project Sam posed the question, “How student documentation might be utilized to support hands-on minds-on learning?” In exploring the use

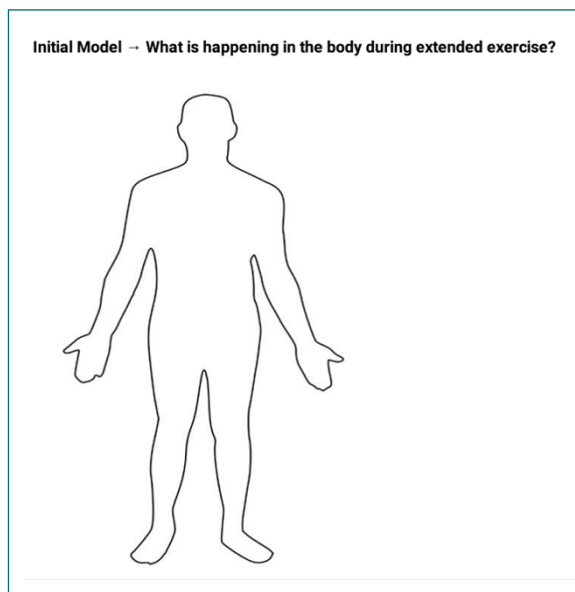
of documentation in his classroom, Sam began developing a “phenomena wall” tied to each unit, where students post their thinking and research over time, relating to the key question raised for each unit (sample questions listed above). The following unit features a month-long phenomena wall Sam started with students, exploring the question:

“Why would a marathon runner go into a coma?”^{vi}

Sam began this exploration having students post initial ideas and puzzles on the phenomena wall about what students might need to investigate. Students shared possible ideas: “lack of sleep,” “muscle overuse,” “heart attack,” “not enough food?” Sam shares, “After doing a bit of reading, we sketched our first body model. Using just an outline of the human body that they fill in and explain what might be happening... overtime through recording models, they’re establishing a baseline understanding of what’s inside the body, how does it work together, and what might go wrong to lead to the outcome that we see here.”



Post-it notes sharing initial student hypothesis in response to the key question.



Human body model. Source: New Vision for Public Schools (2023).

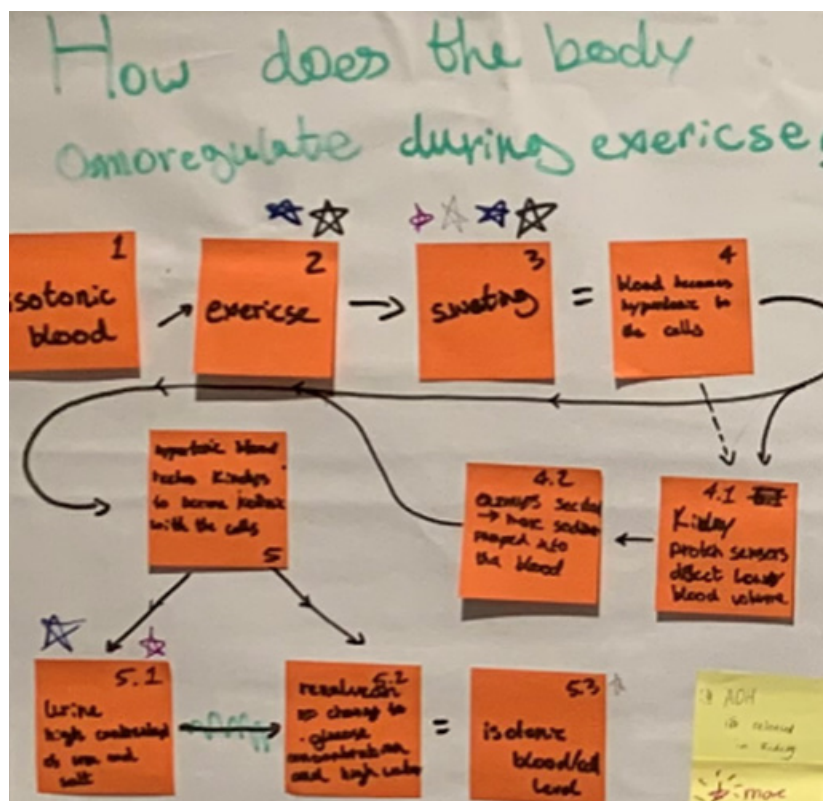
Students were presented with data regarding plasma sodium, temperature, glucose, and oxygen levels of different athletes (four sub-topics of the unit). Students conducted experiments and read relevant research about the role of these different levels play on human body systems, including monitoring their CO₂ output and heart rate before and after engaging in exercise and considering the role of oxygen levels and heart rate in relation to the coma. Sam shares, “The phenomena

wall was revisited probably once per sub-topic to see how our thinking had changed and when we wanted to add to it." Sometimes this revisiting would happen as a whole group, at other times Sam would invite students who finished learning experiences early to consider how their thinking may have changed or to add any additional questions to the wall.

Bringing the students over there and spending some time talking through the phenomena wall became more of a go to for me, because they can see the progression of understanding over time if you lay it out (utilizing a rolling white board at times to preserve documentation)... this often served as a reflection of what we had done before we got into the next thing that's going to go up, taking a look and thinking about where we're at in this process.

Posting documentation from sequence charts, models, and exit tickets along the way

Towards the end of experiments and explorations of subtopics, Sam would share with students a series of blank Post-it notes, asking students to create sequence charts representing a topic such as Osmoregulation, drawing from their observations over the unit. Samples of student-created sequence charts and models were often added to the phenomena wall to document student



Student study group's sequence chart regarding osmoregulation.

thinking over the unit. "Getting students to comment on each other's sequence charts (sharing 'what was the same, different, and one suggestion') was especially helpful in getting them talking about how body systems work" Sam noted.

As Sam used the wall over time, he began utilizing a portion of the space for occasional end of lesson exit tickets, where on a Post-it Note students would share "what they learned" and "unanswered questions" they had at the end of the lesson. Sam would utilize these exit tickets as opportunities to notice how student thinking and understanding had changed over time. "We'd walk around the room during some labs, touching back on them and saying, 'Hey do you have an answer to this question you had a couple weeks ago?' Asking instead of telling is a big part of it for me."

In addition to referencing the wall overtime with students, Sam found that an added benefit of documenting with the phenomenon wall, is that it provided a natural chance for connecting with other science teachers about pedagogical approaches as teachers noticed the changes and updates to the wall over the course of the year. Sam shares,

To become a more effective communicator, as Science STEM Coordinator, is to help teachers understand how to have students use this type of approach in their learning of science. So just thinking about ways to make that clear, without me coming off as like, this is how you should do it, you know? Because nobody wants to hear that.

Resisting answering the central question and final reflections

As the unit progressed, exploring the roles and interactions of human body systems, Sam did not reveal the answer to the key question posed on the phenomena wall. Students continued to post their thinking as well as related observations from learning experiences exploring the role plasma sodium, temperature, glucose, and oxygen levels on human body systems. Sam shared that it had been difficult to resist giving students the answers directly,

I remember feeling worried that they were not successfully making their way through the process of productive struggle to find answers for themselves. I was considering scrapping the whole approach and going back to a more traditional model of science teaching. This period lasted for about the first three weeks of the unit and ended on the third or fourth subtopic and iteration of the body model depending on the student. During this time, I was

very tempted to just give them the answers. I distinctly remember one of my students literally saying "Oh, I get it now" after completing the most recent iteration of his model.

In reflecting about the unit and use of the phenomena wall, Sam shared,

Students can gain a much deeper understanding of how systems work in biology if they are forced to answer questions using data and investigation. It also provided a rich space for deeper discussions and for using data and logical reasoning to answer questions... Students learned how to use a variety of investigative approaches and models to understand and represent their understanding in a variety of ways.

Human Body Model

- Human intakes water
- Water passes through digestive system...
- Enters kidney through the renal artery

IF hydrated:

- Kidney does not reabsorb much water
- Balanced solute/solvent concentration in blood stream
- Remaining products out via renal vein
- Clear urine, pale yellow

IF overhydrated:

- Remaining water by osmosis to the blood stream
- Balanced solute/solvent concentration in blood stream
- Remaining products out via renal vein
- High concentration of solute in urine, dark yellow

Labels: Brain, Hypothalamus and pituitary gland, Circulatory system, Heart, Kidney

Detailed Model
Blood Cell

Note: This is the ideal result of osmosis and solute/solvent concentration balance. (Isotonic)

Labels: Cell membrane, Water or solvent, Solute or solute

Explanation:

Yes, the runner drank too much water. According to the medical test data, they had a plasma sodium level of 130 mEq/L, which is lower than the normal average between 135 and 145 mEq/L. Based on this information, the runner drank too much water, resulting in diluted solute (salt) concentrations and high solvent (water) concentrations. In other words, the cell is hypotonic to the bloodstream, water moves into the cells, where there is a potential risk of cells swelling and bursting.

Student model notes regarding the impact of overhydration and its relation to onsetting comas.

B. Documenting Student Analysis of Visual Text

Betty Cheng – Logos Academy – High School Chinese Language and Literature

Students in Betty Cheng's Grade 12 Chinese Language and Literature class at Logos Academy enter the classroom to see the space filled with images of Hong Kong. The students have grown accustomed to creative changes in their classroom environment as part of their lessons. Today the classroom has been transformed into a photo gallery of Hong Kong as part of their Chinese literature lesson on visual text analysis.

Betty Cheng, a secondary school Chinese language and literature teacher at Logos Academy, is excited. Before participating in the Envisioning Innovation in Education (EIE) project, Betty and her colleagues at Logos had long employed innovative strategies to develop student directed learning in varied subject areas. "Redirecting authority? We've been trying that for years. We called it something different," Logos teacher Dr. Li comments.

Betty explains,

I have long been an innovative teacher. I worked on "flipped learning" and created videos for students to watch prior to class. For student-directed learning, the teachers seem to do all the work, preparing and creating learning resources for students.

Through participation in the EIE project, we hope to develop a systematic approach to innovation. I am excited to redesign student lessons and teacher PD based on strategies, protocols, and thinking routines introduced in the project. I want to use documentation to make visible the learning and thinking of the students. The gallery walk I took with a colleague during a recent EIE community meeting has given me a way to begin.

As part of her inquiry focus, Betty wonders, "What strategies or lesson design principles can we use to enhance student agency and motivation on self-directed learning? How can we use documentation to make visible these strategies?"

In her Chinese classes, Betty hopes that crafting lessons with the appropriate thinking routines will deepen student engagement with the material. The student responses will be documentation

to individually and collectively review. The sharing and interpreting of the documentation will help students learn with and from their classmates and help to deepen their understanding of the material and the perspectives of their classmates.

Betty chooses to experiment with documentation in her lesson on visual text analysis. Visual text analysis is a form of text analysis using visual material, such as images, photographs, or paintings, as the text. Betty has two main goals for the lesson: 1) to enhance the skills of textual analysis, especially on visual texts, and 2) to arouse student awareness of the history and culture of Hong Kong. By giving students choice and time to observe and interact with the visual texts as well as with their classmates' opinions about the texts, Betty hopes to strengthen her students' ability to critique visual texts and to grow their awareness and appreciation of their classmates' points of view.

Slow looking

Betty begins by having her students engage in a slow looking exercise. The students browse the photographs in the room and choose one that interests them. The students jot down words or phrases that come to mind related to the picture. They then discuss the photographs in small groups.



Students view photographs of Hong Kong as part of their lesson on visual text analysis (left). Students choose a photograph and jot down words and phrases in response to the photograph (right).

+1

After the students have engaged in this initial step, Betty introduces the students to the +1 thinking routine,^{vii} an exercise where they share and build on each other's ideas and initial perceptions of the photographs. Students pass their papers with their words and phrases to a classmate who adds additional words or phrases. This step is then repeated.



Students in Betty's Chinese literature class use the +1 thinking routine to add words to their descriptions of images of Hong Kong.

See, Think, Me, We

In order to help the students distinguish what they see from what they think, Betty introduces the thinking routine, *See, Think, Me, We*.^{viii} The students categorize the words into two groups, *See* and *Think*. For the *See* step, students are asked to describe only what they notice, without adding their interpretation or judgment. This allows students to spend more time with the image and to discover more detail. The students then move onto the *Think* step, guided by the prompt: *Think about the message this photo tries to deliver*. For the *Me* step, the students are asked to connect their personal experience to the photograph. For example, one student's *Me* response is, "I think the kids were sister and brother, like elder sister shared food with younger bro and sis. Brother was excited about the food. This situation is similar to my home. It is a very interesting picture."

The students share their thoughts in small groups. For the *We* step, students try to connect their responses to the photos to the broader community, the city of Hong Kong, and think about what the photos say about the city and its culture. One student responds, "The store behind is supposed to display food and the iron bars in the window were originally to hang food, but the empty rack also represented the economic downturn at that time."

The students are later given the opportunity to reflect on the thinking routines used for this lesson. They use the online platform Padlet to record their ideas. On Padlet the students are able to view the responses of their classmates. One student comments that slow looking allows her “to move from the surface features of the photograph to a deeper analysis of the context of the photograph.”

Reflections

The student work that follows shows one student’s responses to the Hong Kong photograph ‘*乖孩子 Good Kids*’ by Fan Ho that she chose to analyze using the thinking routine *See, Think, Me, We*. This student’s reflections on the use of slow looking and thinking routines reveal the impact of the thinking routines on her thinking.

1. What was the experience of Slow looking like for you?

It is a process of thinking. You can make further and deeper observations when you look at it slowly, and you can also get different interpretations through thinking from multiple angles.

2. What parts of the text cannot be observed until you take a second look?

Empty rack in the window, and two of the little kids without shoes

3. How does the +1 given to you by the classmate on the left inspire you?

I hadn’t thought that the three little children might not be the same family, they might be two sisters, and a boy might be the child of a different employee in the store.

4. What new ideas for the text did the Me & We give you?

People with different backgrounds may have different observations and emphasis when looking at the same photo, and people with different views on different things in society will interpret the photo differently.

5. How does this lesson design help you learn better?

This way of learning is unique and I have never tried it before. Quietly observing (slow looking) the features in different visual texts helps to improve my ability to analyze visual texts. The instruction (helped) me from observing the one-sided features of the pictures, extending to deeper observations, such as the background of the protagonist in the pictures, etc., and then connecting to my own experience and the larger community, such as city, culture, identity, even to the global topics. In the internal oral assessment, teachers often focus on how non-literary texts combine visual elements

to reflect and show the global issues, while my analytical skills for visual texts are relatively weak. Thinking routines are more helpful to guide me step by step to learn how to analyze visual text from shallow to deep. Therefore, I think this class arrangement is particularly meaningful.

Betty reflects on the use of documentation to make visible student thinking,

Documentation is not about showing the beautiful end product. As a teacher, I spend a lot of time designing my lesson so as to enhance students' self-directed learning. To craft my students' learning through the instructional scaffolding, I selected suitable thinking tools and created a safe environment to provide choices. For me, I always think about how does choice matter to students' learning? How do choices enhance students' agency?

In this case, studying the student's reflection, it is strong evidence that clear instruction, time and choices, classroom space (decorate the classroom like a photograph exhibition), and relevant thinking tools help students to think deeper and observe more.

In Betty's lesson, Artful Thinking, documentation has multiple functions. The photographs of Hong Kong are resources for the students to explore together. The slow looking exercise and the student responses to the thinking routine, *See, Think, Me, We*, allow students to look more deeply at the images and to see details they may not have noticed at first glance. The +1 thinking routine helps students to consider the perspectives of classmates. During the lesson, Betty is able to step back and observe her students as they share ideas. She takes photos of the students using the thinking routines as they interact with the texts. The student work is hung on the walls and discussed in small groups. And later, the students reflect on the process using the online platform Padlet. These responses are documentation that make visible the student's thinking to the students and to Betty.

Betty shares her documentation of the lesson and the story of learning that took place with her colleagues in her Envisioning Innovation in Education study group and with the broader EIE community at Learning Community gatherings. This sharing furthers the educators' exploration and dialogue of ways to use documentation to enhance student engagement and motivation. For the students, the design of the lesson, which makes visible their thinking process and their classmates' perspectives, shows students that their teacher values their ideas and opinions. Students learn from and about each other, thus growing relationships in the classroom.

Betty is inspired by Caroline Li's Poetry Project on Compassion that Caroline shared in an EIE community gathering (see the following picture of practice). As the Hong Kong schools prepared to close again in March 2022 due to the pandemic, Betty shares, "I want to give my students the opportunity to express themselves. I will have them take a photograph of something they enjoy or appreciate and then write about it. I want to connect to how my students feel during this difficult time."

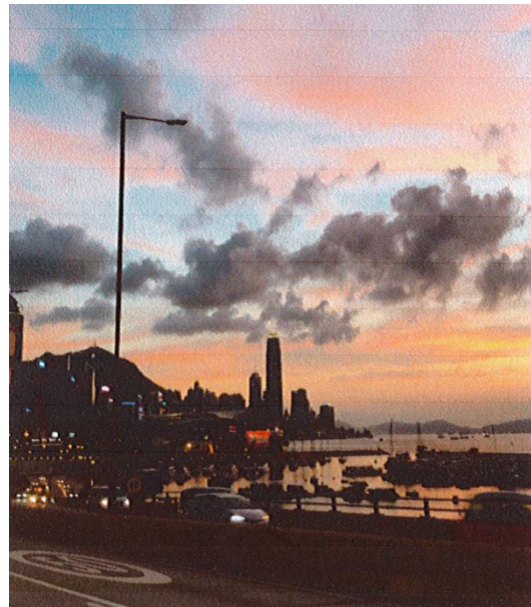
At the end of the year, Betty reflects on her Envisioning Innovation in Education experience, "As an innovative teacher, I have treasured this learning journey. It gave us a creative and safe environment to innovate, allowing us to establish our point of view in education."

C. Celebrating Learning— Documentation as Celebration

Caroline Li - Marymount Secondary School - High School English

A student in Caroline Li's senior English class pauses on her way home from school. She looks up from the tiny screen on her phone and gazes out over the city. Lights flicker. Buildings glimmer. The student is struck by the beauty of the city. Remembering her English assignment, to take a photo of something dear or special to her, she raises her phone and takes a snapshot of the city. Hong Kong at sunset.

Caroline Li, a high school English Language and Literature teacher at Marymount Secondary School (MSS), a local girls' school in Hong Kong, is eager to use reflective practice and documentation, processes she is experimenting with through her participation in the Envisioning Innovation in Education (EIE) project, to support her students in their self-assessment of their learning. She believes that involving students in the assessment process will empower them to understand themselves better as learners, and ultimately increase their enjoyment, happiness, and love of learning.



Student photograph of Hong Kong as part of the Poetry of Compassion project.

Documentation as celebration

It is the year of compassion at MSS. Each year the school chooses a different theme to focus on. Caroline seeks to celebrate the year by celebrating her students' learning. Caroline reflects,

I was inspired by the opportunity to participate in the EIE project on innovation. I was eager to meet with my school colleagues and colleagues across Hong Kong and to connect these new ideas on innovation to the school focus on compassion. I was eager to challenge my students to think deeply and connect widely.

Typically, Caroline designed end of unit tests to assess her students' learning where she alone

judged her students' understanding. As part of her inquiry into her practice, Caroline posed the question, "How can we celebrate learning together?" Caroline aspired to grow her students' understanding of themselves as learners. She hoped to nurture their sense of satisfaction and pride in their work and have them take ownership of their learning. She believed she could do this through having her students document, reflect on, and assess their understanding.

Documentation as personal reflection

In a portion of her inquiry project, Caroline chose to focus on her poetry unit on William Blake and William Carlos Williams to experiment with creative forms of assessment. The goals of the poetry unit are to 1) develop an understanding of literary devices in poetry, and 2) develop an appreciation for literature and the beauty of life and nature. An additional social-emotional goal for Caroline, given the disruptions caused by the pandemic, is to provide students with a space for self expression, dialogue, and connection. Caroline, like her study group colleagues, strives to align her experimentation to the school goal of developing mindful and compassionate persons.

The culmination of the poetry unit is a Poetry of Compassion project, an inquiry-based project on a self-selected topic of interest and passion. The project requires the students to survey the surrounding area and create a literary response to express their feelings and thoughts. To personalize the project, Caroline asks her students to take a photograph of something dear or meaningful to them. They are then to write why they took the picture. The students are finally asked to create a literary response to the photograph, in writing or presentation, that expresses their feelings about the photograph.



Student photograph of Hong Kong as part of the Poetry of Compassion project.

Documentation as observing, recording, and interpreting

In the Envisioning Innovation in Education project, documentation is described as the practice of observing, recording, interpreting, and sharing learning moments in order to enhance learning and inform instruction. The poetry project contains all four practices (observing, recording, interpreting, and sharing) for the purpose of giving students opportunities to demonstrate their understanding of the poems and literary devices they are studying, and be able to express their thoughts and feelings in a creative way.

The project begins with an opportunity for the students to observe and record their surroundings, to observe with curiosity and intention. In the example provided, Caroline's student observes the city at twilight and is surprised by its beauty. Remembering her English assignment, the student records the moment with intention by taking a photograph. Photographs are one of many forms of documentation. Student responses, teacher notes, and discussion quotations are others.

The next step in the project is to interpret the photograph, to write a description of the meaning of the documentation, why it was taken and recorded. Documentation can be explored alone or with classmates and teachers to determine its meaning and significance. In this case, the photograph and its meaning are interpreted by the student alone. Caroline's student reflects on her photograph:

This photo was taken when I was on my way home after a long day of tuition lesson. The snapshot is particularly dear to me as it portrays the neglected beauty of Hong Kong. In this modern age we are constantly on our mobile devices, nonchalant about our surroundings. When I looked up from the phone and saw this view, I was shocked to find that I've never noticed how beautiful the city was with its soaring buildings and dazzling lights. This snapshot acts as a reminder of how we should take a break from our hectic lives and appreciate our surroundings from time to time to find inner peace.

Documentation as sharing

The students then share their photographs with their classmates. Often, documentation may be discussed among students with their classmates. In Caroline's class, the students view each other's photographs quietly, without commenting, in a sort of silent gallery walk. Caroline explains:

For students to share their pictures, initially, I just asked them to bring a picture/photo that means a lot to them, whether it is representative/ significant to herself or reminds them of




someone dear to them or of their surroundings. I didn't ask them to share the significance of the picture/photo in public because it can be quite personal. The students did look at each other's pictures but were not asked to make any comments publicly. Hopefully, by doing so, the students would feel more comfortable in a safe and trusted place to share their personal narratives without judgements but at the same time being aware of each other's voice and choice as a "community."

Documentation as exploration

Caroline introduces thinking routines, frameworks that she is exploring in the EIE project, to help her students find relevance and connection to the poems they study. Using the thinking routine, *Think, Feel, Care*, the students explore and record personal interpretations and feelings about the poems.

As a creative form of assessment, the students are asked to create a literary response to their photograph. Caroline presents the thinking routine *Connect, Extend, Challenge* for the students to make connections to the poems they studied and to consider the way the poems extended their thinking about the different literary devices of poetry. She describes her approach to this aspect of the project:

After reading **The Chimney Sweeper** from *The Songs of Innocence* and *The Songs of Experience*, what do you think about, feel and care for the chimney sweeper in the poem?

 <p>Think</p>	 <p>Feel</p>	 <p>Care</p>
<p>♥ What do you think about the chimney sweeper?</p> <p>♥ What issue do you think he is facing?</p> <ul style="list-style-type: none"> - sold to slavery - cannot cope with his mother's death - exploitation - forced to comply to the social setting - in the cold winter - issues of starvation - loss of personal freedom & innocence 	<p>♥ How does the chimney sweeper feel?</p> <p>♥ How do you feel for the chimney sweeper?</p> <ul style="list-style-type: none"> ♥ - sad - tired - trapped - lost - helpless ♥ - sympathizing - pity - anger - anxious - exhausted - spiteful 	<p>♥ What about the chimney sweeper do you care for or concern about?</p> <ul style="list-style-type: none"> - health - safety - relationships with friends - survival - whether he is aware of his individual existence - feelings

Students use the thinking routine *Think, Feel, Care* to engage deeply with poems.

I did honour my students' choices of material and form to work on for their creative literary responses and didn't really formally [offer] "feedback" on their choice and work in the process. After facilitating the *Connect* and *Extend* parts to set up the creative task in relation to the poems of Williams Carlos Williams that we studied as a class, the *Challenge* of coming up with a creative literary response was purely self-directed.

Caroline's student chooses to write a poem in response to her photograph of the city of Hong Kong.

The Neglected City

As the sun peered through the clouds
before being swallowed by the Earth,
Sunlight hits the tip of my eyelids
that were originally glued on the
tiny screen held in my palms.

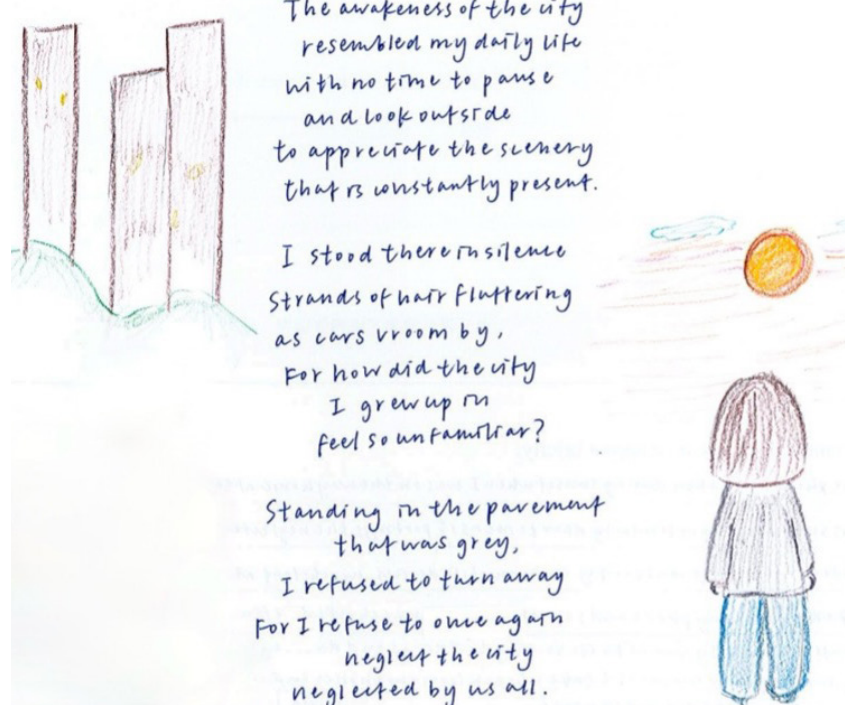
I tear my gaze away from the tiny tablet
only to find Beauty
right before my eyes.

Shimmering buildings, flickering lights,
cars honking, restless nights,
The city shone brightly
in the midst of darkness.

The awakens of the city
resembled my daily life
with no time to pause
and look outside
to appreciate the scenery
that is constantly present.

I stood there in silence
Strands of hair fluttering
as cars vroom by,
For how did the city
I grew up in
feel so unfamiliar?

Standing on the pavement
that was grey,
I refused to turn away
For I refuse to once again
neglect the city
neglected by us all.

The page features three hand-drawn illustrations. On the left, there are three vertical rectangular shapes representing buildings, drawn with light brown and green pencil strokes. On the right, there is a drawing of a sun with rays, and below it, a small figure of a person with long hair, wearing a light blue shirt and dark blue pants, standing with their back to the viewer.

A student writes a poem in response to her photograph of Hong Kong.

Caroline wants to create a safe space for her students to express their feelings and thoughts. Sharing personal, creative work may be taking a risk for many of them. Caroline explains the process for sharing and celebrating the students' documentation and literary responses.

For the sharing of their poems and literary responses, I asked my students to "perform" their work in class. The students read out their work in class and there were some very powerful performances as they were expressing their innermost feelings and in their own words. Initially, they were quite shy to do so, but I do feel that they are actually very proud and happy with their own work. I think the performances meant more for the students themselves than to the others, as they have stepped out of their comfort zones to voice out their personal feelings and thoughts.

At the end of the project, the students use the thinking routine *I used to think ... Now I think ...* to reflect on their understanding of poetry and their learning. One of Caroline's students assesses her understanding of poetry and poetic devices. "I used to think that poems were easy to study because I thought we just needed to memorize the content. Now I think it's not so easy as I thought because I need to include very explicit techniques to analyze the poems."

Throughout the project, Caroline observed her students grow in many aspects of their learning. They grew in their confidence. They appeared to be more willing to show and share their personal feelings and thoughts with others. Caroline believes that the opportunities for students to assess their own work through the review of their documentation and their responses to poems using thinking routines are opportunities to also extend appreciation, care, and compassion for one another, cultivating a more understanding and harmonious learning environment. Caroline feels that taking small steps in developing student confidence to express personal feelings and then to share their work with their classmates is essential for them to feel more comfortable and happy to celebrate their work.

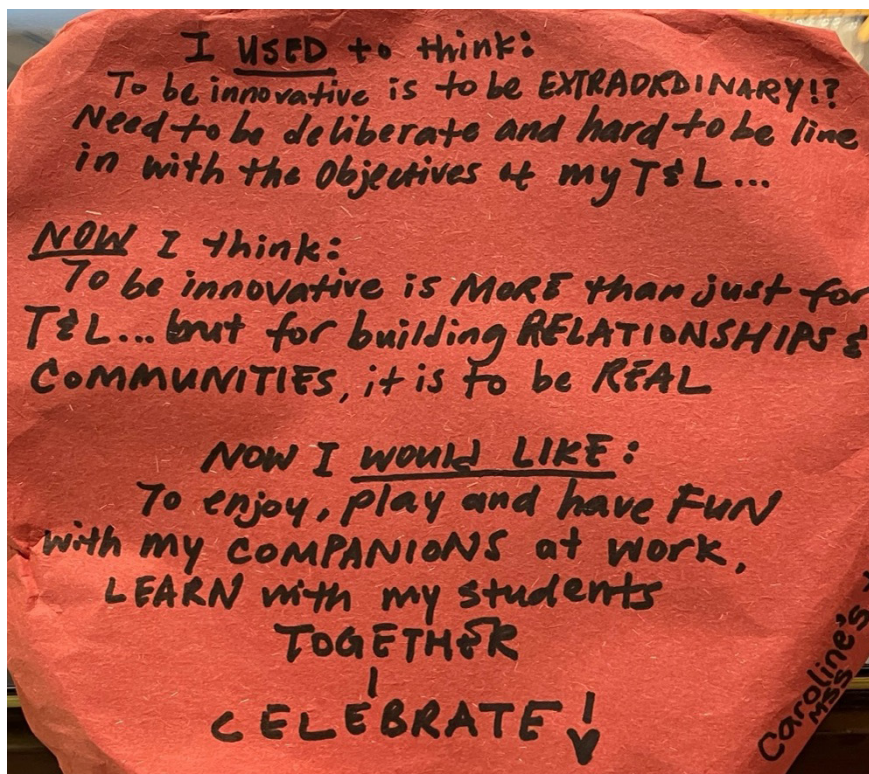
Caroline continues, "I believe innovation can happen in small steps. I want to continue to design more creative assessments to provide my students with opportunities for self-expression, reflection, and assessment through documentation."

Caroline had the opportunity to listen to Sam Crickenberger from The Harbour School share his documentation experimentation with the Phenomena Wall during an EIE community gathering and was impressed. Sam's exploration connected with the MSS study group interest in creating

a culture of thinking through effective use of spaces and setting.

In an end of the year community gathering with colleagues across Hong Kong, Caroline shares her own reflections on her understanding of innovation, using a modified version of the *I used to think ... Now I think ...* protocol,

I used to think that to be innovative is to be EXTRAORDINARY ... and (it was) hard to be in line with the objects of my teaching and learning. Now I think to be innovative is MORE than just for teaching and learning ... but for building RELATIONSHIPS and COMMUNITIES, it is to be REAL. Now I would like to enjoy, play, and have FUN with my companions at work, LEARN with my students together and CELEBRATE!



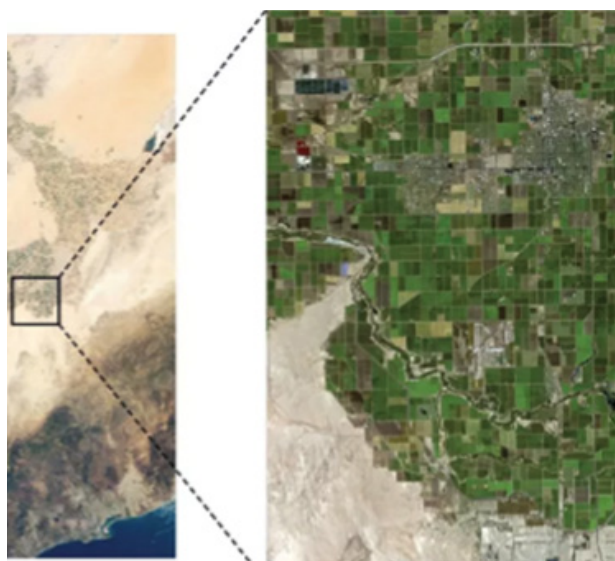
Caroline's reflection for the thinking routine, *I used to think ... Now I think ...*

D. Slow Looking in High School Geography Classrooms

Chris Ho – Fanling Kau Yan College – High School Geography

In Chris Ho's Geography class, he consistently gives students the opportunity to look closely at important geological phenomena and for students to record their thinking about what may be happening. In the provocation below, Chris shares satellite images of a region of southern California with a great deal of tectonic activity, asking students what they *See, Think, and Wonder* as they look closely at the image.

Student comments share thinking about the level of rainfall that must be necessary in the region and raise questions about how agricultural land and desert can be maintained so close together, and whether a buffer region may be necessary.



Satellite images of southern California (image adapted from Aristo Educational Press Limited).

In another unit, Chris had students visit Google Earth and look at a specific strip of sandstone closely to begin an exploration of Chemical Weathering and Hong Kong-based geology.

After discussion, they (students) have to present their ideas after having consensus with other group members. Some students discovered the point of misconception and fine-tuning their ideas into a more precise idea. Finally, they have submitted the assignment which is the final product of their discussion. I am glad to see the difference made before and after the slow-looking protocol applied into the discussion session.

In reflecting about the consistent opportunities provided to slow down, look closely, and share thinking about geological phenomena, Chris shares the key principles of slow looking, "the more you look, the more you see" and that these opportunities have helped his students to "uncover complexity" and "consider an object or situation from different points of view."

What do you see in the image?	From this image, what do you think about the local climate characteristics?	From seeing this image, what do you wonder? Try to raise a related question.
<p>你在照片中見到什麼？</p> <p>Anonymous 19d</p> <p>農地 (Agricultural land)</p> <p>Add comment</p>	<p>從這張照片可得知當地的氣候特徵是怎樣？</p> <p>Anonymous 19d</p> <p>半乾旱地區 降雨量高</p> <p>Arid region, with high rainfall</p> <p>Add comment</p>	<p>看完照片後，你有甚麼疑問？試提出一題相關問題。</p> <p>Anonymous 19d</p> <p>為什麼植被附近是雪地如何維持生長期</p> <p>Why are there plants surrounded by snow? How do they grow?</p>
<p>Anonymous 19d</p> <p>植被覆蓋 (Vegetation cover)</p> <p>Add comment</p>	<p>Anonymous 19d</p> <p>5WS25</p> <p>半乾旱氣候 Arid climate</p> <p>Add comment</p>	<p>Ming him Chris 19d</p> <p>這並非雪地，是荒漠地區 That's actually not snow, it's desert region</p> <p>Add comment</p>
<p>Anonymous 19d</p> <p>5LL16</p> <p>農地和沙漠 (Agriculture and desert)</p> <p>Add comment</p>	<p>Anonymous 19d</p> <p>年雨量高 The annual rainfall is high</p>	<p>Anonymous 19d</p> <p>5LH 14</p> <p>如何做到農地和荒漠分界，沒有緩衝區嗎？ How do they separate agriculture and desert? Is there a buffer region?</p> <p>Add comment</p>

Discussion board utilizing the See, Think, Wonder thinking routine.



Hong Kong-based piece of sandstone (image source: Google Earth).

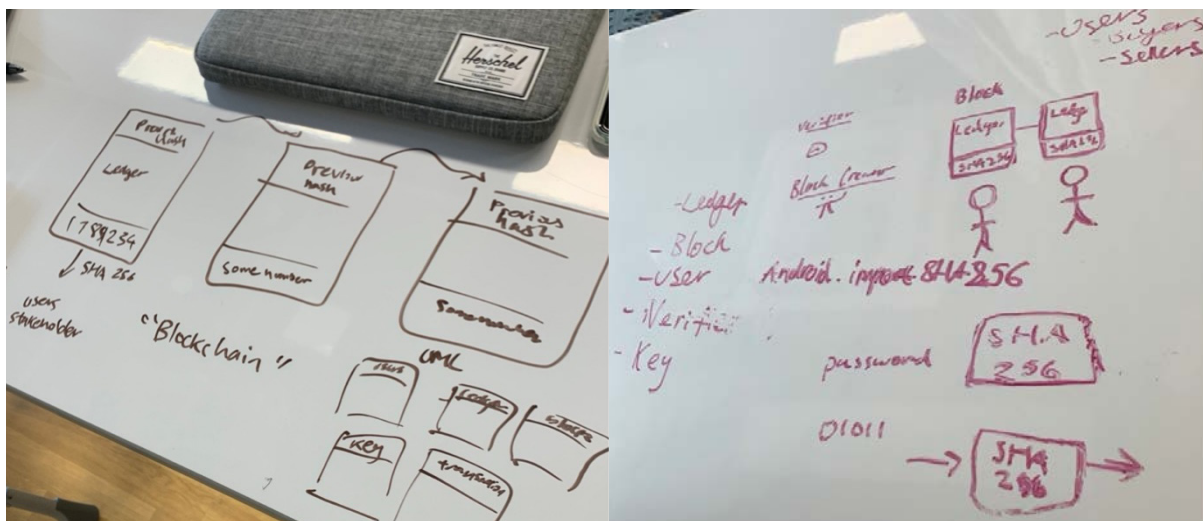
E. Sketchnoting—Seeking to Align Assessment, Documentation, and Understanding

Edwin Lagos – The Chinese International School – High School Computer Science

“A big part of my experimentation dealt with assessment. I looked at assessment from many different perspectives and I kept coming back to the IB Exams and how much they influence what we do and how students perceive learning.” In Edwin Lagos’ Computer Science classroom, he wondered how he could shift to a learning environment “where assessment is genuinely for understanding. Mov(ing) away from massive end of year tests (even though they might be a form of assessment used throughout).”

In a unit exploring the linked lists, crypto-currencies, and mobile application development, Edwin began experimenting with *sketchnoting*—encouraging students to share their thinking and understanding through graphic representations.

It was clear that they needed some background information on how cryptocurrencies work, but I was also not sure about how much they already knew. The assessment started with watching a 20-minute video that explained that concept. We stopped the video at 5-minute intervals to allow students to draw what they had listened to. They created their own understanding of the concepts by making sketches of each of the main vocabulary words.



Student sketches of how blockchain systems operate.

In a separate learning experience, students were encouraged to take apart old computers, exploring their *Parts*, *Purposes*, and *Complexities*. At first students were hesitant to begin the process of exploring the inner workings of a computer, but sketchnoting offered a way for students to consider the computer one part at a time, capturing emerging thinking as they examined each piece of the computer, noting the connections between parts (See Toolkit resources D2 and D4 for more information on the *Parts, Purposes, Complexities* thinking routine and the “*Taking Apart*” slow looking practice).

Sketchnoting made students’ thinking visible, allowing for continued dialogue about learning experiences and ongoing assessment. In reflecting about the role of sketchnoting in these experiences, Edwin shared, “Overall, sketchnoting was a simple formative assessment that helped me understand what students understood.”



Student sketchnotes from a deconstructed computer.

F. Documentation - Lessons Learned

In these pictures of practice, teachers inquired, “How might the practice of documentation be used to enhance student learning?” In the Envisioning Innovation in Education project, educators found a variety of opportunities to have students record, interpret, and share their thinking through documentation. Throughout the project, documentation served as an important process, supporting teachers’ inquiries and innovation projects. Overall takeaways from these experiences include:

1. For students, collecting and interpreting documentation provides opportunities to slow down, uncover complexities, questions, challenge assumptions, and consider different points of view. Similarly for educators, the process of documentation provides opportunities to unpack complex educational challenges and opportunities, carefully re-evaluate presumptions, and attentively listen to different perspectives.
2. Capturing documentation can allow educators to better understand student thinking and learning at various stages within a unit or learning experience, serving as a valuable source of evidence in identifying opportunities for innovation in support of student learning.
3. Utilizing longitudinal forms of documentation can help support sustained student and educator inquiry, allowing students and educators to collaborate in the inquiry process, record their budding puzzles, understanding, and thinking over time.
4. Interpreting and sharing documentation allows for opportunities for connection and relationship building between students and teachers.
5. Sharing documentation with fellow teachers can guide discussion and understanding about learning experiences, approaches to teaching, and can help determine next steps in the learning process.

As Betty Cheng observed, “Documentation gave us a creative and safe environment to innovate, allowing us to establish our point of view in education.” Documentation supports the very innovative concept of making connections, sharing meaning, and finding joy in learning.

Opportunity to Reflect:

1. In what ways is student thinking made visible in educational spaces you are associated with?
2. In what new ways might the practice of documentation be used to enhance student learning and guide student instruction in educational spaces you are associated with?
3. How might you share documentation with your students, colleagues, and the broader school community to tell the story of learning taking place?

Related Resources:

Feel free to explore the following resources as you continue to inquire about documentation in your learning environments.

Toolkit Resource C1—What is Documentation?

A brief introduction to documentation as an inquiry process

Toolkit Resource C2—10 Cent Design Challenge

An activity for practicing and reflecting on the process of documentation

Toolkit Resource C3—Exhibition Board Sharing Guidelines and Template

A process for sharing documentation from recent inquiry cycle(s)

Toolkit Resource E1—Why Look at Student and Teacher Work Together?

A brief introduction to looking at student work and teacher work as an inquiry process

Toolkit Resource E2—Collaborative Assessment Conference

A protocol for looking closely, asking questions, and sharing ideas about student work

Toolkit Resource E3—Wishes, Challenges, Opportunities

A tool for considering inspirations, opportunities, and challenges

Toolkit Resource E4—Feedback Protocols to Support Looking at Teacher and Student Work



A feedback protocol for sharing generative support and new ideas

Appreciate, Wonder, Suggest

A tool for offering positive feedback within professional learning community experiences

ⁱEdwards, C., Gandini, L. & Forman, G. (2012). *The hundred languages of children: The Reggio Emilia experience in transformation*. Third edition. Praeger.

ⁱⁱKrechevsky, M., Mardell, B., Rivard, M. & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. Wiley.

ⁱⁱⁱKrechevsky, M., Mardell, B., Rivard, M. & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. Wiley.

^{iv}Krechevsky, M., Mardell, B., Rivard, M. & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. Wiley.

^vRitchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.

^{vi}The topic and resources from this unit were adapted from the New Vision for Public Schools unit Marathon Runner. <https://curriculum.newvisions.org/science/course/biology/marathon-runner/>

^{vii}See Project Zero's Thinking Routine Toolbox for More Information: <https://pz.harvard.edu/sites/default/files/%2B1%20Routine.pdf>

^{viii}See Project Zero's Thinking Routine Toolbox for more information: <https://pz.harvard.edu/resources/see-think-me-we>

Whimsical and Playful Learning

What is the role of whimsical and playful learning in the classroom?

In Cathy Zhang's Chinese language class at the Chinese International School (CIS), primary students create Chinese characters through creative movement and self-generated games. David Leong's physics students at Munsang College (Hong Kong Island) (IMSC) stumble and laugh as they try to push and lift David's car as part of their lesson on weight and inertia. YY Tsang's English language students at IMSC are delighted to leave school to explore the aisles of a local supermarket as part of their vocabulary unit on health. At Salesians of Don Bosco Ng Siu Mui secondary school (SDBNSM), teachers are investigating how playful opportunities may support international student collaboration, and assessment for English language learners. Gabriel Lee's history students at Chinese YMCA College (CYMCAC) sing along with rap songs as they learn the causes of World War I.

The above experiences are examples of playful and whimsical approaches to teaching and learning, approaches that are innovative and may diverge from the everyday routines and norms of many Hong Kong classrooms (and American classrooms for that matter). In their exploration of innovation, many educators in the Envisioning Innovation in Education project seek to examine their teaching mindsets and environments, and to include playful and whimsical moments in their practice.

At Project Zero, Pedagogy of Play researchers have identified characteristics of play that support learning and student agency. Play can be "joyful, meaningful, actively engaging, iterative, and socially interactive." Incorporating playful learning experiences in classrooms of learners of all ages enhances learning, engagement, motivation, social connection making, and helps develop student agency.ⁱ Research into brain functioning has also shown that enjoyment of an experience stimulates areas of the brain that support cognitive functioning, attention, and memory, essential elements of learning.ⁱⁱ

During Envisioning Innovation in Education learning community gatherings, the Project Zero team often sought to design playful learning experiences and relaxing environments to explore new concepts and to facilitate participant sharing during these events. These playful experiences resonated with many Hong Kong educators. Looking for opportunities to innovate and engage with concepts in novel ways, educators enjoyed opportunities to tinker and create representations

of ideas and concepts. Sketching and building representations of innovation, in response to the question, "What does innovation look like?" were among the new and playful ways to express and share ideas (see Toolkit Resource B7 for more information). These experiences were relaxing and fun even when the experiences took teachers out of their comfort zones. The project's playful professional learning experiences offered teachers the space and license to express ideas in novel ways and to take risks without worry of failure. Teachers experienced how playful learning opportunities can lead to a shift from passive to active learning, and support student motivation.

A close cousin of play is whimsy. We define whimsy as a fanciful disposition and behavior, drawing on light and unexpected humor. What does whimsy bring to the classroom? In stress-filled classrooms, a whimsical moment can transform the classroom mood. Unexpected and humorous moments can create a relaxed, friendly atmosphere, and reduce everyday tension. Humor and surprises can connect students and teachers, create a positive learning environment, and enhance student interest, motivation, and learning.

The teachers featured in the pictures of whimsical and playful learning that follow are trying something new in their teaching. They are asking, What if? What if I take the students out of the classroom (to expand their English vocabulary)? What if my students try to push and lift my car (to help understand weight and inertia)? What if the students move, sing, and create games (to learn Chinese characters)?

What if?

Pictures of practice featured in the following section include:

- A. "How can I build play into Chinese learning?"
- B. Creating Opportunities for Playful Learning and Connections Schoolwide
- C. Look Out Below!—Playful Learning in the Physics Classroom
- D. Let's Dance—Playful Learning in the English Classroom
- E. Creating Novel Experiences in the History Classroom

A. “How can I build play into Chinese learning?”

Cathy Zhang – Chinese International School – Elementary Chinese

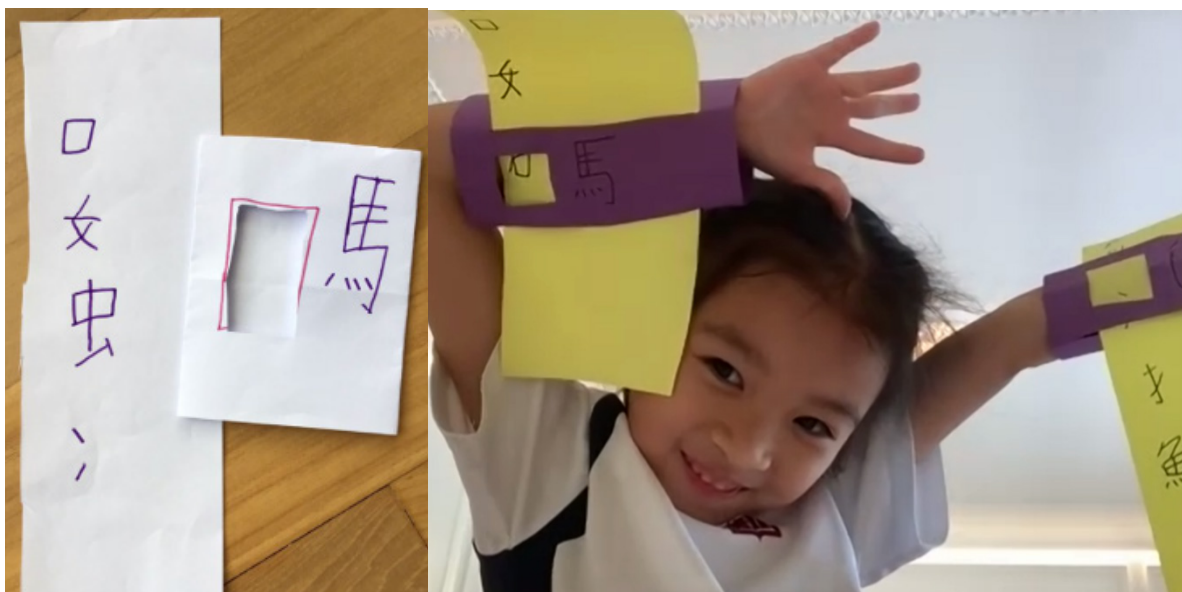
Cathy Zhang is a Chinese teacher for non-native Mandarin learners at the Chinese International School in Hong Kong. In crafting her Inquiry Focus at the beginning of the term, Cathy reflected, “I want to learn about myself as a teacher researcher to explore new ways to help students learn Chinese effectively. I want my students to be strategic learners to motivate themselves to study Chinese. I want to enrich the curriculum by developing learning strategies to decode Chinese characters.”

Cathy experimented with several playful learning strategies with students over the course of the year:

Radical books

A difficult part of learning Chinese characters is developing a sensitivity to different radicals that match with a given character to make new meanings.

Chinese radicals are what we could think of as the base component of each character. It is usually the leftmost part of the character. Chinese radicals can hold information about the character meaning and/or sound. There are around 200 radicals in Chinese, and they are used to index and categorize characters.ⁱⁱⁱ



A student creates different characters all with the “horse” component.

To cultivate students' awareness of the changing meaning of a Chinese character based upon its radical (the left-hand portion of the bracelet in the image on the previous page), students created radical books and bracelets for various key characters. These wearable, handmade devices provide ample opportunities for play and roleplay.

Cathy was pleasantly surprised about her students' engagement and interest in creating radical books. One student "had so much fun making it (radical books), she created two Chinese paper bracelets," Cathy shared.

Learning Chinese characters through physical movement

There are approximately 600 Chinese characters that are pictograms, which are stylized drawings of the words they represent. To help students learn many of these key characters, Cathy experimented with incorporating physical movement and role play. Cathy showed students an image that related to a given character, asking students to try to guess and represent the character with their bodies.



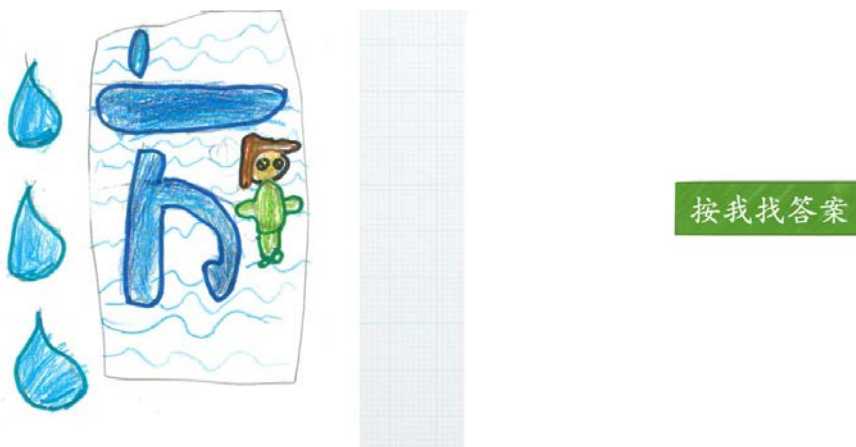
Students role-playing the character for rest: 休. Students role-playing the character for body: 身.

In the above image, "the girl in the back spread out her arms to represent a tree, the other girl was pretending to have a rest." Together they constructed the character 休, "to rest."

Cathy reflected, "We all had fun using our movements to represent the Chinese characters. With the visual clue from the origin of the characters, students not only had fun but also gained a deeper understanding of the Chinese characters."

Student-created guessing games using Keynote

To develop recognition of more challenging Chinese characters, Cathy guided students to create their own cartoon pictograms. Students uploaded their drawings to Keynote and turned them into a guessing game where fellow classmates would look at their drawings and try to guess what character was being represented. The following image below represents a student drawing of the character 游 which they broke down to three parts (氵 the left water radical, 方 square—represented as a swimming pool, 子 child—represented with the person on the right wearing a swimming cap (which represents the two-stroke mark above 子).



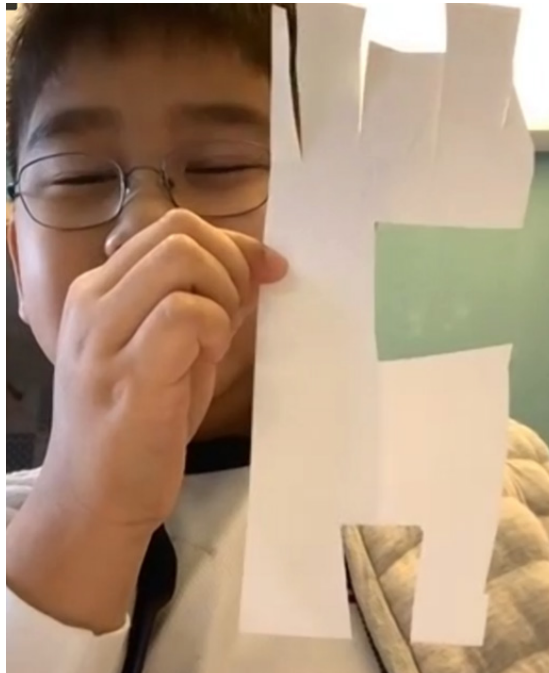
Student created cartoon pictogram of 游—to swim.

In sharing the work of another student, Cathy describes, “Two mouths (kou) with a lot of water, and then a dog below (犬), becomes 哭 (to cry).” The student playfully made the dian from dog (犬) into a teardrop to personify the verb ‘to cry.’”



Student created cartoon pictograph of 哭—to cry (answer revealed in image).

Together as a class, students designed 23 cartoon pictographs of characters. When the green icon is clicked in the Keynote they created, the white box on the right shifts and the Chinese character that inspired the drawing is revealed to students. Cathy shared that these experiences allowed students to create “stories behind the characters and to have fun while learning the Chinese characters.”



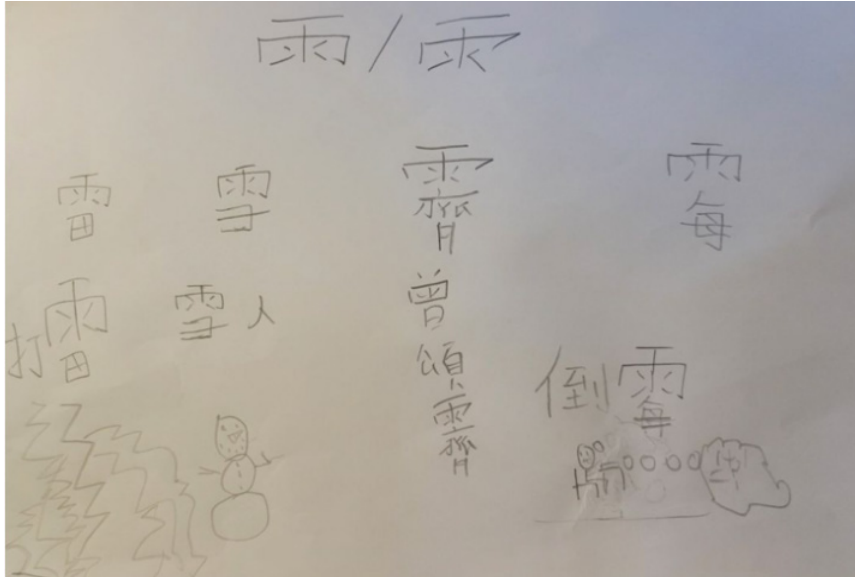
Student holding up the character 片 “slice (or scrap of paper)” created from a scratch of paper.

To students: Be creative and reflective, what other strategies can you think of?

In addition to the methods Cathy shared with the students above, she asked students to come up with their own methods for learning Chinese characters, encouraging a range of learning approaches.

Memorizing Through Song: “My strategy for memorizing characters is song. If I want to write the character 聽 (listen), it goes: shang, er, wang shi sui xin. If I don’t sing the parts, I won’t know the character. So singing the parts is very important.”

Character Maps: "A student created a map with drawings to include all characters with the rain (雨) radical. The map below includes the words for thunder, snowman, the student's name, and bad luck.



Student created map of characters that utilize the radical 雨 rain.

Creative Representations: "A boy creatively cut a character 'slice (or scrap of paper) 片' from a scratch paper. He is excited to show me his work."

In reflecting about the student's overall experience with these new engaging forms of playing with Chinese characters, Cathy was pleased with both students' learning of characters, and the new strategies they were developing. "Students were interested and actively participated in learning activities. They can name the strategies they are using to memorize characters. They set their learning goals."

B. Creating Opportunities for Playful Learning and Connection Schoolwide

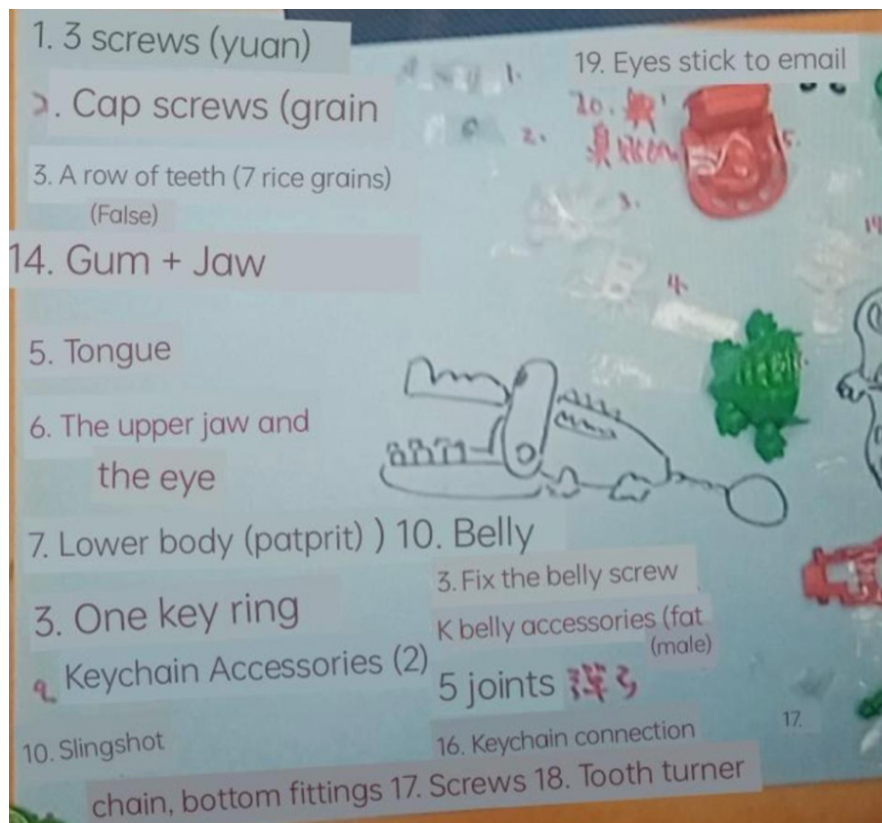
Salesians of Don Bosco Ng Siu Mui Secondary School – High School English and Global Studies

At Salesians of Don Bosco Ng Siu Mui Secondary School (SDBNSM), teachers are inquiring how playful opportunities may positively impact student learning and engagement.

A playful beginning to an intercultural inquiry and exchange

At SDBNSM the long-term goals of cultivating students' global competence and learning through playful opportunities are seen as interrelated. Vice Principal and English teacher Celest Chan shares, "Together we tried to imagine who we wanted our teenagers (students) to become, and we want them to become global citizens equipped with skills to thrive in the world of the future. Various (global competence) papers published by the OECD highlight the importance of soft skills like imagination, creativity, collaboration, and communication." In sharing images from recent play-based learning experiences, Celest proudly shares, "You see teamwork, you see collaboration, you see fun, you see communication, full concentration, engagement, and definitely problem solving."

SDBNSM educators have introduced games as a way to begin learning about new contexts, and to begin working with students from different countries. Prior to exploring the historical, economic, and political context in Pakistan, English Teacher Eddy Yan and Head of Academic Affairs Dominic Leung gave students the opportunity to engage in Carrom, a game popular in the country. In starting off a longitudinal exchange program with students in Singapore, SDBNSM students would later come to explore the social challenges and solutions related to equitable housing access, but first students built relationships through playful maker opportunities, taking apart "Crocodile Dentist" toys in small groups, trying to figure out and explain to others how the mechanisms work.



Students sharing their findings through dismantling a toy in small groups.

In reflecting on the role of these games in their intercultural exchange, Dominic shares,

The two basic things that link people together are food and games. And of course, we cannot have food for eight lessons every day, so we decided to put games into the introduction of the world course. So that they can link with each other, be closer to each other, and then start learning more about different cultures... so this is a natural lead into the latter parts of the course... Eventually we'd like the students to know more about different situations, different resources, different practices, and cultures in different places because they may give us new ideas [for] how to solve problems in our own country. We can share our culture, our resources with each other and that may be very helpful to the other.

A playful approach for the school-based assessment component of public examinations

In recent years, the Hong Kong public English secondary school examinations have included a 15% School-Based Assessment (SBA) component. Celest shares the SBA “is a very good education innovation in HK. Teachers feel empowered to be a part of the public exam process. And we take this opportunity to empower the students as well by involving them more.” A central focus of the SBA is for “students to discuss issues in depth and convey ideas clearly and concisely.” In Celest Chan and Natalie Chan’s English classes, they wanted to design the SBA component in a way that would be engaging and fun for their students. As part of this assessment, they provided a few different learning opportunities that were playful in nature including:

Presentations based upon student selected movies

In preparation for the SBA analysis and presentation portion, Celest decided to have students propose movies they are interested in watching (providing a few possible light-hearted comedies, fantasy films, and drama films from diverse regions as options), and to present on the film’s story, and one scene that resonated with them. Students’ response to a wider variety of choices for presentations pleasantly surprised Celest who shared,

Students with little English and no presentation experience were able to present to the class for three minutes... I used to think that students did not have the ability to select a suitable movie for their SBA assessment which is worth 15% of their HKDSE subject mark, so no choice was allowed in the past few years. Now, after witnessing the process that students are able to use their cultural background, personal interest, research skills, and peer discussion as resources to select the movie that would bring out the best presentation performance for them in the high-stake public examination component.

Reflection sharing with LEGO bricks

Celest also invited students to share final reflections from the term, visualized through simple Lego displays. Celest requested students to “pick out some pieces or characters you would like to play with. Using those pieces, tell us a story about how you felt throughout the learning process this year... We’ll be using the rubrics, but we’re more interested in how you feel and what motivated you.” Celest described students’ positive engagement in this learning experience as a landmark in the study group’s inquiries about playful learning,

When you ask them to play, it will reduce the level of stress for them. It will activate the other parts of the mind for them, allowing them to imagine, and use some stories about their feelings through the LEGO characters, buildings or creations... that's why we chose this as a medium or catalyst.

In reflecting about the experience, one student shared "I was nervous during the SBA, however, after I finished my presentation, I was very relaxed, and felt amazing—I was very happy with the result."



Student preparing for his individual presentation of the SBA assessment.

In looking back across the school year, Celest celebrated the opportunity to have students take a greater role in "leading learning" and "finding joy." Celest reflects,

This approach to teaching suggests that students are not merely empty vessels waiting to be filled with knowledge that educators have to impart upon them, but are rather competent problem solvers filled with valuable knowledge (animation & fiction), skills (description, critical thinking, and evaluation skills), cultural perspectives (cultural perspectives of Chinese and Non-Chinese students) and background experiences that they can build upon and share with others.

C. Look Out Below!–Playful Learning in the Physics Classroom

David Leong – Munsang College (Hong Kong Island) – High School Physics

“Look out below!”

High school senior physics students at Munsang College (Hong Kong Island) (IMSC) laugh and stumble as they try to lift and push their teacher’s car in order to grasp (literally) the concepts of weight and inertia. They later excitedly drop objects off the top of the school building as they explore theories of force and motion.



Students in David Leong’s physics class drop bottles off the roof of the school to test theories of force and motion.

David Leong, Integrated Science and Physics teacher at IMSC, is eager to innovate in his classroom in order to help his students grasp difficult and abstract physics concepts. David wants to provide his students with interesting and lively approaches to learning that will increase their interest, motivation, and understanding. David wants to offer opportunities for engaging experiential learning, choice, and student centered learning to increase student agency. He wants his students to learn effectively, to enjoy the learning process, and to have fun!

David explains that his standard approach to teaching physics was largely teacher-directed. He provided his students with the material to study and the detailed notes to review and be tested on. David states that he designed pre and post tests but that there was little integration of the student's thinking in between. If a student didn't understand a concept fully, David retaught and reviewed the concept with the student. "I was doing all the work," he complains.

As part of his inquiry for the Envisioning Innovation in Education (EIE) project, David wonders, "How can I help my students tackle misconceptions about physics?" He wonders how a playful approach might impact student thinking and the dynamics of the class. He wonders what he can do differently to help his students enjoy physics and deepen their understanding of difficult concepts, while making their thinking visible in the process.

David wonders where and how to begin. He explains,

I asked myself how to start? What are the opportunities for change? What might change look like? What is my own and my students' threshold for change? Should I begin with a more active class, a more abled class, try one class first, try a few lessons first, try a topic that most students find very difficult?

"We're in motion!"

David decides that he will focus on the tone of the class and the presentation of material. Pedagogy of Play ideas about the effectiveness of playful learning that David has been introduced to in the EIE project make sense to him. Students learn best when learning is relevant, meaningful, and joyful. Positive emotions help students engage in their learning.^{iv} David strives to present challenging material in a lively and interesting way and to empower his students to think deeply.

In his lesson on force and motion, David notices that his students have difficulty understanding the concepts of force, mass, and inertia. He begins with a question that Aristotle once wondered, "What keeps an arrow moving in the air" and shows a video of an arrow moving through space. This helps his students to begin to understand the concept of inertia and mass.

Having introduced the concept of inertia to his students, David then proceeds to ask the classic question, "Why do heavy and light objects fall to the ground at the same time?" The students jot down their ideas on Post-it Notes. Most students express a common misconception—Earth pulls the objects down with the same amount of force.



This question is based on a famous question: Does heavy object fall faster?

Heavy objects fall faster.

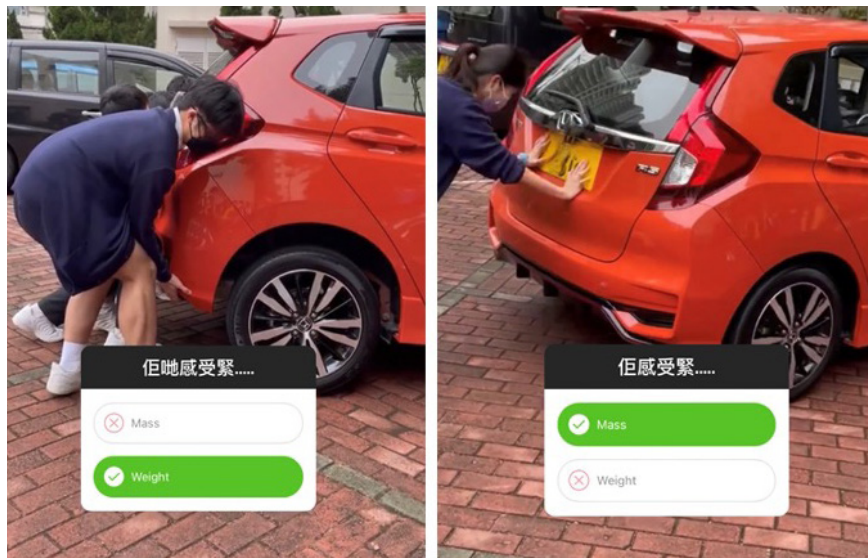
Aristotle

David supplies an image of Aristotle, who mistakenly thought: "Heavier objects fall faster."

David then asks his students to hold two bottles (one in each hand) of different masses at rest on the table. The students find that the forces pulling the objects cannot be the same. David then asks the students to drop the two bottles off the roof of the school. The fact that the bottles reach the ground at the same time despite the Earth pulling them with different force begs the students to ask, "What is wrong with our common sense theory?"



Students perform an experiment to see that a bottle with more water has more inertia and is less likely to topple.



Students push and lift David's car to feel the difference between weight and inertia.

To resolve this cognitive disconnect, the students need to understand the difference between weight and inertia. What better method than to experience the difference by pushing and lifting David's car? The students try to push David's car. They try to lift David's car. They are surprised that it takes four students to lift the car but only one student to push the car. They find that lifting the car is much more difficult than pushing the car and that weight is different from inertia.

With this important clue in hand, David asks his students to now discuss the question, "Why do heavy and light objects fall to the ground at the same time?" David uses the Project Zero prompts, *What makes you say that?* and *Tell me more about that...* to push the students to extend their thinking. David invites his students to engage in the thinking routine *Connect, Extend, Challenge* to help make their thinking visible.

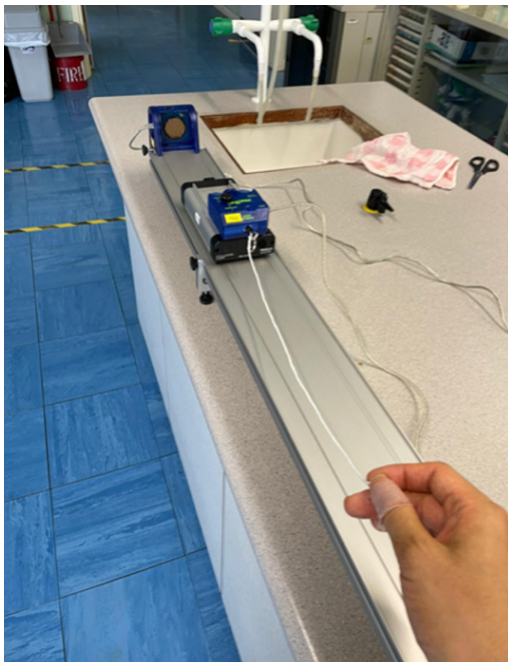
For the lesson on motion and force, David's students are active, in motion, and they are having fun! In addition to the lively and playful presentation of concepts, David changes the way students discuss and share their ideas. David usually asks his students to restate their knowledge at the end of a lesson prior to taking a test. Wanting to change this practice so students can learn from one another, David introduces thinking routines that he has learned through the Envisioning Innovation in Education project. He utilizes the thinking routine *Connect, Extend, Challenge* so that students can think about connections to the concepts they are learning, how their thinking about this topic was extended through these playful experiments, and to surface any misunderstandings.

CONNECT How are the contents of lessons connected to what you already know?	EXTEND What new ideas did you get that extended your thinking in new directions?	CHALLENGE What challenges or questions have come up in your mind?
1. I know that metal feels cold. 2. I have learnt about energy in form 1.	Two objects with same temperature can feel very different. For example, a metal feels cold but a polystyrene of the same temperature does not feel that cold.	1. I want to know why a temperature difference causes heat flow. 2. How does heat flow occur? 3. I still find the direction of heat flow confusing.
I thought mass is same as weight and both of them mean how heavy a body is. ✓	Mass tells how much inertia a body has. Weight means how much force of gravity on a body. Mass and weight are not the same but there is an relationship between them which is $W=mg$. ✓	I want to know why object has mass then has inertia. <i>Good question!</i> ✓
I knew heavier object will not fall faster than a lighter object but I don't know why. ✓	The initial velocity, acceleration and displacement of the objects are the same so we can know that the final velocity and time are the same. This explains why heavier object will not fall faster than a lighter object. ✓	
I thought there is no weight on a body when it is weightless. ✓	In weightless situation, there is weight. For example, a cable of a lift is broken and a person is inside the lift. The lift falls quickly. At that time, the person feels weightless because there is no normal reaction force from the bottom of the lift to him. There is	

Students engage in the *Connect, Extend, Challenge* thinking routine to express their understanding and possible struggles.

“I will never go back to my old way of teaching!”

David typically provides his students with organized work sheets to demonstrate their understanding. In his new approach, David wants students to be able to share their thinking with their classmates. The use of Post-it Notes, a material that David had never used before, allows the



A student in David's physics class designs an experiment to measure his own power.

students to quickly jot down and share their ideas with one another. The use of another Project Zero thinking routine, the +1 thinking routine,^v allows students to add on to each others' ideas, something that is not possible when filling out individual worksheets. David loves the active participation and sharing of his students as well as their lively engagement with the concepts. He proclaims, “I will never go back to my old way of teaching!”

David invites his students to design simple experiments to measure their own power. David notes that providing playful and creative learning approaches is not merely about designing activities

that are entertaining and fun, though he does enjoy that. Playful learning is also about engaging students in thoughtful and meaningful activities that challenge them, empower them, and allow them to take pride in their learning.^{vi}

At the end of the lesson on force and motion, David provides certificates of understanding to the students. The certificate reads, "This is to certify that (Name) has found Aristotle a complete idiot on force and motion and is now interpreting the natural world according to Newtonian Mechanics." Signed "David Einstein Leong." Now there certainly is some playful humor in that!



David's students' certificate of understanding on the laws of motion.

D. Let's Dance–Playful Learning in the English Classroom

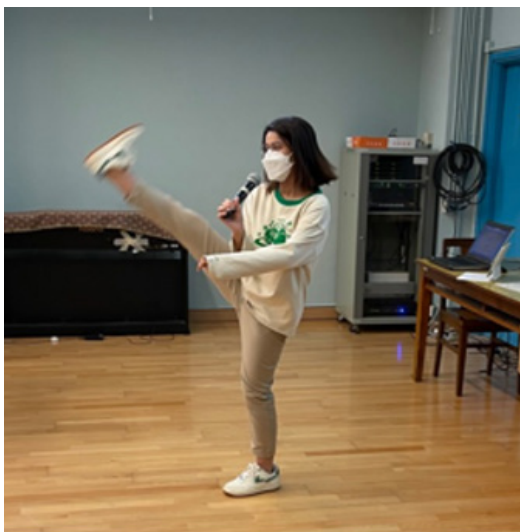
YY Tsang – Munsang College (Hong Kong Island) – High School English

YY Tsang, a high school English teacher at Munsang College (Hong Kong Island), is looking for new ways to engage and motivate her English language students. She knows that her students benefit from exposure and repetition to learn new vocabulary but often lack the opportunity to hear and speak English outside of school.

YY explains, "I want to connect vocabulary learning to the students' everyday lives in order to increase their interest and engagement. The hope is that increased interest will motivate and inspire students in their oral and written expression." As part of her inquiry into her practice, YY inquires, "How can connectivism play a role in enhancing motivation for acquiring the English language?"

“Let's dance!”

YY seeks to engage and motivate her students through playful learning experiences, experiences that are meaningful and that challenge and empower her students, and that are also joyful. In playful learning “students are leading their learning, feeling confident and empowered, are exploring the unknown, and feeling that their learning matters.”^{vii}



An assistant teacher in YY Tsang's English class demonstrates Cantonese Opera dance moves for the students.

YY seizes an opportunity. An assistant teacher in YY's English class is studying Cantonese Opera. As part of her lesson on persuasive writing, YY invites the teacher to introduce the students to Cantonese Opera dance movements. The opportunity to playfully experience key components and moves of the Chinese Opera provides the students with a real life experience and details to include in a piece of writing on this topic.

YY explains,

Before I ask my students to do a feature article writing on Cantonese Opera, which is an intangible cultural heritage item, I invite them to experience Cantonese Opera first, by inviting our assistant teacher, who is really a Cantonese Opera enthusiast and has been learning it since 2003, to give students a workshop. After the demonstration, students will role play being real reporters and will “interview” the assistant teacher with questions they have in mind.



Students in YY Tsang’s English language class practice Cantonese Opera dance moves as part of their lesson on report writing.

YY observes that the students love learning the Cantonese Opera dance movements. They enthusiastically practice the moves and then don their “reporters” hats to craft interview questions for the assistant teacher. They post their questions on the class Padlet which allows students to



YY’s English students craft interview questions for the Chinese Opera enthusiast.

share and see the interests of their classmates.

YY is encouraged by the impact of the active and playful experiences on her students' interest and engagement in the topic. She is thrilled by how motivated and excited the students are. She sees the fruits of their interest and motivation as they write pamphlets on the Cantonese Opera. YY shares, "The students' writing is greatly improved! Their pamphlets on the Chinese Opera are much more detailed and lengthy compared to student writing of previous years."

"We're taking our learning outside!"

YY is excited by the enthusiasm of her students during the writing unit. Following an Envisioning Innovation in Education Learning Community gathering where colleagues in the EIE project shared their inquiries with innovative practices, YY is inspired to approach the next vocabulary unit on Health and Nutrition with a playful mindset. YY explains, "For the unit on Health, what better way to explore nutrition than to take the students out of the classroom and to the source, Fusion, the local supermarket?"

YY's language goal is to provide her students with relevant and real life experiences to help develop their English vocabulary. She also wants to help them develop their agency and ownership of their learning.



Students in YY's English language class study food labels as part of their vocabulary lesson on nutrition.

YY's IMSC study group focus for the Envisioning Innovation in Education project is the exploration of student agency. The group inquires, "How can we give students more authority and choice in their learning?" YY shares her thinking, "I hope through my inquiry, ways of enhancing students' motivation to learn can be identified and one day, even if I don't do anything, students can explore what they need to learn by themselves!"

For the vocabulary unit on Health and Nutrition, YY designs the project with student-directed learning in mind. The students will lead their learning with many choices and decisions to make. The students are tasked with organizing themselves into food interest groups, researching a self-selected food group and its nutritional value, and presenting their findings to their classmates.

YY is impressed by how seriously the students take to the project. At the supermarket, which indeed is a fun experience, the students work together and take photos of their foods and the nutrition labels. Back at school, the students work on their own in their groups to research aspects of nutrition, such as the recommended daily intake of nutrients. They compare the nutrients of their food groups to those of the other food groups and present their findings to the class. Finally, following the group presentations, the students vote on which food group is the healthiest. Their research even includes a comparative study of dog foods!

YY reflects on the Health project and impact on her students,

Students were exceptionally excited about the activity and I was impressed by their seriousness in preparing the presentation. If students are motivated to learn, they can do a lot on their own, without the need of the teacher to prepare a lot in advance! If possible, I will let my students take up the initiative to decide on what they would like to do in the English lessons and get them to find out different things on their own (so as to save my work!).

YY sees that connecting her students to real world contexts that utilize English language is highly motivating. She notices how excited the students are to visit the local supermarket. Of course it is fun to be out of the classroom, but the students are focused and work well in their groups. YY notes that the students take the focus on health very seriously. They also endeavor to record their daily food intake and exercise. They create exercise plans that they present to their classmates for when the school is closed during the pandemic.

The Cantonese Opera workshops and trips to the local supermarket are opportunities for active and playful learning. Practicing dance movements provides opportunities for movement, levity,

and unexpected humor. The students' attitudes toward their English language study and the class environment are enhanced by these moments of playfulness and whimsy, moments that are not just entertaining but meaningful and engaging.

YY reflects on the playful approach to the vocabulary study,

Gaining from this experience, I will try to create more authenticity in students' writing (or even listening or speaking or reading) and practice to let students take charge of what they are going to write (to listen to, to speak, and to read).

YY thinks further about the impact of innovative approaches to language instruction.

Having had 'ample' teaching experience is both an advantage and a disadvantage to me indeed. Relying on my past experience, I could save a lot of time making use of my 'old' teaching strategies/methodology to teach my students. On the other hand, the lack of innovation is also reducing the effectiveness of my teaching. And this is exactly when I realised I have to try out some 'new' ways to conduct my teaching. Though much more time-consuming, the outcome was always much more pleasant than I had expected. This is also the drive to keep me on!

E. Creating Novel Experiences in the History Classroom

Gabriel Lee – Chinese YMCA College – High School History

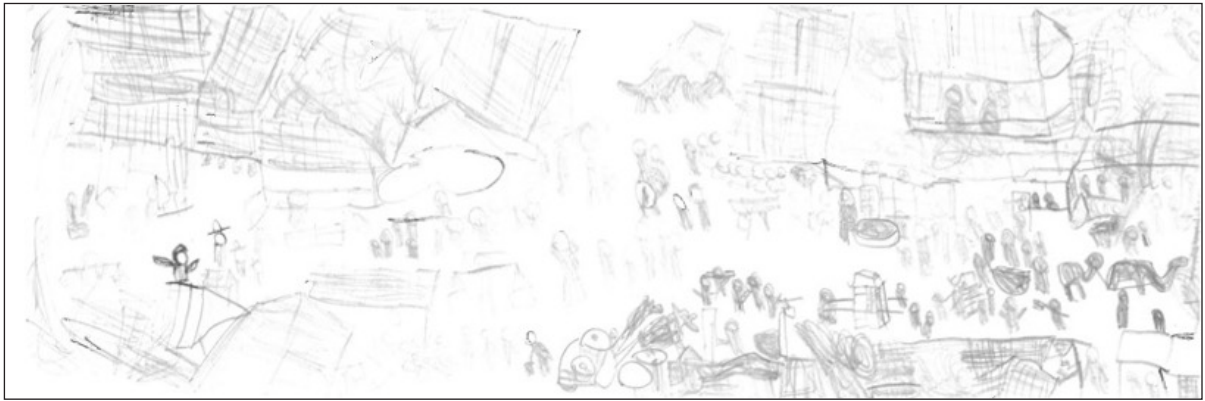
Gabriel Lee, a high school history teacher at Chinese YMCA College (CYMCAC), a secondary school in Hong Kong, was excited by the prospect of his school's participation in the Envisioning Innovation in Education (EIE) project. Gabriel was eager to experiment with new perspectives on teaching history because he found that his students often felt disconnected from distant historical events. He wanted to create new ways for his students to find meaning, purpose, and relevance in the study of the past, and to have fun in the process! For his inquiry into his practice, Gabriel posed the question: "How can I enhance student motivation in history class and make it long-lasting?"

Experimenting with Project Zero frameworks

Gabriel hoped to encourage and support his students' enjoyment of history. As with many teachers in the EIE project, and in innovative classrooms elsewhere, Gabriel grappled with how to balance innovative practices with tight school schedules and exams. Ideas from the Pedagogy of Play (PoP) framework that were introduced during the envision phase of the EIE project resonated with Gabriel (see Toolkit Resource A3 for more information). The PoP idea that learning that is meaningful, actively engaging, and joyful can enhance student interest and understanding appealed to Gabriel. Gabriel sought to create a relaxing and fun environment for his students in order to increase their enjoyment and learning.

Gabriel was also drawn to ideas from Teaching for Understanding (TFU), another Project Zero framework that was introduced in the envision year of the project (see Toolkit Resource A1 for more information). Providing students with a variety of ways to demonstrate their understanding of concepts and issues in history appealed to Gabriel. He wanted to offer his students opportunities, such as drawing, speeches, drama, and role play, to increase their engagement and enjoyment of historical events. Gabriel explained,

I have prepared different types of activities which hopefully make my students have fun in class. In (a) Chinese History lesson, they were assigned to draw "Along the River During the Qingming Festival," a legendary painting from (the) Song Dynasty.



Student drawing of a painting from the Song Dynasty.



"Along the River During the Qingming Festival (Qing Court Version)" Original Painting by Zhang Zeduan (1085-1145).

Novel and playful approaches to difficult topics in history

The study of history often involves grappling with difficult topics. Offering students the opportunity to explore topics in ways that diverge from the usual teacher-directed learning routines can be motivating and enjoyable for students, and help them to grasp difficult issues. During the study of World War I, Gabriel introduced his students to the origins of World War I through BBC rap battles. His students were surprised that history, music, and slang could be part of a history lesson and that history could be fun! Gabriel was pleased with his students' increased interest in the topic. Gabriel explained,

The students have learned more about WWI history and slang in rap songs. Mixing slang with history is new to them. When historical knowledge is mixed with a new time frame, students are more eager to learn. It's a game changer in terms of motivation.

In a meeting with his Envisioning Innovation in Education study group colleagues, Gabriel was pleased to share that his students connected more deeply with the World War I material than in previous years and were having fun in the process. Gabriel shared his wonders with the group, "The students were having fun listening to the BBC raps about WWI. Is that okay?" Gabriel also appeared to inquire whether it was okay for him to be a student alongside his students, to learn new approaches to teaching, and to have fun in the process.

Slow looking and *See, Think, Wonder* in support of student motivation


At one of the Envisioning Innovation in Education learning community gatherings during the inquire phase of the work, Gabriel was introduced to slow looking, a practice of looking at content in a structured and intentional way. Gabriel combined the thinking routine *See, Think, Wonder*, a thinking routine for engaging deeply with content, with slow looking in order to slow down the students' pace, to have students look closely at material, and share emerging thoughts about that material. Using slow looking also helps students raise questions to uncover the complexity and nuance of the material they are investigating.

This was a new approach for Gabriel and his students. Gabriel shared,

I have applied what I have learnt (slow looking) into my lesson (teaching totalitarianism before WWII right now). I introduced my students to *See, Think, Wonder*. They did not know what to wonder about. We haven't asked them to wonder in history class. I want to think more about how to apply these concepts. I want to find visuals and comics to use in class.

Gabriel experimented further with novel ways to support his inquiry in how to motivate students and have them connect to and enjoy history. His students used slow looking to explore World War II fascist propaganda. They then created their own propaganda symbols and slogans.


Choose one European country and design a poster to persuade your civilians to join WWI. Share the features of your poster.



The features of the poster:

The poster had a British flag and some words that can persuade me civilians to join WWI. 'Your King And Country Need You Enlist Now'

Choose one European country and design a poster to persuade your civilians to join WWI. Share the features of your poster.



The features of the poster:

The features of the poster is the factory gives more mans or women the production of armaments will be increase to equip the woman to enter the factory to produce weapons for the army

S.3 Tutorial class (English and History)

The cause of World War I: Rap Battle

Source: The cause of World War One! Origins: Rap Battle | WW1 Uncut – BBC

According to the lyrics, they all had different concern and opinion respectively. Write down the meaning behind the lyrics.

Country	Lyrics	Meaning
Serbia	Your fatty Franz Ferdinand didn't see Princ's pistol (手鎗) Serbia got friends, yo! Russia's our home	Princip was the assassin-刺 害 of Sarajevo incident 塞拉耶佛暗殺事件
Austria-Hungary	We bring the pain, Slav Blood split in Sarajevo (兄弟) genus cause a blood bath Serbia's our brethren. Same blood, same religion, same Slavic complexion (膚色)	Russia and Serbia were like sibling (Pan-Slavism 泛斯拉夫主義)
Russia	We're packing more army than you got salute Got cloths to the west of me and jokers to the east But Austria-Hungary's my mate Gimme evidence (證據) the Serbian beat And tell your mates France not to interfere (干預)	German (日耳曼人) vs Slav(斯拉夫) Sarajevo incident triggered 引發WWI
Germany	As for your dreadnoughts (無畏艦), wave them goodbye The armies of the triple entente (三強協約) I—mightly Your plans will be sunk like your floating junk (沉沒) G!F	Under Extreme Nationalism (極端 民族主義), Russia and Serbia should unite 聯合 as a big Slav Empire. Armaments Race (軍備競賽)
Britain		Germany got France from the west and Russia from the east (stuck in the middle) Pan-Germanism(泛日耳曼主義) France was the main enemy of Germany Britain and Germany battled for building dreadnoughts (Armaments race) 三強協約 英法俄

Students create propaganda symbols in their study of World War II propaganda.

Gabriel reflected on his students' engagement with slow looking and the *See, Think, Wonder* thinking routine,

Students need more practice to do a real slow looking. They were easy to be sidetracked. During slow looking, they tended to ask questions instead of observing and thinking. But overall they were into the exercise and the better understanding of the historical sources can be found from what they had answered.

Sharing innovations with colleagues

At cohort-wide learning community gatherings, Gabriel shared his experimentation with other Envisioning Innovation in Education colleagues. In one meeting, history teachers discussed how they sought to build knowledge of history through imaginative and creative approaches and activities, such as time travel, role play, and drama. The teachers shared that they hoped to increase student active participation and reflection through the use of thinking routines such as *See, Think, Wonder*. Through repeated opportunities for students to express their understanding in varied ways, teachers sought to establish new routines and habits that would support student self-learning and self-direction. The teachers shared that through playful and creative approaches to history their students were more actively engaged, were beginning to see the connections

between the past and the present, and were enjoying the study of history in the process.

Gabriel shared ongoing puzzles with his EIE colleagues, "How much intervention is enough or too much? How will the new skills connect with the public exams?" He wondered how students who were used to more direct teaching would adapt to more student-centered teaching and learning. As Gabriel and his colleagues shared their innovations during the project, they saw the value in the novel practices. They observed and were pleased with their students' increased interest, motivation, and enjoyment of history and learning. As Gabriel mentioned above, "The new approaches are a game changer!"

F. Whimsical and Playful Learning - Lessons learned:

Whimsical and playful learning experiences can create favorable conditions that enhance student learning and allow for innovation in education to take place. Creating a relaxed atmosphere in the classroom allows learners to be open to new and innovative practices, and to have fun in the process of learning. In these pictures of practice, teachers inquired about the role of playful and whimsical learning experiences in their teaching. Teachers created a variety of opportunities to bring playful moments into their classrooms, various subjects, and professional development experiences (see more examples of this in the Professional Development pictures of practice in the section that follows). Overall teacher takeaways from these experiences include that crafting playful, whimsical learning experiences can:

1. Create a friendly and relaxed learning atmosphere.
2. Reduce classroom stress for students and teachers.
3. Increase learner interest and motivation.
4. Increase risk taking of learners.
5. Improve teacher to student, student to student, and teacher to teacher relationships.
6. Enhance the learning experience and retention of information for learners.
7. Support learning and practice regarding difficult subject matter.

Note: "Learners" refers to students in classroom settings as well as teachers in professional development settings.

Opportunity to Reflect:

1. Think about your classroom or context. What does playful and whimsical learning look like in your setting? What does it sound like and feel like?
2. What is the impact of a playful and whimsical mindset and approach to learning on your learners' or colleagues' engagement, motivation, and learning?
3. What might you do to add an element of whimsy or play into your classroom or context?

Related Resources:

Feel free to explore the following resources as you continue to inquire about whimsy and play in your learning environments.

Toolkit Resource A1—The Teaching for Understanding Framework

The Teaching for Understanding framework supports educators in taking students beyond the simple memorization of facts to being able to apply knowledge flexibly in unfamiliar contexts

Toolkit Resource A3—Pedagogy of Play Framework

A framework for supporting playful learning through exploring the unknown, leading learning, and finding joy

Toolkit Resource B5—Where are the Pirates?

A tool for introducing the unexpected, inspiring curiosity, and sparking student and teacher wonder

Toolkit Resource B7—Constructing Complex Concepts

A tool for articulating and discussing complex phenomena

Toolkit Resource D2—Take Apart

A practice for looking closely and exploring complexity

Toolkit Resource D3—Observational Drawing

An activity to support looking closely at an object

ⁱSee Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schulz, T. S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools*. Cambridge, MA: Project Zero and Hirsh-Pasek, K., Golinkoff, R. M., Nesbitt, K., Lautenback, C., Blinkoff, E., & Fifer, G. (2022). *Making schools work: Bringing the science of learning to joyful classroom practice*. New York: Teachers College Press.

ⁱⁱSee Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schulz, T. S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools*. Cambridge, MA: Project Zero.

ⁱⁱⁱKelsey, S. (2020). Chinese Radicals: What are they and how to use them. Clozemaster Blog: Language Learning. <https://www.clozemaster.com/blog/chinese-radicals/>

^{iv}See Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schulz, T. S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools*. Project Zero.

^vSee Project Zero's Thinking Routine Toolbox for More Information: <https://pz.harvard.edu/sites/default/files/%2B1%20Routine.pdf>

^{vi}Clapp, E., Ross, J., Ryan, J. & Tishman, S.. (2016). *Maker-centered learning. Empowering young people to shape their worlds*. Wiley.

^{vii}Mardell, B. et. al (2023). *A Pedagogy of Play: Supporting playful learning in classrooms and schools*. Project Zero.

Effective In-School Professional Development

What does effective in-school professional development look like?

At the Chinese International School of Hong Kong, an interdisciplinary group of educators meets regularly inquiring, "How can we equip and empower teacher leadership, to promote a culture of innovation at our school?" At Fanling Kau Yan College, teachers have been encouraged by their principal to experiment with new methods to support students' self-regulated learning. Informed by a year of inquiry projects on the topic, educators are considering how to involve the larger school community in this continued inquiry. At HKCCCU Logos Academy, a shift in staff has led a long-term study group to consider how to involve interested colleagues in order to share innovative strategies and learnings. At Saint Francis of Assisi's College, study group educators who wished to share their inquiry project experiences and lessons learned organized a whole school professional development day, incorporating hands-on playful experiences to introduce the use of thinking routines and documentation.

For many educators, top-down, short term workshops and lectures provided by outside facilitators are the most common form of professional development. These approaches often offer little to no follow-up or support when teachers return to the classroom.

The Envisioning Innovation in Education project draws from Project Zero's long history of *collaborative inquiry*, wherein the expertise of researchers and practitioners is combined to develop dynamic interventions that result in "usable knowledge," specific to a context but with implications for other learning environments. In the collaborative inquiry approach, the learning that a study group affords can offer tremendous benefits.ⁱ Study groups consist of 4-6 educators (teachers and coaches) from diverse departments and disciplines. Groups meet regularly to examine their practice, interventions, and to look collaboratively at documentation,ⁱⁱ offering one another support and strategies for next steps throughout the school year. When engaged in the exchange of ideas in a study group, one learns from the new perspectives of others. There is a shift in the roles of teacher and learner. Teachers become co-learners with their colleagues. Learning with others can inspire innovation through a "seeding, migration and appropriation of ideas."ⁱⁱⁱ The construction of knowledge with others through the group learning experience

enhances individual learning.^{iv}

During the Envisioning Innovation in Education project, study group members experimented with innovative approaches that the Project Zero team introduced overtime. These included Project Zero frameworks such as Teaching for Understanding, Agency by Design, and Pedagogy of Play (see Toolkit Section A for more information), as well as thinking routines and the practice of slow looking. Many EIE study groups were drawn to the new approaches to Looking at Student Work together, where teachers explored student work together in a structured way (see Toolkit Section E for more information).

In the face of high levels of teacher attrition in Hong Kong and educational settings internationally, many Hong Kong schools were interested in looking at how teachers could be better supported and how shared learning could help preserve school culture and approaches to teaching. Using their study group meetings as a launchpad, many educators chose to focus their inquiry projects on how to better support professional development within their own schools. The following pictures of practice explore teachers' experiences inquiring about effective in-school professional development, supporting collaborative inquiry and collegial learning overtime, and sustaining inquiry-driven innovation.

Pictures of practice featured in the following section include:

- A. From Inquiry Projects to Schoolwide Implementation—Supporting a Shared School Culture of Thinking
- B. The Innovation Lab—Supporting Teacher-Driven Learning and Leadership
- C. The Power of the Study Group
- D. Playful Professional Development

A. From Inquiry Projects to Schoolwide Implementation—Supporting a Shared School Culture of Thinking

Fanling Kau Yan College – Professional Development

The old mindset for teachers was: “I have so much to teach and I’ll do the talking myself” Now: We involve students in learning—if they are involved, they need to think, they need to try, they may learn from mistakes—but all of these are very important—students will not forget this process of learning.

After several attempts, they (students) will use *See-Think-Wonder*. They will use it to help their own learning. These are transferable skills—to inform their own learning, when they are in the university without the help of our teachers... this (secondary school experience) is the golden period to develop these lifelong learning skills.

– Veronica Yau, Principal, Fanling Kau Yan College

At Fanling Kau Yan College (FKYC) in the New Territories of Hong Kong, Principal Veronica Yau has consistently emphasized the importance of creating learning environments where Student Regulated Learning and agency are cultivated. “If you put a lot of emphasis on the process of learning, you know, the results come,” she shares confidently. Throughout the first and second year of the Envisioning Innovation in Education project in Hong Kong, the FKYC study group explored the use of thinking routines across disciplines taught by teachers in the group including English, Chinese History, Math, Music and Geography. In their thinking routine inquiry projects across subjects, FKYC teachers in the study group were pleased by the performance of students, sharing on their group’s end of year exhibition board, “students express their ideas with more elaboration/reason/dig deeper into their ideas” and that there was a “higher level of engagement and participation through utilizing the routines.” In the final year of the EIE project, the FKYC study group with support of Principal Yau, decided to make the emphasis of the coming year on sharing the practice of thinking routines with fellow teachers and to support implementation across classrooms and subjects.

A thinking routine is a set of questions or a brief sequence of steps used to scaffold and support student thinking. Project Zero researchers designed thinking routines to deepen students’

thinking and to help make that thinking “visible.” Thinking routines help to reveal students’ thinking to the teacher and also help students themselves to notice and name particular “thinking moves,” making those moves more available and useful to them in other contexts.’

The FKYC study group kicked-off this schoolwide professional development initiative by hosting a workshop for all teachers towards the start of term. The workshop began with an explanation of what thinking routines are, how they align with FKYC’s school plan, and where the “Core Thinking Routines” are located online on the Project Zero Thinking Routine Toolbox website.

To contextualize the use of thinking routines, each teacher from the study group prepared a short 10-minute interactive presentation about the use of thinking routines in their respective classrooms. Learning experiences captured in study group teacher sharings included:

Appreciate, Wonder, Suggest in Chinese history

“I planned to have a reflection after students finished a progress test which is required to present the historical writing skills. Students were used to asking for more marks rather than investigating the mistakes.” To support a more reflective environment where students slow down, look closely, and take stock of their learning and areas for continued development, history teacher Jolly Sau Man Lam shared about her process of using the thinking routine, *Appreciate, Wonder, Suggest*, with students after the progress test. When Jolly returned students tests papers, she shared two anonymous essays on the screen inviting students to consider and discuss:

Appreciate—What do you appreciate, enjoy or admire about this piece of writing?

Wonder—What questions or outstanding wonders do you have about this piece of writing?

Suggest—What concrete suggestions or advice do you have for this author?

After engaging in this shared process, Jolly invited students to look back at their own essays, and consider what appreciations, wonders, and suggestions came to mind before developing a second draft.

Think, Puzzle, Explore in Life and Society

In a unit on the topic of “Citizenship and Responsibilities—Rights, Duties and Principles of the Rule of Law,” Life and Society teacher Jordi Kiu Ho Mok shares three citizenship cases with students:

“My name is Jingyi. I was born in Hong Kong. I am 13 years old this year. My parents came to Hong Kong from the mainland to settle down when they were young. Now our family lives in a subdivided house. I hope to apply for public housing.”

“I am Nobita. I came to Hong Kong from Japan to study. I hope to apply for the police examination in Hong Kong after graduating from university.”

“I am Peter, born in Hong Kong, I am 12 years old. My parents are British and have successfully obtained Hong Kong permanent identity cards. I care about Hong Kong very much and hope to run for election as a member of the Legislative Council when I grow up.”

Jordi separates students into groups, assigning them each one scenario to explore, asking students, “Do they qualify for the rights and social benefits associated with their desires?” When sharing out, Jordi asks students to develop the habit of “reasoning with evidence,” utilizing the thinking routine Claim, Support, Question:^{vi}

Make a *claim* about the topic.

Identify *support* for your claim.

Ask a *question* related to your claim. What’s left hanging?

In Jordi’s session, he shared his experience discussing this topic with students, and how the thinking routine introduced through the EIE project, *What makes you say that?*, became useful in guiding students to expand upon their ideas and engage in deeper discussion surrounding the topic.

Other workshop sharings included:

- How English teacher Grace Pik Wan Tse utilized the thinking routine, *Color, Symbol, Image*, to summarize the big ideas about a unit on urban beekeeping.
- How history teacher Chun Ying Au guided students to create mind maps sharing what they know about 4th-6th century Chinese history, before looking at each other's work and sharing how their classmates' ideas connected, extended their own thinking, and what challenges (puzzles) still existed for them about the topic (utilizing the thinking routine *Connect, Extend, Challenge*).
- How math teacher Amy Kam Yip Wong consistently used the thinking routine *See, Think, Wonder* when studying unfamiliar mathematical graphs.

Educators participating in the workshops were given opportunities to practice thinking routines throughout the session. Teachers responded to individual learning experiences, jotting down appreciations, wonders, and suggestions regarding the experiences shared. After participating in all three sessions, participants were given time to reflect individually about how thinking routines may be applied to their subject, before discussing their thoughts with a partner, and sharing out some ideas with the whole group (utilizing the thinking routine: *Think, Pair, Share*.^{vii})

At Fanling Kau Yan College, this meeting was not meant to be a one off, but a start to a term of school-wide inquiry about the use of thinking routines. In the following month, teachers were asked to choose a thinking routine to experiment with, crafting an opportunity to use that routine in a coming unit. Teachers were encouraged to discuss their ideas and planning during departmental meetings in smaller groups. Teachers were asked to document their experiences using the thinking routine with student work and video recordings when possible. Later that month, teachers would be asked to gather again to share insights and puzzles regarding their respective experiences.

The FKYC Envisioning Innovation in Education study group separated responsibilities for the spring term with half of the teachers focusing on the continued support of educators in utilizing thinking routines throughout the term, developing a hub for teachers to share continued insights, puzzles, and documentation. The other three study group teachers focused on student experiences with thinking routines, seeking to develop understanding of the impact of thinking routines for student learning and understanding.

Heart-warming reminders



Time	Occasion	Task
Dec	L&T	<ul style="list-style-type: none"> • Consolidate the learning in Dec Workshop • Design of open class lesson
Early Jan	Trial lessons L&T	<ul style="list-style-type: none"> • Experiment the use of Thinking routines and talk moves • Refine the design of lesson • Video tape lessons • <u>Documentation</u> (Thinking routines, students' work, reflection)
11 & 16 Jan	Open Class	<ul style="list-style-type: none"> • Conduct the lesson • Video tape lessons • <u>Documentation</u> (Thinking routines, students' work, reflection)
Late Jan	L&T	<ul style="list-style-type: none"> • Reflection: Insights and Puzzles

Timeline shared with colleagues during the December thinking routines workshop.

In reflecting about the experience with thinking routines throughout the year, one FKYC teacher utilized the thinking routine *I Used to Think ... Now I Think ... to share:*

I used to think 'thinking' was an abstract and unreachable thing. Yet important, it is hard to elicit. Now I think 'thinking' can be elicited and is essential in students' learning. In order to help students continue to develop, thinking is essential.

B. The Innovation Lab—Supporting Teacher-Driven Learning and Leadership

The Chinese International School – Professional Development

We would like to see how PD can be offered in different ways, using the expertise of our own staff and students to create an environment of learning from each other, where doors to classrooms are open to others to explore and inquire.

– Janelle Codrington Professional Development and IB Coordinator

In preparation for their 50th anniversary, the Chinese International School (CIS) sought to step back and craft a plan for how professional development programs would be facilitated at the school. To develop this program, CIS Principal Sean Lynch asked the inter-disciplinary CIS study group comprised of teachers from the Computer Science, Chinese, Arts, English, and Theory of Knowledge departments to craft a proposal. To better understand the preferences and interests of the wider school community, the group extended their reach with a survey shared with all secondary teachers at the school “to ascertain what PD they were seeking within the school environment to support their teaching... and the various ways that PD could be offered.”

Factoring responses from the community, the CIS study group began to envision a school-based Innovation Lab, in alignment with the Inquiry Focus Question, “How can we equip and empower teacher leadership, to promote a culture of innovation at CIS?” The team began to envision a system where teachers could propose professional development initiatives they were interested in pursuing, and a school committee would review the proposals, allocating available funding toward approved proposals. A key aspect of the Innovation Lab is that professional development of any teacher would be brought back and shared with the school community (aided by teacher-led workshops, recorded video, or writing) and in certain instances could be used to benefit the learning of educators beyond the CIS community. The CIS study group came to the consensus that any professional development proposal raised would be assessed in relation to how the initiative:

- *Innovates*—what’s happening in CIS learning environments,
- *Empowers*—staff and students to learn and grow,
- *Engages*— the learning community, supporting a community where collegial learning flourishes.

The study group’s proposal included four core fellowships for participating in and developing professional development at the school:

Online Course Development Fellowship: “to undertake the creation of courses that can be delivered through online platforms and that cover topics which advance the school’s strategic goals... This fellowship seeks to empower teachers to share their expertise through mediums that are interactive and asynchronous in nature, with the possibility of a hybrid model if necessary.”

Travel Research Fellowship: “to conduct fieldwork during a school vacation related to a teaching and learning initiative that advances the school’s strategic goals... It includes the observation, collection, and analysis of data or evidence gathered in a specific field of study outside of the classroom.”

Summer Professional Development Fellowship: “to support summer professional development opportunities to a group of CIS faculty. This initiative is one of the ways by which CIS aims to support the continued professional growth of our staff.”

Summer Research Fellowship: “to undertake academic research in a field or area that advances the school’s strategic goals (over the summer break). Fellows will engage with academic research to empower themselves in their professional learning and/or leadership qualities, with an ultimate goal to innovate and bring pedagogical change within or outside the classroom.”

With these proposed tracks in place for the initial year of the innovation lab, the CIS study group doesn’t view this project as closed but plans to continue to inquire about teachers’ experiences in the various tracks, as well as the effectiveness of different approaches of sharing professional learning from each track with colleagues.

C. The Power of the Study Group

HKCCCU Logos Academy – Professional Development

雨后春笋

“After the rain, many sprouts spring forth.”

The rain ...

At the beginning of the third year of the Envisioning Innovation in Education (EIE) project, Logos Academy study group members, Gary Wan and Daniel Ng, were faced with a dilemma. Four of the six study group members and the school principal had left Logos to either pursue positions at other schools or retire. Gary and Daniel, the two remaining participants, wondered if they should continue with the project.

The study group had chosen self-directed learning as the group inquiry focus. The group strove to nurture student agency and motivation through the redesign of lessons and experimentation with Project Zero thinking routines. As a DSS school in Hong Kong, Logos enjoys autonomy and flexibility in curriculum design and teachers have been working on moving from teacher-directed learning to student-guided learning for many years.^{viii} There is a robust culture of co-planning and collaboration.

“I was frustrated when the others left. I had lost my energy and passion.” Gary shared in a meeting with EIE Project Zero practitioner specialists. Daniel agreed, “I also was at a loss when the others left. I felt we needed to find a new direction, to try something new and to build a community.”

Challenge to opportunity: The study group expands

Turning the challenge of the departure of their study group colleagues into an opportunity, Gary and Daniel reached out to colleagues in their Chemistry and English departments who they believed would be open to innovative ideas and tools. “We were taking a risk,” Daniel admitted. “We had to learn how to conduct ourselves as EIE examples (teachers of EIE). I felt grateful. This was a precious opportunity to plant the seeds of innovation with others.”

Gary explained that he and Daniel believed in the ideas, tools, and strategies they had been introduced to during the first two years of the EIE initiative. They were inspired by the Teaching for Understanding, Pedagogy of Play, and Agency by Design frameworks that contain practical

and effective concepts for enhancing student learning. They felt a sense of responsibility to share these ideas with their colleagues in the form of an expanded study group. They also saw the expansion of the study group as an opportunity to collaborate with colleagues across departments, something that was not often practiced at Logos or many other schools.

The sprouts ...

After meeting with interested teachers, Gary and Daniel designed the focus of their innovation year. They posed the question, How can we effectively share the Envisioning Innovation in Education project and tools with other colleagues and encourage and engage them in educational innovation?

Five colleagues from the two departments expressed interest in informally joining the study group. Gary and Daniel decided that the expanded group would meet monthly and that they would introduce concepts and Project Zero thinking routines at each session. Also, at each session the teachers would work together to co-create lesson plans that incorporate the new tools and strategies. Yuki Lee, a colleague and fellow chemistry teacher, was eager to support the work of Gary and Daniel. Yuki explained, "Gary and Daniel are so committed and work so hard. They offer a supportive environment where we can step outside our comfort zones and try new ideas and strategies."

At each study group session, Gary and Daniel led an exploration of core concepts learned during the project with guiding questions, What is innovation? What does playful learning look and sound like? The new study group members were introduced to Project Zero thinking routines such as *+1* and *See, Think, Me, We* to build on and connect to each other's ideas.

Yuki described the enthusiasm of the teachers in the first meetings,

The early sessions were exciting and so positive. Our colleagues were very open and motivated to try new ideas with their students. In science, we wanted the students to have a role in their learning and to tackle real life problems. We wanted them to enjoy their learning and to not be afraid to take risks.

The study group meetings and the professional learning community gatherings supported these objectives by providing opportunities to experiment with thinking routines such as *See, Think, Me, We* and for teachers to share what they tried with their students and colleagues.

Franklin, a first-year biology teacher who joined the study group, noted,

I remember when we were introduced to Pedagogy of Play, we were so excited. We saw the possibilities right away. We wanted to include wonder, delight, and choice in our lessons. We began to plan together to incorporate the ideas in a unit on adaptations. Using Pokemon cards, we would have the students create an original Pokemon character and design a habitat. The lesson was interactive and fun. We wanted to impact student motivation and engagement. We were eager to share the ideas with other colleagues.

Gary and Daniel introduced the innovation cycle of *Try, Share, Revise* to the group. At subsequent sessions, the teachers shared what they tried in their classes. They used the *Appreciate, Wonder, Suggest* feedback protocol to reflect on their process. John, an English teacher of 8th and 11th grade students, reflected on the application of the tools in his English classes,

(Previously) our English students viewed learning English with anguish. They looked to me for the right answer. I wanted to establish a rapport with the students and change their perspective on language instruction. I wanted to help them find the relevance of learning English, to



Logos study group members meet to discuss plans for the year.

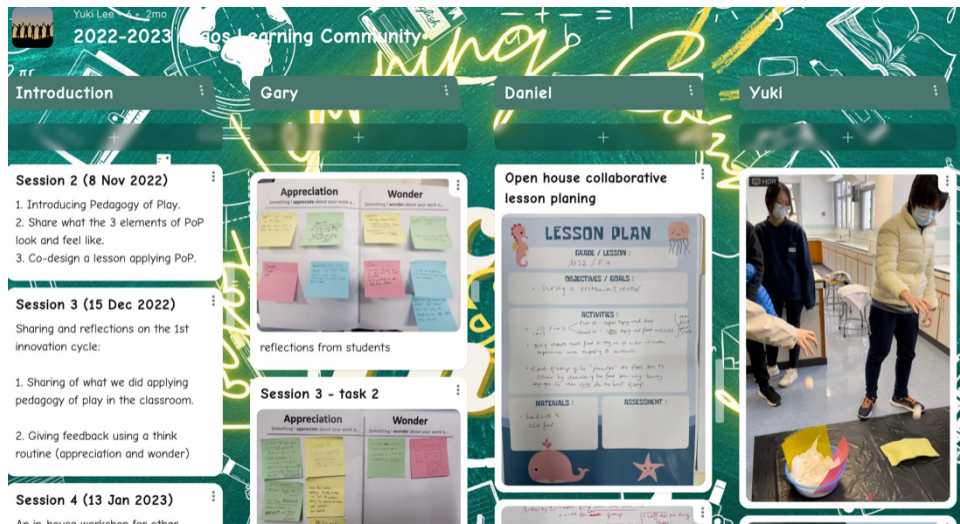
relate to their own experiences and explore the possibilities. I used the *Compass Points* thinking routine to explore the students' thinking. Prior to using these routines I rarely saw their actual thinking. Using the routine I gave students' two points E: What were they excited about? and W: What worried them? I gave them the

choice of creating the two remaining points. I believe the thinking routines helped students to think about text on a deeper level.

Daniel, also an English teacher, agreed, "Thinking routines work well in the English Language Arts context. Using the thinking routine *See, Think, Me, We*, we are giving the message to the students that we care about their thinking, we care about how they are feeling, and we care about who they are."

Gary and Daniel reflected on the power of the study group:

The study group is a good bottom-up strategy to encourage idea exchange and lesson co-planning. It is also a very good platform for colleagues to support each other and to share joy, struggles, and puzzles. It can also facilitate a sustainable professional learning community that encourages colleagues to try and innovate in a positive and supportive environment. A small study group is desired as in-depth discussion is possible.



Logos study group members post documentation on the study group Padlet.

At their last study group session of the year, Gary and Daniel introduced a modified version of the protocol: *I Used to Think... Now I Think...* They ask the group to reflect on their experience and to think forward about their next steps using the prompts: *Before I joined the study group... After I joined the study group... Now I will...*

Gary reflected, "Before I joined the study group, I was not sure what I could deliver. After joining the study group, I learned that there is always space to add new things. Now I will expand the study group."

Daniel also shared,

Before joining the study group, colleagues might not show much interest in the [Envisioning Innovation in Education?] tools. After I joined the study group, I am convinced that colleagues saw the practical value of the tools. I will further cultivate the ideas of innovation in my department.

Dr. Lee, the new Logos principal, listened quietly to the study group members as they told their learning stories during a Project Zero team visit. Towards the end of the meeting, the group turned to Dr. Lee for his thoughts.

I have been sitting here listening to your stories and I have a picture of a team working hard together. I now want to listen to you, to find out what you need, and to introduce new teachers to this culture. Your work reminds me of the Chinese idiom, "After the rain, many sprouts spring forth." This is the DNA of innovation.

雨后春笋

"After the rain, many sprouts spring forth."

Out of rain many sprouts. Perhaps the rain represents the many difficult circumstances specific to Logos and Hong Kong, the loss of study group members, the pandemic, and the disruptions to schools. Perhaps the rain represents the challenges faced by all teachers, the everyday stresses and demands of teaching. And the sprouts? Certainly the small group of brave educators at Logos who persevered and continue to persevere to innovate and enhance teaching and learning for their colleagues and students are the sprouts, as are the many ideas and relationships that grow and are nurtured by the rain of education in Hong Kong.

D. Playful Professional Development

A Playful Introduction to Thinking Routines and Documentation

Saint Francis of Assisi's College – Professional Development

“Teaching benefits both teachers and students.”

– Core aspect of the teaching philosophy at SFAC

At Saint Francis of Assisi's College (SFAC) educators engaged in a multiyear inquiry on the effective use of thinking routines and documentation, using the Pedagogy of Play (PoP) framework as a guide in history, math, and robotics courses (see Toolkit Resource A3 for more information on PoP).

Over the course of their inquiry projects, SFAC educators found that these approaches for playful and visible learning:

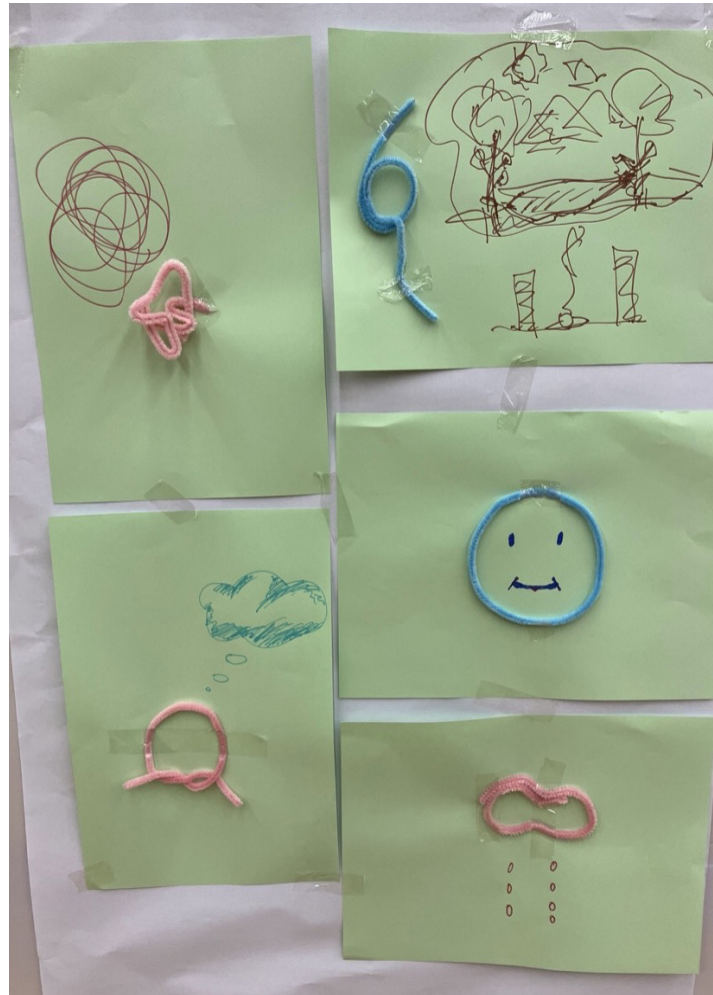
- Promote students' interest and engagement in class and academic performance.
- Scaffold convergent and divergent thinking (through the use of thinking routines).
- Provide new perspectives for teachers to understand students' learning through documentation.
- Enable students to demonstrate their understanding in school and out of school.
- Cultivate a growth mindset, expanding teachers' and students' ways of thinking.

SFAC study group educators who wished to share their experiences and lessons learned from their inquiry projects with fellow educators decided to offer a whole school professional development day with a few hands-on playful experiences utilizing thinking routines and documentation. Opening this professional development day, Vice Principal and Math Teacher Virginia Yuen Kwan Wong quoted the first principle of *Cultures of Thinking in Action*.^x “For classrooms to be cultures of thinking for students, schools must be cultures of thinking for teachers.”

Checking-in playfully

Handing out a single colorful pipe cleaner to each teacher, the SFAC facilitators, Virginia Yuen Kwan Wong, Tsun Long Fan, Tik Chi Lau, Wing Wah Sheung, asked teachers to “use the pipe cleaner and make it into any shape to express your recent mood.” Once finished, educators were

asked to paste their creation onto a piece of paper and were given the opportunity to draw on the piece of paper to further convey their emotions (without writing down any words.) After spending approximately five minutes on this playful warmup, educators were asked to “speak from your heart” and share briefly about the creations they had made.



Teacher pipe cleaner creations.

Prior to this event, facilitators were worried that educators would be shy and not be willing to engage in this playful activity, but they were pleasantly surprised sharing, “The overall response was better than expected. Colleagues were very involved in the program, and teachers were creative and willing to openly share their ideas.”

A playful introduction to thinking routines

To begin an exploration about the use of thinking routines, educators were divided into groups, and each group was given a mysterious object to examine closely using the *See, Think, Wonder* thinking routine.



Teacher discussions using the *See, Think, Wonder* thinking routine.

On small Post-it Notes educators were invited to document: What details do you *notice* about your object? What *thoughts* come to mind about the possible use of this object? and What *wonders* are raised by examining this object? During the process, educators posted their notes on a shared piece of paper and were invited to read the ideas shared from fellow educators, stimulating vibrant discussion and further thinking (for more information on the *See, Think, Wonder* thinking routine, see Toolkit Resource D4).

After educators tried the *See, Think, Wonder* thinking routine firsthand in a light and playful manner, SFAC study group educators shared their experiences using the thinking routine to support close observation, thinking, and surfacing wonders regarding:

- Historical Hong Kong architecture (in Tsun Long Fan's Chinese History class).
- Unfamiliar graphs (in Virginia Yuen Kwan Wong's Linear Algebra class).
- Further development opportunities for student-created robotics projects (in Wing Wah Sheung's Technology and Design class).

After hearing about these experiences, educators were encouraged to consider opportunities for using *See, Think, Wonder* and other thinking routines introduced throughout the day in their own contexts. The playful introduction to thinking routines helped lead the way towards a gradual integration of thinking routines in future staff development sessions and lesson planning across departments.

E. In-School Professional Development—Lessons Learned

In these pictures of practice, educators focused their inquiry projects on how they could better support educator professional development within their own schools. In the Envisioning Innovation in Education project, teachers found a range of innovative methods and opportunities to meet the professional development needs of their school. Study group takeaways from these experiences include:

1. Starting with school-based inquiry-focused study groups with educators across subjects can provide a grounded approach to supporting schoolwide implementation of new and enhanced teaching approaches.
2. Interdisciplinary study groups of experienced teachers can support the visualization and implementation of school-based initiatives.
3. Innovation and inquiry can be sustained by mixing veteran study group teachers and new teachers eager to inquire and try new approaches to teaching.

Opportunity to Reflect:

1. In what ways is professional development facilitated in schools or educational spaces you are associated with?
2. In what new ways might the in-school study group approach support professional development in educational spaces you are associated with?
3. What might you do to support professional development opportunities in your home teaching and learning environment?

Related Resources:

Feel free to explore the following resources as you continue to inquire about effective professional development in your learning environments.

Toolkit Resource B3—Dreaming Systemically

A tool for taking a systems-based approach to innovation in education

Toolkit Resource B4—Population, Innovation, Outcome

A tool for considering change of practice, and the populations involved in that practice

Toolkit Resource E1—Why Look at Student and Teacher Work Together?

A brief introduction to looking at student work and teacher work as an inquiry process

Toolkit Resource E2—Collaborative Assessment Conference

A protocol for looking closely, asking questions, and sharing ideas about student work

Toolkit Resource E4—Feedback Protocols to Support Looking at Teacher and Student Work



A feedback protocol for sharing generative support and new ideas

Appreciate, Wonder, Suggest

A tool for offering positive feedback within professional learning community experiences

Toolkit Resource G2—Making Connections and Extending our Reach (The Octopus Activity)

An activity for making connections and extending the reach of our inquiry projects

ⁱRitchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.

ⁱⁱBlythe, T., Allen, D. & Schieffelin Powell, B. (2015). *Looking together at student work: A companion guide to assessing student learning. Second edition*. Teacher's College Press. and Seidel, S. Collaborative Assessment Conference. http://www.makinglearningvisibleresources.org/uploads/3/4/1/9/3419723/modified_collaborative_assessment_conference_protocol.pdf

ⁱⁱⁱRitchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.

^{iv}Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Text-Book Series in Education. New York: The Macmillan Company.

Dewey, J. (1933). *How We Think: A restatement of the relation of reflective thinking to the educative process*. Boston: Heath.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Vygotsky, L. S. (2004). Imagination and creativity in childhood. *Journal of Russian and East European Psychology* 42 (1): 7-97.

^vSee the Project Zero Thinking Routine Toolbox. Available at: pz.harvard.edu/thinking-routines

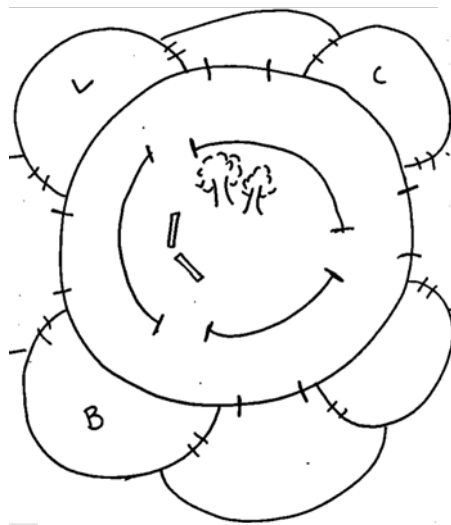
^{vi}For more information, see Project Zero's Thinking Routine Toolbox: https://pz.harvard.edu/sites/default/files/Claim%20Support%20Question_0.pdf

^{vii}See Project Zero's Thinking Routine Toolbox for more information: <https://pz.harvard.edu/sites/default/files/Think%20Pair%20Share.pdf>

^{viii}*Private direct subsidy scheme schools* are government subsidized and charge school fees with flexibility in curriculum offered

^{ix}Ritchhart, R. (2023). *Cultures of thinking in action: 10 mindsets to transform our teaching and students' learning*. San Francisco: Jossey-Bass.

LEADING FOR INNOVATION



"What is innovation?"—Sketch by Lauren Minnie

5 Leading for Innovation

At Project Zero, we work closely with cohorts of educators to collaboratively pursue inquiry and design new frameworks for teaching and learning. Oftentimes these frameworks go beyond conceptual structures and theories and further include valuable pedagogical tools, strategies, and practices. In order to achieve these goals, we have found that it is important to include school leaders in the mix. This may be especially true for inquiries aimed at pursuing school-based change.

We have found many benefits to including school leaders in terms of generating value, expanding perspectives, and exercising authority.

Engaging school leaders keeps them in the loop—and in the know—about the ongoing progress of a collaborative inquiry. Including school leaders demonstrates that the school values an initiative. School leaders can also communicate the importance of a collaborative inquiry to key stakeholders, such as teachers, other school leaders, school boards, parent groups, and funders.

School leaders may also offer a different perspective on a collaborative inquiry project than their teacher colleagues. They often see the larger picture within a school or organization, and may be able to make connections (e.g., to other educators, departments, upcoming school initiatives, funding opportunities, etc.) that participating educators may not see on their own.

School leaders may also use their authority to support and protect the work of a collaborative inquiry by providing teachers with the time and flexibility to experiment with their practice, allocating necessary resources, and championing the risk taking that is necessary when trying new things. Using their influence and authority, school leaders can scale the work of a small group of participating educators, bringing innovations and new pedagogical approaches to their wider school communities. At the close of a collaborative inquiry initiative, school leaders can also leverage their change management capabilities to sustain the work of a project in the years ahead.

While these benefits of including school leaders into the mix of a collaborative inquiry are significant, perhaps of most importance is that it is both highly rewarding and fun to be in the room with a group of education professionals working together in ways they may not work together otherwise!

Learning with Leaders

Perhaps the greatest goal of the Envisioning Innovation in Education project has been to change the educational landscape in Hong Kong for the better by supporting the practice of inquiry-driven innovation in a variety of teaching and learning environments. Throughout this project we understood that teachers would be elemental in developing the changes to practice that would help reshape the Hong Kong educational landscape, but the work of teachers alone would likely not be enough. We believed that supporting a team of principals in the inquiry process may help us further understand what leading for innovation might look like.

A commitment to working with school leaders was built into the project from the very beginning. In addition to working with study groups of educators from each of the 11 participating schools, we made the participation of the principals from each school a requirement. We called this band of eleven school leaders the Envisioning Innovation in Education *Principal Team*.

If you have ever met a school principal, you probably know that they are busy folks with a lot on their minds—and even more on their plates. For this reason, we engineered the participation of principals in the Envisioning Innovation in Education project to be a light lift. While principals were invited to each of our full-cohort Learning Community events, the primary means for engaging these school leaders in this work was through biannual 90-minute Principal Team meetings (also known as “focus group discussions” and “catch-up sessions” as mentioned in the Arc of Experience chapter).

Principal Team meetings served as a time for the principals to come together in mixed groups to discuss innovation from the perspective of school leadership, and to consider the role that a principal (or a team of principals) might play in that process. As the Envisioning Innovation in Education project largely took place during the COVID-19 global pandemic, Principal Team meetings began as online affairs, then became in-person events facilitated at the CATALYST Education Lab office, with representatives from the Project Zero-based team participating virtually. Given the state of the world at this time, the Project Zero-based team only had the privilege of conducting a Principal Team meeting in-person once in May of 2023. Due to everyone’s busy schedules, it was often hard to find a common meeting time for all 11 principals. Even when meeting virtually, Principal Team meetings were often conducted as two smaller meetings of 5-6 principals per meeting.

To structure and focus the conversations at Principal Team meetings, the Project Zero-based team provided two to four discussion prompts for the principals to consider in advance of the meeting. During each meeting, the Project Zero-based team facilitated the discussions, took notes, and offered relevant insights.

To kick-start the Principal Team conversations, we brought concepts of technical and adaptive change to the table. Here, we described technical change as new approaches to practice within existing systems to address specific issues, and adaptive change as the complete overhaul of processes or systems to adopt wholly new practices.ⁱ We shared with the Principal Team that one of the goals for the Envisioning Innovation in Education project is to pursue both technical and adaptive change in education through a program of collaborative inquiry. We see a place for both of these approaches when working toward innovation in education. We then asked the Principal Team to share some technical or adaptive changes that they foresee when thinking about their schools in the years ahead.

Over the three years of the project, we explored the personal leadership practices of the principals overtime. We prompted reflections on the ongoing inquiry processes their teachers were engaged in and discussed how to establish a schoolwide culture of innovation. Where appropriate, we again brought up the concept of technical and adaptive change in the conversations as an anchor. Examples of the discussion prompts we engaged in together include:

Reflecting on the purpose and role of a school leader

- *What does inquiry look like from your perspective as a school leader?*
- *What roles do technical and adaptive change play in school leadership?*
- *What can principals do to create the conditions for school-based innovation to thrive?*

Reflecting on recent experiences in the Envisioning Innovation in Education project

- *Based on your experience of the teacher cohort exhibition board sharings, what would you suggest to either individual participants or the full cohort regarding their pursuit of inquiry-driven innovation? What suggestions might you have to build momentum for this work?*
- *As you think of the arc of your own school's story and the next chapters you hope to write, how does your school's story fit into the broader narrative about innovation in education in Hong Kong?*

- *From your perspective as a school leader, what do you see as the next chapters for your school, and how might you develop and support the characters who will live out that narrative? Three years into the future, where do you hope this work will have taken you and your school?*

Soliciting advice and input for wider impact

- *What overarching inquiry focus questions might be established for the full cohort to have an impact upon the greater Hong Kong educational landscape?*
- *What other players would need to be involved to effect change on that larger scale?*
- *In your opinion, how might the lens of technical and adaptive change be useful in thinking about innovation in education?*
- *What suggestions do you have for leveraging the power of our collective group of 11 participating schools?*

Leading for Innovation: Reflections and Insights from the Principal Team

The goal of the Principal Team meetings never wavered from our original intention: to gain a better understanding of what leading for innovation looks like. The most important thing that we learned from inquiring with our principal colleagues was that there is no one way to lead for innovation. Our aspirations were never so high as to find the magic key or the clearly marked treasure map leading to innovation. But what we did learn was that leading for innovation can take many shapes and forms. Amongst them are the following:

1. Prioritize Wellbeing and Show Compassion

As noted in several places throughout this book, the Envisioning Innovation in Education project took place during the COVID-19 global pandemic—which was an incredibly stressful time for educators in Hong Kong and around the globe. But pandemic aside, teaching can be a demanding profession all on its own, especially within a high achievement culture experiencing social change.

It has been argued that learning is negatively impacted by high levels of stress.ⁱⁱ We extend that argument to suggest that innovation is likely not to happen when one is feeling highly stressed. The Principal Team understood that, in order for learning and school-based innovation to take place, the wellbeing of all school stakeholders needed to be of the utmost concern for any lead administrator.

The Principal Team acknowledged the stresses that their teacher colleagues experienced. They also continually expressed their most sincere respect for the educators in their schools, and compassion for the position many of these educators were in as they balanced many challenges, especially during the COVID era. We deduced that leaders showing compassion and respect for educators was especially important when educators were bravely experimenting with their practice.

Teaching is hard work. And being a student is hard work, too. The Principal Team further acknowledged the stresses that young people experienced under a similar set of circumstances to their teachers. To this end, the school leaders we worked with placed a high priority on teacher and student wellbeing.

2. Encourage Risk-taking and Iteration for Sustained Change

It was noted more than once in our Principal Team meetings that, for the most part, curriculum and curricular practices have not dramatically changed in Hong Kong for a number of decades, but students have. All too often, what's taught and how it is taught in classrooms today does not differ much from what was taught and how it was taught many years ago. The school leaders we worked with over the course of the Envisioning Innovation in Education project recognized that the times have changed, that students have changed, and that curriculum and curricular practice must change as well.

The *Try, Share, Revise* approach to experimentation with practice that was supported by the Envisioning Innovation in Education project resonated with the Principal Team. This group of school leaders understood the importance of risk taking and iteration in the innovation process—and the connection between the two. Experimenting with one's practice can naturally be risky business. And while risk taking on its own is an important part of the innovation process, it is especially valuable when it is tried in succession. Each time an educator takes a risk in their practice, they learn something. When they take a risk again, they try something new based on what they learned before. The Principal Team recognized the importance of this cycle, as they recognized the importance of encouraging their educators to take risks and iterate. For the Principal Team, this looks like regularly reflecting and asking: what can we learn from this? As one principal shared, "It's ok to take risks, and at times you fail, which is fine. But it is important to follow up and say, 'Ok, what did we learn from this experience?'"

In order for teachers to experiment with their practice, the Principal Team also expressed the desire for the Envisioning Innovation in Education project to not be a one-off professional development experience, but rather an informed and ongoing professional learning experience that is “sustained and iterative.”ⁱⁱⁱ School leaders know as much as teachers that many professional development events are one-off experiences led by outsiders with little follow up—and little possibility for effective change. “Hello and goodbye,” as one school leader put it. Leading for innovation, on the other hand, looks like sustained change. Whatever form innovation might take in their schools, the school leaders wanted that change to stick.

3. Support Connections and Community Across Diverse Settings

On many occasions, the Principal Team made the case that innovation does not happen in isolation. Innovation is social. There were myriad ways in which the school leaders we spoke with discussed the social nature of school-based innovation, but two especially stand out. The first is that innovation spawns from the social connections and the relationships that are built when communities of educators come together—especially when communities of educators across diverse school contexts come together, as noted above. The second is that innovation itself is socially constructed. Just as many respected theorists such as Lev Vygotsky and Jean Piaget have made the case for the social construction of knowledge,^{iv} so too did the Principal Team make the case for the social construction of school-based innovation. Many principals suggested it was their responsibility to create opportunities and conditions that enable such connections within and across schools to happen.

Veronica Yau, Principal of Fanling Kau Yan College, spoke of the “power of dialogue.” She and her colleagues discussed at some length how the Envisioning Innovation in Education experience had prompted conversation, an exchange of ideas, and mutual respect amongst educators (and school leaders) who came from different school settings. There is power in inter-school dialogue, as Principal Yau wisely noted. Principals can play a key role, finding opportunities to connect with outside schools and encouraging candid sharing of the innovations, puzzles, and ongoing inquiries taking place. Dialogue has the capacity to bring communities of practice together across difference. The power of this dialogue further supports innovation—as an idea that is being developed in one school may take root and effect change in another.

4. Reimagining the Role of a School Leader as a Facilitator, a Networker, a Cultivator, a Farmer, and More

The Principal Team also focused on examining the role of a school leader—especially the role of a principal. With principals-a-plenty in the room, they picked apart the traditional perceived role of the principal as the highest authority, a top-down leader that bids commands upon their educators and mid-level managers. The Principal Team did not see the role of the principal as a top-down authority. Instead, they articulated many different roles that a principal should play—a facilitator of experiences; a networker connecting individuals, departments, and ideas; a cultivator supporting the growth of individuals and groups; and so many other things. Principal Li Kin Man from Salesians of Don Bosco of Ng Siu Mui Secondary School elegantly described the role of a principal by comparing a school's top leadership position to the work of a farmer: A farmer cares for the land, filling it with nutrients, cultivating the soil with concepts and ideas, then sows seeds, nurtures and cares for those seeds as they grow to become hearty and healthy crops that provide sustenance for so many others. From the perspective of the Principal Team, leading for innovation demands that principals think differently about their roles as school leaders.

5. Walk the Walk Collectively as Change Agents

It's important to walk the walk and not just talk the talk was a theme that surfaced during the Envisioning Innovation in Education Principal Team meetings. What's meant here is that, in their leadership positions, the principals we worked with expressed the idea that it was not enough to support change initiatives at their school—they had to be change agents themselves. It is difficult for individual teachers—and certainly a whole school—to engage in the work of innovation if the school's top-level administrator cannot demonstrate innovation in their practice. Leaders in their positions, our Principal Team argued, need to walk the walk of school-based innovation—and not just talk about it.

6. Curiosity, Confidence, and Hope

As we look back on the notes we took from our Principal Team meetings over the years, we find that just like their teacher colleagues, the principals were on their own learning journeys. Throughout the process, our conversations with the principals evolved from a place of *curiosity* about the process of inquiry-driven innovation to a place of *confidence* in that process; from a place of *aspiration* for developing a broader learning community to a place of *inspiration* for the

community that developed over the course of the Envisioning Innovation in Education project—and excitement for the possibilities that lie ahead, and, from a place of *how do we do this?* to a place of *look what we have done and what we'd like to do next*.

Many principals noted that maintaining a sense of hope is a key aspect of leading for innovation. The school leaders we worked with were hopeful in many ways. They had hope for their teachers, hope for their students, hope for their schools, hope for themselves as principals and as people attempting to do good in the world—they had hope for the world. And they had hope for the future. They even had hope for the unknown. Jadis Blurton, Head of School of The Harbour School expressed this sentiment quite eloquently, “I hope to be surprised by the future,” she noted, “vibrantly surprised.” Ultimately, leading for innovation benefits from sharing a sense of hope.

How Might You Lead for Innovation?

We have been greatly inspired by the work of the Envisioning Innovation project’s Principal Team. They have taught us much about what it means to lead for innovation—and we are grateful they are out there in the world doing the work they do.

For any school leaders reading this chapter, we invite you to consider the reflection prompts shared above, and to engage in dialogue about these questions with fellow school leaders. Consider how the insights we have shared might resonate with you—and connect to your role. We are eager to continue to learn how others approach leading for innovation.

Having shared our insights from working with the Principal Team here, in the next chapter we describe the lessons we learned from working with the Envisioning Innovation in Education teacher cohort. We also share some thoughts on looking forward.

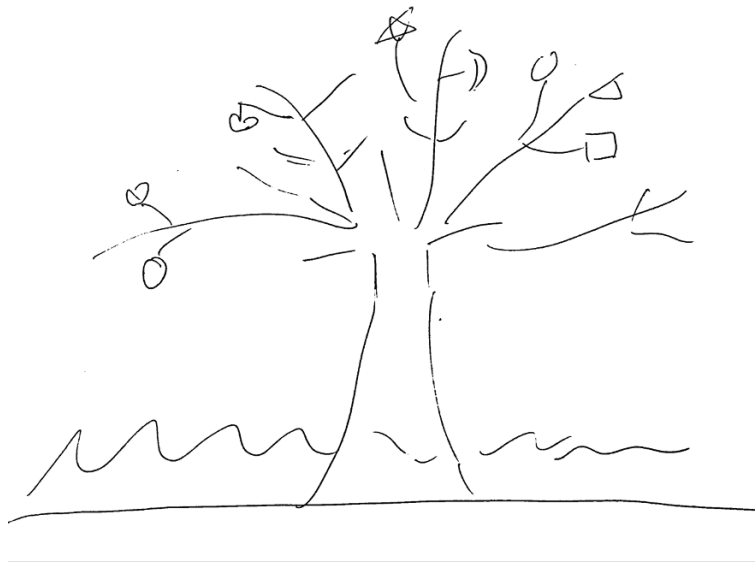
ⁱTo learn more about the concepts of technical and adaptive change see Heifetz, R. A. & Linsky, M. (2002). *Leadership on the line: Staying alive through the dangers of leading*. Boston, MA: Harvard Business School Press and Heifetz, R. & Linsky, M. (2002, June). A survival guide for leaders. *Harvard Business Review*. <https://hbr.org/2002/06/a-survival-guide-for-leaders>

ⁱⁱSee for example, Whiting, S. B., Wass, S. V., Green, S., & Thomas, M. S. C. (2021, May). Stress and learning in pupils: Neuroscience evidence and its relevance for teachers. *Mind, Brain, Education*, 15(2), 177-188.

ⁱⁱⁱSustained and iterative is one of the key aspects of the Creating Communities of Innovation model for inquiry-driven innovation. See Clapp, E. P., Dawes Duraisingh, L., & Sachdeva, A. R. (2019). *The Creating Communities of Innovation toolkit for inquiry-driven innovation*. Cambridge, MA: Project Zero/President and Fellows of Harvard College. <https://pz.harvard.edu/sites/default/files/CCI%20Toolkit.pdf>

^{iv}Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press. Vygotsky, L. S. (2004). Imagination and creativity in childhood. *Journal of Russian and East European Psychology* 42 (1): 7-97. Piaget, J. & Inhelder, B. (1969). *The psychology of the child*. Basic Books.

LESSONS LEARNED AND LOOKING FORWARD



"What does innovation look like?"—Sketch by Thomas Hung

6 Lessons Learned and Looking Forward

It's 8:30 a.m. in Kowloon on Monday, May 8, 2023. A host of educators, administrators, and guests arrive from across Hong Kong to fill the main hall of the New World Millennium Hong Kong Hotel in Tsim Sha Tsui, which today will serve as the venue for the final Learning Community event of the Envisioning Innovation in Education project. While the cohort and their guests arrive for this professional development experience, there is something in the air that lets one know that this will be no ordinary professional development day. Oh certainly, there is tea, coffee, and pastries, but today will be different from the professional development events that so many educators have experienced in the past.

Today is a day of celebration. Today the Envisioning Innovation in Education educators take center stage. They are the authors, the actors, the directors, and the participants in an exhibition of their teaching and learning. There is excitement in the air, hugs and laughter erupt from corners of the room as educators greet one another, fellow travelers on what has been a three year-long journey of envisioning, inquiry, and innovation. The venue is transformed by documentation that represents the educators' inquiries into their practice—exhibition boards, learning journey maps, artifacts of experimentation, and costumes: Mario Brothers hats and gloves, hanfu robes, and a variety of pirate paraphernalia. But mostly the venue is transformed by the educators themselves. Educators who have come, scripts in hand, to lead interactive scenes, scenes designed to engage fellow participants in playful experiences of teaching and learning, and to share the inspiring stories of innovation taking place in the eleven Envisioning Innovation in Education schools



Educators interact towards the start of the final Learning Community event.

across the city, stories of personal, student, and school-wide growth and change. Stories that demonstrate mindset shifts, and lessons learned, upon lessons learned.

“Welcome everyone!” The day begins

In this chapter we share the lessons we have learned throughout the Envisioning Innovation in Education project. We begin by first offering a short summary of the key principles, structures, tools, and strategies that were introduced throughout the Envisioning Innovation in Education project (discussed in detail in the Arc of Experience chapter). We then briefly touch on the key themes of teacher and student agency, documentation, whimsy and play, and effective in-school professional development (discussed in detail in the Pictures of Practice chapter). These are important elements to come back to because they serve as an integrated center of gravity that holds together so much of what our team, and the participating educators, have learned. Next we review what we have learned from the work of the cohort, including how the Envisioning Innovation in Education experience has shifted the mindsets of so many of our participating teachers. Here, we present five different facets of an innovator’s mindset, based on what we have learned from the participating educators and administrators, largely in their own words, along with the words of our Project Coordinators who worked so closely with the cohort. We also highlight some of the efforts we made to break the mold of professional development for the Envisioning Innovation in Education participants, including the key puzzles we explored throughout the project. Lastly, we turn to looking forward, sharing the outlying questions and puzzles that have surfaced for us by considering the opportunities we see for future inquiry and innovation both in Hong Kong and beyond.

Key Principles, Structures, Tools, and Strategies

As described in the Introduction and Arc of Experience chapter of this book, inquiry-driven innovation served as a guiding principle that grounded the Envisioning Innovation in Education experience. Participants were encouraged to pursue their sustained curiosity, explore opportunities, and carefully inquire about their teaching and learning environments to facilitate their implementation of new educational practices . A collaborative inquiry approach was taken for the project that combined the expertise of researchers and practitioners to develop inquiry focus questions and processes for pursuing those questions over time.

As a project team, we established a *professional learning community* consisting of three core elements: full-cohort learning community events 3-4 times a year, school-based study groups that met bi-weekly, and a *conceptual theme of Envision* for Year One, *Inquire* for Year Two, and *Innovate* for Year Three.

Throughout the experience, we supported participants in developing an innovator's mindset, which we highlight later in this chapter. Participants were introduced to select Project Zero frameworks (Teaching for Understanding, *Agency by Design*, and Pedagogy of Play), pedagogical provocations (e.g. approaching innovation through the lens of systems, redirecting authority, dreaming systemically, etc.), inquiry strategies (e.g. documentation, slow looking, looking closely at student work, reflective practice, etc.), a narrative-based approach to inquiry-driven innovation, as well as other tools and strategies. For more details on the different frameworks, inquiry strategies, and resources listed above, please visit the EIE Toolkit that follows this chapter.

Key Themes That Emerged: Student Agency, Documentation, Whimsical and Playful Learning, And Effective In-school Professional Development

In the Pictures of Practice chapter of this book, we sought to highlight four themes that became central to numerous educators' inquiries in pursuit of innovation: student and teacher agency, documentation, whimsical and playful learning, and effective in-school professional development.

Many innovation projects prioritized the promotion of student agency within classrooms. Alongside this, the development of increased teacher agency also supported innovation by allowing teachers to openly share their experiences and viewpoints, as they determined the focus and approach for inquiry and innovation. Documentation, the practice of observing, recording, interpreting, and sharing artifacts of learning, as an inquiry strategy effectively supported educators' inquiry cycles and was found useful to deepen student learning across subjects. Whimsical and playful instructional approaches created favorable conditions for learning and innovation both in classrooms and professional development experiences. As the project progressed, educators recognized the value of the tools and strategies utilized in the Envisioning Innovation in Education initiative to support and sustain effective in-school professional development.

The gravitation of educators to these four themes speaks to the relevance and potential they hold for supporting student learning in the contemporary Hong Kong educational landscape. From

these educators' inquiry and innovation projects, we hope that you will be supported in envisioning and inquiring about how similar practices can be pursued in your respective classrooms and professional development communities.

Dispositional Shifts in Participants' Mindsets

Throughout the Envisioning Innovation in Education project, the Project Zero team discussed what kind of mindsets and dispositions would support teachers in engaging in inquiry and sparking innovation in their educational contexts. As described in the Arc of Experience section of this book, there were numerous supports in place designed to guide educators in the *Envision*, *Inquire*, and *Innovate* phases of the project, ultimately supporting a community where inquiry-driven innovation became a shared belief—and a shared process. An *innovator's mindset*, a term made popular by George Couros, is described as the “belief that abilities, intelligence, and talents are developed so that they lead to the creation of new and better ideas.”ⁱ Throughout the Envisioning Innovation in Education project, we came to describe an innovator's mindset as an inclination, capacity, and sensitivity to seek and pursue opportunities for generative change within one's practice. In using the word generative, we utilize the definition provided by the Cambridge Dictionary, “to produce or create something,” with emphasis on the creation or change to what currently exists.

It won't surprise readers that we took a Project Zero-based approach to defining the innovator's mindset. In particular, we leaned on Project Zero's triadic theory of dispositions, which describes a disposition as a way of seeing and being in the world that consists of three parts: the *capacity* or ability to engage in a certain generative manner of thinking, the *inclination* or motivation to engage in that generative manner of thinking, and the *sensitivity* or alertness to occasion as to when to engage in that generative manner of thinking.ⁱⁱ

We believe that this dispositional approach to the innovator's mindset supported the educators and school administrators we worked with in envisioning new ways of teaching and learning and becoming agents of change within their school communities. More concretely, we believe that our teacher colleagues:

- developed various skills and capacities that support innovation—including through exposure and practice with pedagogical frameworks, tools, and resources designed to support students' growth and learning,

- bolstered their interest or motivation to engage in innovation—including guiding educators to envision forms of innovation in the opening year that would benefit the educational systems they are a part of, and the students served by those systems, and
- further developed an awareness of—or sensitivity to—opportunities to engage in innovation—through consistent redirecting of authority, prompting participating educators to seek out opportunities for educational innovation in moments big and small.

Combined together, these dispositional shifts support an innovator’s mindset.

At the final Learning Community event, we asked educators to reflect on the three-year experience of the Envisioning Innovation in Education initiative and to share how their thinking had changed throughout the course of this project. Specifically, we asked them to respond to the prompts of the thinking routine *I used to think, Now I think, Now I’d like to...* (see Toolkit Resource G1 for more information). In teachers’ responses describing shifts in their thinking over the course of the project, we observed many shared comments that spoke to the adoption of an innovator’s mindset that had been encouraged as teachers engaged in the process of envisioning, inquiring, and supporting innovation.

We grouped the dispositional shifts in our participants’ innovator’s mindsets into the following *facets of the innovator’s mindset*. Over time we have found that these facets of the innovator’s mindset serve as the skills, capacities, and practices that are necessary for educators and school leaders to develop a process of inquiry in pursuit of school-based innovation. Each of the facets below is supported by quotes from our participating teachers, guest educators from participating schools who joined us at the final Envisioning Innovation in Education learning community, or our colleagues at CATALYST Education Lab—who worked so closely with the cohort.

Facet I: Seeing Innovation as Something That Can Occur in Ways Big and Small

Pursuing educational innovation doesn’t necessarily require a total transformation of practice. Change and innovation can come in small shifts in practice discovered through the inquiry process. Throughout the Envisioning Innovation in Education experience, a “try this” approach was consistently promoted. Whenever participants were introduced to a new idea or tool, they were encouraged to try it out in their context, share their experiences with colleagues, and revise for next steps. As pedagogical interventions were developed as a part of participant’s inquiry processes, they were encouraged to try out their ideas both in individual lessons, and then eventually in the

facilitation of bigger units and projects. Elevating trial and error as part and parcel of inquiry-driven innovation influenced participants' perception of what innovation could be:

I used to think INNOVATION has to be completely life-changing
Now I think innovation includes making small changes to our thinking and vision.
Now I would like to make these small tweaks to inspire and innovate continuously.

– Anjali Nainani, CIS

I used to think it's impossible to make "change" in the system.
Now I think there's a big variety of ways to make learning more fun inside lessons.
Now I'd like to try new approaches. Slow down my teaching in order to change the atmosphere.

Make learning FUN!

– Kara Choi, Visiting Educator from CYMCAC

I used to think Innovation was the work of grand dragons and phoenixes (emperors and empresses). Now I think innovation can be simple and not take too much time.

– Tsun Long Fan (Long), SFAC

Starting small, even taking baby steps, to initiate improvement.... By beginning with small steps, the process doesn't become overwhelming, and it allows us to see what works and what doesn't. It's practical, inspiring, and aligns well with the spirit of innovation.

– David Ng, (Afterword)

Facet II: An Openness to Learning, Trying New Things, and Seeing Challenges as Opportunities

Change in any form requires an openness to exploring, trying things out, maintaining a sense of curiosity, and tinkering with the learning process overtime. Even in moments of challenge, there is space to improve and innovate. In the Envisioning Innovation in Education project, participants were introduced to pedagogical provocations, asked to consider how they might apply the tools they were accumulating in their "backpack," and encouraged to find entry points and opportunities within their systems.

I used to think the project was mostly about using thinking routines across the school. Now I think our project was more about our school's culture and taking chances without worrying about being right or wrong. For me it's about being willing to share and try for the good of the students.

– Jen Crickenberger, THS

I used to think my teaching method was good enough. Now I think there are other methods that I have not thought of. Now I would like to try more methods to see which one works the best for students in our school.

– Anonymous, SDBNSM

“Where there is challenge, there is an opportunity.”

– Lauren Minnie, MSS

I used to think “If it ain't broke don't fix it.” Now I think you can always fix it for the better. Now I would like to make more people understand you can fix it for the better.

– Daniel Ng, Logos

I used to think students would not like to change. Now I think it depends on the willingness of the teacher to change which encourages students to follow.

– Kiu Ho Mok (Jordi), FKYC

Our cohort also had a mindset shift of viewing themselves as learners too, allowing room for collaboration and co-learning with their students and colleagues. This balanced approach can foster a more supportive, engaging, and sustainable educational environment.

– David Ng, (Afterword)

Facet III: Engaging in Reflection, Honoring Diverse Perspectives, and Reflective Practice

As we engage and share about our inquiry processes, we can gain from the diverse perspectives of others, and an exploration of our own positionality as individuals. In the Envisioning Innovation in Education experience, the introduction of inquiry strategies and iterative inquiry cycles often led to the challenging of assumptions, uncovering of new insights, perspectives, and puzzles as well as the habit of learning and reflecting with colleagues.

Instead of expecting participants to immediately know how to engage in effective and meaningful dialogue for learning and inquiry with one another, thinking routines, discussion scaffolds, and feedback protocols were provided to support participants in thinking together, and providing opportunities along the way to explore their positionality, “Who am I?,” “Who are my students?,” and “What is my teaching and learning context?”

I used to think culture alone was enough to introduce new members of the community to a school and make them feel a part of its journey. Now I think understanding one’s own and a school’s identity are crucial to build effective partnerships to learn from and with one another. Now I would like to establish structures for reflective practice, collaborative dialogue, and to allow innovative ideas to be fostered and grown.

– Alastair Jackson, HKIS

I used to think there is one single solution for all. Now I think every school has individual needs. Now I would like to learn more from others’ experiences.

– Catus Lei, Visiting Educator from IMSC

Now I would like to take what I have learned back to the school and figure out my way of doing it.

– Franklin Kwan, Visiting Educator from Logos

I used to think that documentation was tedious.

Now I think “Documentation + reflection = Secret formula.”

– Lauren Minnie, MSS

Participants’ mindsets and practice with collaborative inquiry shifted from apprehension... to confidence and appreciation for diverse ideas and connections. The different perspectives pushed them to uncover biases and blind spots, which inspired new approaches.

– Queenie Hon, (Afterword)

Facet IV: Learning With and from Others Across Contexts

Participants leapt the furthest the more they connected—especially when, together, they connected with the unfamiliar. As teachers shared stories from learning experiences they facilitated in the classroom, participants found they can be supported and inspired by the work of others, and can consider how the innovation projects of others can be adapted to benefit

students across contexts. The Project Zero team intentionally embedded many structures within the Envisioning Innovation in Education experience to facilitate the learning with and from others across contexts. Participants who were unfamiliar with each other were given the opportunity to work in the same groups during learning community events, they engaged in discussions that celebrated the learning process, and it was emphasized repeatedly that everyone has an equal voice. Our intention was to create safe, brave, and trusting spaces where participants could share not only their successes, but also their failures.

I used to think EIE is a learning community where people learn pedagogy only. Now I think it is about cooperation. Sharing and making changes together. Now I would like to learn and contribute more to the MSS community. To make changes together.

– Anonymous, MSS

I think we all bring ideas and enthusiasm to practice and can work together in the system. Now I would like to maintain connections to colleagues from other schools to see how our efforts continue to develop.

– Betsy Lewis-Moreno, HKIS

Now I think who we are makes a difference and we can shape the education system bringing a wider impact, showcasing shared success.

– Celest Wing Yin Chan, SDBNSM

Now I think to be innovative is more than just teaching and learning... but for building relationships and communities, it is to be REAL. Now I would like to play and have fun with my companions at work. Learn with my students TOGETHER—CELEBRATE!

– Caroline Li, MSS

Protocols... have been used to promote collective learning and meaningful dialogue, ensuring that everyone leaves with ideas and direction for next steps Through collaborative inquiry, educators learn as equals, valuing diverse perspectives from cross-subject and cross-school connections.

– Queenie Hon and David Ng, (Afterword)

Facet V: Looking Forward—Inquiry and Innovation as a Lifelong Journey

“Learning and teaching should not stand on opposite banks and just watch the river flow by; instead, they should embark together on a journey down the water.”ⁱⁱⁱ

Learning as a student and a teacher—or as anyone for that matter—is a lifelong endeavor. At Project Zero, we find teachers to be most successful in the inquiry and innovation process when they tinker with their practice overtime, seeking new opportunities to provide meaningful learning experiences for their students, their communities, and themselves. From the outset, we presented the project as an iterative and non-linear learning journey. Rather than seeking a single solution to our shared inquiries, we emphasized there are many routes to innovation, and innovations themselves will need to continue to evolve with the times.

During the final Learning Community experience that we facilitated for our teacher colleagues, we prompted them to reflect on their experience and consider how their approaches to practice had changed over the three years—and also to consider what they were inspired to do next. In this way, our goal was to signal that the end of this multi-year journey does not mark an end to our colleagues’ inquiries about teaching and learning, but rather presents a chance to take stock, celebrate the journey thus far, and continue to look and inquire forward as a community.

We see this looking forward approach to inquiry and innovation as a lifelong journey—which may be considered to be yet another facet of the innovator’s mindset.

Now I think teaching and learning is an endless journey. Now I would like to be a traveler in this journey, and continue learning and teaching.

– Hoi Yin Lee (Gabriel), CYMCAC

I used to think shorter cycles of innovation are preferred. Now I think sustained inquiry over multiple years is also powerful. Now I would like to engage new cohorts of teachers in the innovation cycles we engaged in over the years.

– Anonymous, HKIS

Now I would like to continue to be brave to reflect and take in feedback. I want to give myself time to let it sit so I can consider authentic changes. I want to keep learning and growing.

– Jen Crickenberger, THS

Now I would like to lead for positive changes, cultivate a team who are innovative, action oriented, purpose-driven, to co-create a future school for our next generations.

– Anonymous, MSS

Final Reflections on Facilitating the Envisioning Innovation in Education Project

The Envisioning Innovation in Education initiative has been an exciting journey for our project team. Along the way, there were many insights and puzzles that came to the surface for us—and a handful of lessons that we learned about working in this unique part of the world—and about engaging a diverse group of teachers and school administrators. Below, we offer a few last reflections on our own arc of experience.

Addressing Unique Contextual Variables

Although our project team was composed of westerners from the United States, we collectively brought experience working in a variety of cultural contexts on five different continents, including Asia, and specifically within China and Hong Kong. We knew many of the basics, but we also understood some of the finer details about working in the region. Like, the Hong Kong \$10 note is made out of a more plastic material because it is the most popular note exchanged in the wet markets, you always use two hands when accepting or offering a business card, and a taxi driver picking you up from the airport will be hard pressed to accept a credit card payment for the journey. While our previous work in the region had provided us with some important cultural information, our international experience has also taught us that there is always something new to learn about a place—even one that you may have been to many times before. Our previous international experience has also helped us understand that each cohort of educators brings with them a unique set of variables to consider. For the Envisioning Innovation in Education project in Hong Kong, two contextual aspects especially framed the project: the high achievement and test-driven culture of the Hong Kong educational landscape, and the intentional mix of different school types to form the cohort of participants.

Whereas some may view these unique contextual variables as puzzles, we met them as opportunities ripe with insights and lessons to be learned. Many of the educators we worked with increasingly gained appreciation and found insights within these perceived puzzles as well. We have learned from working with educators in other high achievement settings, that with

the proper support, a strict curriculum and high stakes focus on student achievement does not necessarily restrict an educator's ability to experiment with their practice. For example, a stand-out quote from the Creating Communities of Innovation project comes from Reshmi Menon, a senior administrator at GEMS Modern Academy in Dubai. GEMS Modern Academy is an Indian curriculum school in the United Arab Emirates that is widely known for student success and achievement. Nonetheless, Reshmi shared that "curriculum is not a barrier to innovation."^{iv} In other words, even within rigid curricular structures, it is still possible to innovate without sacrificing student academic performance.^v Indeed, we found this to be the case throughout the Envisioning Innovation in Education project. Ron Ritchhart and Mark Church, authors of *The Power of Making Thinking Visible* share how the practice of thinking routines (utilized by numerous participating teachers in their inquiry projects) has consistently increased students standardized testing results, writing "This (result) is not surprising. When students are more cognitively engaged, we know that performance goes up."^{vi}

The range of schools represented in the Envisioning Innovation in Education project made this work quite distinct. Not only did we work with a mix of government schools, direct subsidy scheme (DSS) schools, and international schools, within those buckets there was also great variety. Regardless of what category each school fell into, they were all unique in their own way. Amongst the unique aspects that differentiated each school were school-specific missions, curricular goals, the populations of students served, professional development experiences for faculty and staff members, and past experiences with innovative approaches to practice. The diversity of the schools we worked with may have suggested that there would be abundant puzzles to figure out—and indeed there were some—but there was also the opportunity for abundant insights to be discovered.

One puzzle we needed to address was how to differentiate the Envisioning Innovation in Education experience for the wide range of participants we were working with, given their many different experiences as educators and the different teaching and learning environments they worked within. To address this puzzle, we made efforts to better understand the unique contexts of the different participating schools and offer support to cater to their diverse needs. This included bringing in Project Zero Practitioner Specialists in Year Two to work with different study groups in hopes of establishing closer relationships with participants. In Year Three, the virtual huddle sessions allowed innovation teams to discuss their work with the Project Zero-based team in a

more intimate and casual setting. These sessions allowed us to better understand the insights and challenges faced by our participants in their specific context, and exchange views on the different strategies and tools to support their inquiry and innovation work together.

What we found through the Envisioning Innovation in Education project—as we have learned from other projects—was that despite the different teaching and learning environments that they came from, our participating teachers were more alike than they were different. Initially some educators in the project may have questioned what they had to learn from cohort members in different school settings—and viewed the coming together of educators from so many different places with so many unique career experiences as quite the puzzle. In the end, learning from others representing a variety of school settings was acknowledged as one of the richest aspects of the Envisioning Innovation in Education experience—and one of the greatest sources of insight for our teacher partners. From our perspective, we didn't see the coming together of diverse educators from various settings as a puzzle at all. We knew from past projects that our teacher colleagues would have a great deal to learn from one another. What was a puzzle for us was how to get this unique cohort of educators to arrive at that insight. To figure that one out, we were very intentional about how we mixed and matched educators from different contexts; sometimes purposefully putting folks from widely different schools and content areas together, sometimes bringing subject area teachers together, and sometimes allowing choice—amongst several other strategies for encouraging the cross-pollination of perspectives and ideas across perceived difference.

Pivoting During the Pandemic

The Envisioning Innovation in Education project was entirely conceived and initially designed before the global COVID-19 pandemic shook the world. The constant shifts in practice from in-person learning to distance learning, to hybrid learning, back to in-person learning were an extreme challenge for the educators in the Envisioning Innovation in Education project—as they were a challenge for other educators around the world. As a project team, we were likewise challenged by the pandemic. Sometimes the need to innovate does not arise according to our plans but is thrust upon us.

A puzzle that emerged for us was how to support teachers to participate actively in the Envisioning Innovation in Education project activities while still dealing with the daily challenges of being a pandemic time educator. Experimenting with practice and participating in meaningful reflection

takes time, and the pandemic-induced challenges made it harder for teachers to devote the time and energy they would have wished to engage with the project. Even finding the time to meet for study group sessions became a challenge for some schools. Addressing this challenge prompted us to come up with a more flexible arc of experience and encourage our teacher colleagues to engage with study group sessions and materials at their own pace, and in accordance with what made the most sense for them. In addition, if responding to all of the Inquiry Cycle Guiding Questions (Toolkit Resource B2) was not feasible, we encouraged participants to upload snapshots of their work, featuring as little as a single image and 1-2 paragraph description of a moment that stood out to them from their current cycle of inquiry.

Taking a Playful and Participatory Approach to Professional Development

As we have noted previously, many educators in the Envisioning Innovation in Education project came to this work with a more traditional view of professional development—professional development that was top-down, short-term, and expert-driven in nature. Instead of over relying on lectures and PowerPoint presentations, we consistently sought to foreground a playful, interactive approach to professional learning that was hands-on and teacher-centered. The majority of tools and resources prepared through this project (see the following Toolkit chapter for more information) were designed to be engaging and participatory, rather than prescriptive. To inspire longevity and sustainability in professional learning, we also frequently gave our colleagues “permission to hack” the work that we presented to them and to make it their own, and encouraged them to consider interactive and immersive forms of sharing their work with their colleagues (for examples, see Toolkit Resource C3 Exhibition Board Sharing Guidelines and Toolkit Resource G3 Sharing Our Stories of Innovation).

Emphasizing the Value of the Process Over Immediate Results

The Envisioning Innovation in Education project has been a learning journey, and part of that journey has involved skilling up educators with new approaches to practice. This was especially true during the inquiry phase of the project, where educators were introduced to various inquiry strategies as well as an inquiry cycle structure that took some getting used to. A number of tools and resources were developed to support teachers with the process of inquiry (see Toolkit sections B-F). We also intentionally placed the Innovate phase at the end of the three-year experience. A challenge for some educators in the cohort was sustaining multiple cycles of inquiry in support of

their longitudinal inquiry focus questions. Establishing a pace for the project and slowing down became focal points for our work, which supported educators in developing deeper and more flexible insights from their inquiry projects overtime.

When process is valued as an important part of an educators' development, it creates a safe space for teachers to try new things. Change is nuanced, and it is sometimes hard to capture changing mindsets and dispositions when there is an emphasis on evaluating short term milestones. Throughout the Envisioning Innovation in Education project, we found that focusing on process over specific results involved taking opportunities to express joy, interest, and excitement as teachers' learning journeys unfolded, and supporting teachers in defining their pathways to innovation—helping them decide for themselves what success might look like.

Balancing Agency, Guidance, and Support

Finding a balance between agency, guidance, and support was another puzzle for our team. We viewed this puzzle as an inherent part of the inquiry-driven innovation process, and an opportunity for the work. In Year One, when we shared prompts and provocations for participants to try out on their own, some teachers expressed hesitation about experimenting with new tools and approaches without additional direction from us, or they hoped to hear more examples from others. Although there is room for guidance and examples from experts when engaging in innovation in education, the challenge here was empowering teachers to trust their own instincts and expertise in designing approaches that fit their unique context and defining for themselves what success might look like in their teaching environment.

This was an ongoing puzzle that we had to grapple with throughout all phases of the project. We consistently fell back on the principles of redirecting authority. Rather than positioning ourselves as the top-down authorities with the definite right answers and correct approaches to practice, we consistently elicited the cohort's thinking, asked for their input, and positioned them as thought partners. We also internally leaned into the Sweet Spot of Innovation tool from the Creating Communities of Innovation project.^{vii} Here, we were always considering the threshold for ambiguity, agency, and innovation of our various participating teachers, and adjusting our approach to the project as we went along.

A fundamental belief we upheld throughout the process was the importance of taking an asset-based approach to the work of educators. Possibilities are unleashed when teachers are seen and see themselves as capable professionals. Although novel ideas might be initially challenging to incorporate into one's teaching, all teachers are capable of engaging in thoughtful practice when given the time, freedom, autonomy, and support to do so. When teachers make small changes in some aspect of their teaching and reflect on their practice, they are already engaging in the process of innovation, and over time, this will translate into changes large and small. However, it all starts with trusting that teachers can take seeds of ideas and turn them into flourishing innovative approaches to teaching and learning.

Participants were encouraged to share their early inquiry cycle works-in-progress with teacher friends through casual conversations and in study group meetings, rather than sharing them with school colleagues at formal meetings who often hold high expectations for rapid results and impressive practice outcomes. We also encouraged educators to elaborate on surprising and promising ideas along their journeys, noticing the positive takeaways from inquiry and innovation. These strategies produced hopeful and energizing instances of principals and teachers building on each other's ideas, such as characterizing failure as an important step in both learning and innovation, focusing on the developing process over the immediate outcome, recognizing unexpected student responses as opportunities for inquiry, and celebrating how teachers moved to online learning (and back again) with more agility.

Over time, we observed the cohort's overall threshold for ambiguity, agency, and innovation increase. With repeated practice in different activities, educators developed their capacity for agency and taking authority, such as revising their individual Inquiry Focus Questions as their inquiry progressed, extending agency and authority to students for some course assignments, increasingly sharing their insights and experiments from the Envisioning Innovation in Education project with other school colleagues, being willing to examine newly offered pedagogical tools and proactively considering ways to utilize them in their learning environments, and adapting their study groups to changing needs. Our teacher colleagues increasingly demonstrated to themselves and each other that "We can do this!"

Opportunities For Future Inquiry and Innovation

Beyond generally thinking of the work of inquiry and innovation as a lifelong journey, we are left with specific questions and puzzles about what is next for this work—and what is next for the Hong Kong educational landscape.

We are always interested in adapting the work of Project Zero to new cultural, social, and political settings. The Envisioning Innovation in Education project itself extended the insights from the Creating Communities of Innovation project which worked with educators teaching within British, Indian, American, and International Baccalaureate school settings in the United Arab Emirates. And that project extended the insights of the many projects that had come before it, from teaching and learning environments that stretch around the world. This being said, we would be eager to continue to adapt the structure of the Envisioning Innovation in Education project and apply it elsewhere, to see what more may be learned.

While it is important to look across cultural contexts, it is also important to see how a given pedagogical framework may be applied across the learning spectrum. The educators and school administrators who participated in the Envisioning Innovation in Education project largely represented secondary schools. Given the importance of early childhood education, we are curious to see what may be the prospects of engaging in this work with a cohort of educators and administrators who serve our youngest learners. On the other end of the spectrum, we are curious to see what the prospects of this work may be with our colleagues in higher education. We further see potential for this work within talent development and human resources departments within professional work environments in a variety of industries, as we observe a possible connection between inquiry-driven innovation and models for entrepreneurial education and organizational development.

We noted earlier in this chapter that the Envisioning Innovation in Education project took place during the COVID-19 pandemic. It also took place during an upsurge of the Black Lives Matter movement in the United States and elsewhere in the world. This was, and continues to be, a time of protests demanding greater racial justice and equity. During the early phases of the project, our team would always include addressing issues of race and racism on our working agendas, but the item consistently got bumped to next time. We see great prospects in combining the work of the Envisioning Innovation in Education project with an explicit justice and antiracism agenda.

Likewise, foregrounding diversity, equity, inclusion, and belonging through such work would be of further interest to our project team—as we believe it would be of great value to the field of education in many different settings, including Hong Kong. While pursuing the work of reflective practice, we challenged ourselves and our participating teachers to become aware of our own identities in relation to those of our students, schools, and the various communities we inhabit.^{viii} This was hard work, and much came of it. Nonetheless, there is a greater amount of emphasis and inquiry needed in this area in K-12 schools in Hong Kong—and elsewhere in the world.

Continuing Collaborative Inquiry-driven Innovation in Hong Kong Via a Community-driven Approach

Speaking of Hong Kong, we are excited to see how this work will continue, and eager to investigate what mechanisms may be put into place to really move the needle within the Hong Kong educational landscape. For the three years that we worked with educators in Hong Kong, we have been inspired by their ability to grow and learn as individuals and as a broader community. It delights us to no end that, while this phase of the Envisioning Innovation in Education project in Hong Kong must ultimately come to a close, the educator community that we have worked with will continue forward through the *Envisioning Innovation in Education Alliance*.

In the final year of the Envisioning Innovation in Education project, the CATALYST Education Lab team engaged the teacher cohort in considering ways to maintain the momentum when the three-year project ended. This was in response to the strong desire by the cohort to explore the development of community-driven initiatives and to continue their co-learning journey and cross-pollination of ideas. The notion of the Envisioning Innovation in Education Alliance was suggested by the participants, and throughout Year Three, they collectively brainstormed with the CATALYST Education Lab team to give shape to the concept.

The Envisioning Innovation in Education Alliance was eventually formed. Consisting of eight out of the eleven original EIE Schools, the Alliance aims to:

- a. Cultivate a collaborative learning community that continues the cross-pollination of ideas and practices amongst diverse school contexts in Hong Kong;
- b. Organize professional development opportunities (such as cross-school study groups and learning community events) to support the continuation of inquiry-driven innovation for individuals and schools;

- c. Empower and equip individuals as facilitators for professional development experiences to deepen learnings from the Envisioning Innovation in Education project and extend the influence of the project to a wider community.

The EIE Alliance Fellows, representatives from the Envisioning Innovation in Education Alliance schools, have committed themselves to meet for monthly cross-school study groups to explore their shared interests in response to their school goals and emergent needs. Insights gleaned from these study group meetings are then brought back to the EIE Alliance Fellows' home teaching and learning environments in the form of school-based inquiries. The insights and ongoing inquiry of the EIE Alliance Fellows will be shared at Learning Community events where EIE Alumni and other school colleagues will also be invited to join. Inspired by the Envisioning Innovation in Education learning community events previously led by the Project Zero-based team, the EIE Alliance's Learning Community events will carry forth the spirit of inquiry-driven innovation by seeding and scaling innovative approaches to practice through professional learning experiences that are designed by educators, for educators.

Currently the Envisioning Innovation in Education Alliance is investigating the topics of Making Thinking Visible and Global Competence. Together, the EIE Alliance Fellows are exploring these topics and seek to develop strategies to incorporate them into their schools.

We know that in the months and years to come the Envisioning Innovation in Education Alliance will do great things, and we will have much to learn from them. As the Alliance finds its way and continues on its journey of inquiry-driven innovation, we encourage all educators to join them, and join us, on this continuous path forward.

Looking Forward Together

In this book, we have described our shared journey of envisioning, inquiring, and innovating within various educational spaces throughout Hong Kong. We hope this book will be a useful resource as you envision and inquire about what innovation may look like in the educational settings you are affiliated with. In the following section of the book, you will find a Toolkit with a number of resources divided into several different sections based on the Envision, Inquire, and Innovate phases of this collaborative inquiry. We invite you to explore each section and consider what tools and resources may be useful for your work.

ⁱSee, Couros, G. (2015). *The innovator's mindset: Empower learning, unleash talent, and lead a culture of creativity*. Dave Burgess Publishing, Incorporated.

ⁱⁱSee, Perkins, D. N., Jay, E., & Tishman, S. (1993). Beyond abilities: A dispositional theory of thinking. *Merrill-Palmer Quarterly*, 1-21.

ⁱⁱⁱSee Edwards, C., Gandini, L., and Forman, G. (Eds.). (2012). *The hundred languages of children: The Reggio Emilia experience in transformation* (p.58). Santa Barbara, CA.: Praeger.

^{iv}See Dawes Duraisingh, L. & Sachdeva, A. R. (2021). *Inquiry-driven innovation: A practical guide to supporting school-based change* (p. 105). Jossey-Bass: Hoboken, NJ.

^vSee Clapp, E. P., Dawes Duraisingh, L., & Sachdeva, A. R. (2020). *The creating communities of innovation toolkit for inquiry-driven innovation*. Cambridge, MA: Project Zero.

^{vi}See Ritchhart, R. & Church, M. (2020). *The power of making thinking visible: Practices to engage and empower all learners*. San Francisco, CA: Jossey-Bass. P. 16

^{vii}To learn more about the Sweet Spot of Innovation tool, visit <https://pz.harvard.edu/sites/default/files/CCI%20SSI.pdf>

^{viii}To learn more about the Envisioning Innovation in Education project's approach to reflective practice and the tools that were used to explore this inquiry process, see section F of the Toolkit.

AFTERWORD



"What does innovation look like?"—Sketch by YY Tsang

Afterword: A conversation between the Envisioning Innovation in Education Project Coordinators

By Queenie Chun Ki Hon and David Ki Chun Ng

Starting in 2020, we joined CATALYST Education Lab as Project Coordinators for the Envisioning Innovation in Education (EIE) project. In this role, we served as the primary liaisons between the Project Zero-based team and the EIE participants, offering close communication and support to the cohort on the ground in Hong Kong. We recently reflected on our experiences through a conversation, sharing our thoughts and perspectives on the work.

What were our early thoughts on the Envisioning Innovation in Education initiative and the work of Project Zero?

Queenie: I found the EIE project very unique, and much needed, in its diverse school network and emphasis on teacher agency. These were deliberate elements to show that innovation can happen in any setting, regardless of the context or availability of resources. Initially, many participants felt unfamiliar and uncomfortable with bottom-up, teacher-driven change. Our flexible stance on “innovation,” to be defined by each school, challenged us (including myself) to embrace ambiguity on what the process and outcome of innovation could look like.

David: When I first learned about the EIE project, I immediately thought of the complexities we face in the Hong Kong educational context. When implementing initiatives to promote innovation in education, professionals and stakeholders in the field cannot overlook the fact that the exam-oriented culture in Hong Kong may limit creative thought. The already heavy workload of frontline teachers further complicates the situation, leading us, within the project team, to reflect on how to carve out time and mental space to allow innovation to happen. In addition, the social climate of the past few years has made stakeholders in the field less inclined to take steps towards making changes.

Despite these challenges, there is hope. The partnership with Project Zero stimulated my wonder as to what the term “Zero” actually means, more specifically “What is the fundamental purpose of education?” 10 people might have 10 different answers, however this essential question

interestingly also allows everyone engaged in this EIE journey to reflect on what do I and we “envision,” then “inquire” together and further take action to “innovate.”

What were some challenges and opportunities posed by this project?

Queenie: The timing of the project certainly brought forth challenges, as well as opportunities, for innovation. Participants were not shy to identify time constraints—whether posed by curriculum demands or pandemic restrictions—as barriers to experiment for innovation.

David: Besides everyone needing time to adjust and warm up, there have been quite a few unexpected events in the past few years. The impact of COVID-19 has been significant, many in-person activities were canceled. However, we all managed to turn this challenge into an opportunity. For example, we explored hybrid modes of experiential professional development events. While the Project Zero team joined and led sessions remotely, our local team took responsibility for on-site facilitation. This innovative approach allowed us to adapt to the constraints of the pandemic and continue our work in a new and engaging way.

Queenie: Participants took risks to experiment under these uncertainties. Over time, they learnt that trial and error was part and parcel of the innovation process. They became more comfortable in taking calculated risks. Of course, the challenges of accountability to multiple stakeholders, high staff turnover, and curriculum reforms remained. Hong Kong is an academically competitive city. Not only are teachers accountable for student performance, parents also expect more familiar ways of teaching and learning for their children. When teachers experiment, new practices that deviate from what parents are familiar with may trigger concern and resistance. This adds to teachers’ stress and fear of innovation. Nevertheless, it was powerful to witness participants’ eagerness for feedback and iteration, and their courage to continually try, share, and revise. These experiences stretched their threshold for change and fostered their innovator mindset.

David: Another great example in response to staff turnover is how Marymount Secondary School introduced a co-learning space to provide support to newly employed staff, while Logos Academy expanded the learning circle to include more colleagues, enabling them to share insights and experiment with new practices. These challenges prompted our participants to actively create a collaborative environment for co-learning and co-exploration. In the end, participants found that new practices could be sustained through this engagement.

What surprises or changes did you observe in the cohort?

Queenie: Initially, participants' personal learning reflections were often missing in their inquiry process. Specifically, educators would share what they did, how their students responded and what students learnt. To uncover participants' own reflections on the experience, I would prompt, "and what did *you* learn?" At the end of the project, I shared this observation with several participants. They were surprised to hear of their natural inclination to prioritize students while overlooking themselves as learners. Three years on, the cohort now actively shares their reflections and insights with others. This shift is significant, because when teachers are consciously aware of their own learning, that learning trickles down to students.

David: I totally agree, and I truly appreciate how educators in Hong Kong have consistently prioritized their students, especially during the pandemic. Their care for their students was demonstrated in how they adjusted lesson plans and schedules for learning from home, always with the best interest of the students in mind. However, I also believe that educators should not overlook their own well-being and professional learning. As you have also mentioned, the responsibility for teaching and learning should not be solely placed on the shoulders of teachers. Students should be encouraged to take more responsibility for their own learning. I can see our cohort has been trying to shift the learning authority to students in the EIE journey, scaffolding students to own their learning. Meanwhile, our cohort also had a mindset shift of viewing themselves as learners too, allowing room for collaboration and co-learning with their students and colleagues. This balanced approach can foster a more supportive, engaging, and sustainable educational environment.

Queenie: Participants' mindsets and practice with collaborative inquiry shifted from apprehension (e.g., "I don't know enough about my colleague's domain to give feedback") to confidence and appreciation for diverse ideas and connections. The different perspectives pushed them to uncover biases and blind spots, which inspired new approaches.

How have we applied EIE tools & strategies in our work?

Queenie: As a learning organization, we adopted EIE tools that enhanced our team's internal working culture and participant-facing experiences. Documentation, including structures such as *Story of Learning and Exhibition Boards*, has been adopted to effectively capture and disseminate insights and puzzles for further exploration. Protocols such as *Appreciate, Wonder, Suggest* have

been used to promote collective learning and meaningful dialogue, ensuring that everyone leaves with ideas and direction for next steps.

David: I am particularly impressed by the simple innovation steps of the *Try, Share, Revise* innovation cycle, which encourages starting small, even taking baby steps, to initiate improvement. By continuously engaging in the innovation cycle, it can lead to refined interventions and potentially creating a ripple effect that spreads influence. It brings to mind the school slogan of Salesians of Don Bosco Ng Siu Mui Secondary School: “Dream big, start small, and act now.” By beginning with small steps, the process doesn’t become overwhelming, and it allows us to see what works and what doesn’t. It’s practical, inspiring, and aligns well with the spirit of innovation.

Queenie: Reflective practice reminds us to examine our values and assumptions, enabling us to make more informed decisions about the design of our work. One of my favorite frameworks is Teaching for Understanding, which prompts us to constantly re-evaluate our priorities and revisit our overarching goals and objectives, ensuring alignment between our organization’s mission and daily work.

David: I was also amazed by the storytelling moments prepared by our participants during our final learning community event. They designed interactive sessions with elements such as role play, interactive games, Q&A sessions, and storyboard sharing, allowing their colleagues to experience their innovation journey. This narrative approach supports our participants in sharing not only the outcomes of their innovations, but also the process of their learning experiences. It is clear that this method of storytelling can be a powerful tool in the field of education, fostering deeper interaction and the exchange of ideas. It’s something that is worth further promotion within our educational community.

How does this experience inform the future of work at CATALYST Education Lab and your work within the wider Hong Kong community?

Queenie and David: We advocate for facilitating communities of practice to drive innovation. Through collaborative inquiry, educators learn as equals, valuing diverse perspectives from cross-subject and cross-school connections. Empowering educators at all levels promotes distributed leadership and teacher agency, which inspires professional growth, creativity, and forward-thinking approaches. By transforming schools into cultures of learning for both students and educators, we can achieve innovation in education.

THE ENVISIONING INNOVATION
IN EDUCATION TOOLKIT:
FRAMEWORKS, TOOLS, AND
RESOURCES



"What does Innovation look like?"—Sketch by Alvin Wong

The Envisioning Innovation in Education Toolkit: Frameworks, Tools, and Resources

Throughout the Envisioning Innovation in Education process, we introduced our participating educators to an array of pedagogical tools and resources to support them on their learning journeys. In this toolkit we provide a number of tools and resources that were offered to our teacher colleagues through the Envisioning Innovation in Education project—which we hope will also be useful to you as you pursue inquiry-driven innovation in your educational setting. Many resources have been developed over the 55+ year history of Project Zero, and others have been developed or adapted specifically for the Envisioning Innovation in Education project.

This toolkit is divided into several different sections based on the inquiry and innovation process. We invite you to explore each section and consider what tools and resources may be useful for the current phase of your innovation project work (even if it's just starting), or to support an inquiry strategy (documentation, looking at student work, slow looking, or reflective practice) in your educational setting. Thinking routines (a set of questions or a brief sequence of steps used to scaffold thinking) are referenced throughout this guide to support student learning and inquiry strategies.

Feel free to get to know many of these tools and resources over time, rather than reading them all in one sitting. To help you navigate the tools and resources in this chapter, we have provided the following overview:

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

A. Framing Understanding, Agency, and Play

A1. The Teaching for Understanding Framework

The Teaching for Understanding framework supports educators in taking students beyond the simple memorization of facts to being able to apply knowledge flexibly in unfamiliar contexts

A2. Agency by Design Framework

The Agency by Design Framework for maker-centered learning focuses on cultivating a sensitivity to design, and a capacity to shape one's world through building, tinkering, re/designing, and hacking

A3. Pedagogy of Play Framework

A framework for supporting playful learning through exploring the unknown, leading learning, and finding joy

B. Envisioning and Commencing an Inquiry Project

B1. Inquiry Focus Guidelines

Guidelines for crafting an inquiry focus

B2. Inquiry Cycle Guiding Questions

Guiding questions to support *Try, Share, Revise* inquiry cycles

B3. Dreaming Systemically

A tool for taking a systems-based approach to innovation in education

B4. Population, Innovation, Outcome

A tool for considering change of practice and the populations involved in that practice

B5. Where are the Pirates?

A tool for introducing the unexpected, inspiring curiosity, and sparking student and teacher wonder

B6. Surface a Wonder, Follow a Wonder

A tool for supporting curiosity through student-centered-learning

B7. Constructing Complex Concepts

A tool for articulating and discussing complex phenomena

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

C. Documentation (Inquiry Strategy)

C1. What is Documentation?

A brief introduction to documentation as an inquiry strategy

C2. 10 Cent Design Challenge

An activity for practicing and reflecting on the process of documentation

C3. Exhibition Board Sharing Guidelines and Template

A process for sharing documentation from recent inquiry cycle(s)

D. Slow Looking (Inquiry Strategy)

D1. What is slow looking?

A brief introduction to slow looking as an inquiry strategy

D2. Take Apart

A practice for looking closely and exploring complexity

D3. Observational Drawing

An activity to support looking closely at an object

D4. Thinking Routines that Provide Opportunities for Slow Looking

Units, Functions, Objectives (UFO)

A thinking routine for looking closely and considering innovations

Parts, Purposes, Complexities

A thinking routine for exploring the purposes and complexities within an object or system

Looking Ten Times Two

A thinking routine for making careful observations about images, visual art, or objects

See, Think, Wonder

A thinking routine for making loose and thoughtful observations and stimulating curiosity

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

E. Looking at Teacher and Student Work (Inquiry Strategy)

E1. Why Look at Student and Teacher Work Together?

A brief introduction to looking at student work and teacher work as an inquiry strategy

E2. Collaborative Assessment Conference

A protocol for looking closely, asking questions, and sharing ideas about student work

E3. Wishes, Challenges, Opportunities

A tool for considering inspirations, opportunities, and challenges

E4. Feedback Protocols to Support Looking at Teacher and Student Work



A feedback protocol for sharing generative support and new ideas

Appreciate, Wonder, Suggest

A tool for offering positive feedback within professional learning community experiences

F. Reflective Practice (Inquiry Strategy)

F1. What is Reflective Practice?

A brief introduction to reflective practice as an inquiry strategy

F2. Surfacing Our Identities to Understand Our Subjectivity (The Subjectivity Specs Activity)

An activity for unpacking our identities and perspectives

F3. Thinking Routines to Support Reflective Practice

See, Think, Me, We

A thinking routine for connecting oneself to the bigger picture

Parts, Perspectives, Me

A thinking routine for exploring the complexity of objects, systems, and perspectives

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

G. Sustaining Inquiry and Sharing Innovations

G1. Thinking Routines for Reflecting on the Current Progress and Direction of Inquiry Project Work

I used to think, Now I think, Now I'd like to...

A thinking routine for reflecting on how one's thinking has changed during the inquiry process and envisioning next steps

Think, Puzzle, Explore

A thinking routine that sets the stage for deeper inquiry

Compass Points

A thinking routine for examining propositions

G2. Making Connections and Extending our Reach (The Octopus Activity)

An activity for making connections and extending the reach of our inquiry projects

G3. Sharing Our Stories of Innovation

Activities to support the crafting and sharing of learning journey stories

Other Project Zero frameworks EIE educators often drew inspiration from include:

The Making Thinking Visible and Cultures of Thinking Projects

Project Site: <https://pz.harvard.edu/projects/cultures-of-thinking>

Books: *Making Thinking Visible* (Ritchhart et. al, 2011), *The Power of Making Thinking Visible* (Ritchhart & Church, 2020), *Creating Cultures of Thinking* (Ritchhart, 2015), *Cultures of Thinking in Action* (Ritchhart, 2023)

Making Learning Visible

Project Site: <https://pz.harvard.edu/projects/making-learning-visible>

Book: *Visible Learners: Promoting Reggio-Inspired Approaches in All Schools* (Krechevsky et. al, 2013)

Creating Communities of Innovation

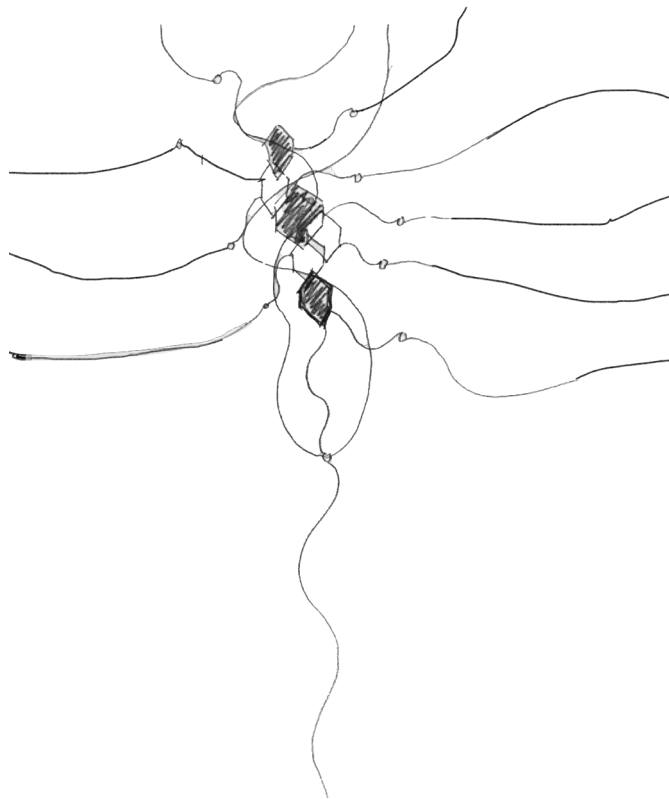
Project Site: <https://pz.harvard.edu/projects/creating-communities-of-innovation>

Book: *Inquiry-Driven Innovation* (Dawes Duraisingh & Sachdeva, 2021)

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION A

FRAMING UNDERSTANDING, AGENCY, AND PLAY



"What does Innovation look like?—Sketch by Kiki Kung

A1. The Teaching for Understanding Framework

The Teaching for Understanding framework supports educators in taking students beyond the simple memorization of facts to being able to apply knowledge flexibly in unfamiliar contexts.

In the book *Teaching for Understanding*,ⁱ Project Zero researcher, David Perkins explores the question, “What is understanding?” Perkins shares:

Understanding is the ability to think and act flexibly with what one knows. To put it another way, an understanding of a topic is a “flexible performance capability” with emphasis on the flexibility. In keeping with this, learning for understanding is like learning a flexible performance—more like learning to improvise jazz or hold a good conversation or rock climb than learning the multiplication table or the dates of the president or that $F=MA$. Learning facts can be a crucial backdrop to learning for understanding, but learning facts is not learning for understanding.

Teaching for Understanding is an approach to designing curriculum, instruction, and assessment that goes beyond the simple acquisition of information to help students develop transferable knowledge and skills that they can apply in situations and contexts they have never encountered before.ⁱⁱ

The Teaching for Understanding framework, developed through collaborative research with practitioners, raises four key questions to pursue in the design and facilitation of learning experiences:

1. Generative Topics: What topics are most important for my students to understand?
2. Understanding Goals: What about these topics needs to be understood?
3. Performances of Understanding: What kinds of learning experiences will best help students develop and use understanding flexibly and thoughtfully?
4. Ongoing Assessment: How will I (and my students) know how well and how much they have understood?

Consistently pursuing these key questions during the design and facilitation of learning experiences guides students and educators towards pursuing deep, lasting, and useful learning.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

A2. The Agency by Design Framework

The Agency by Design Framework for maker-centered learning focuses on cultivating a sensitivity to design, and capacity to shape one’s world through building, tinkering, re/designing, and hacking.

The Agency by Design framework for maker-centered learning was developed as part of a multi-year Project Zero study of the promises, practices, and pedagogies of maker-centered learning.ⁱⁱⁱ Originally conducted with a cohort of educators in Oakland, California, the Agency by Design project has now expanded to include a global community of practice.

For as long as humans have stood up on two legs and walked forward, we as a species have always been makers. Making is ingrained into the human experience. Nonetheless, far too many models for teaching and learning rely on a stand and deliver approach to education that leaves little room for making. Maker-centered learning attempts to leverage our natural inclination for making by foregrounding making in the classroom. Maker-centered learning can be simply described as *learning centered on making*.

There are two core concepts that undergird the Agency by Design framework for maker-centered learning: maker empowerment and sensitivity to design.

The Agency by Design research team identified agency as the core outcome of maker-centered learning. While agency may be loosely understood as being empowered to effect change through one’s actions,^{iv} the team coined the term maker empowerment to describe agency seen through the lens of making. Maker empowerment can be defined as a *sensitivity to the designed dimension of objects and systems along with the inclination and capacity to shape one’s world through building, tinkering, re/designing or hacking*.

The research team identified having a sensitivity to design as being an elemental part of maker empowerment. Sensitivity to design can be defined as *learning to notice and engage with one’s physical and conceptual environment by looking closely and reflecting on the design of objects and systems, exploring the complexity of design, and finding opportunity to make objects and systems more effective, efficient, ethical, beautiful, or _____*.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

While maker empowerment and sensitivity to design are dispositions that are meant to be nurtured over time, the team further developed three more tangible and teachable maker capacities to support these dispositions: looking closely, exploring complexity, and finding opportunity. Simply stated, by looking closely at the design of objects and systems, one may explore the complexity of design, by exploring complexity, one may find opportunity to effect change. A suite of making moves and indicators has been developed to support each of these maker capacities.



In addition to the two core concepts of maker empowerment and sensitivity to design, maker-centered learning also highlights the importance of systems thinking, empathy and perspective taking, cultural participation, and addressing issues of power and representation. More than three dozen teacher tested tools have been developed to support the Agency *by* Design framework for maker-centered learning.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

A3. The Pedagogy of Play Framework

A framework for supporting playful learning through exploring the unknown, leading learning, and finding joy

The Pedagogy of Play (PoP) framework represents a multi-year study of playful learning in four contexts.⁹ Educators and staff at schools in Denmark, South Africa, Colombia, and the United States engaged in collaborative inquiry with the Project Zero Pedagogy of Play research team to investigate the guiding questions: Why do educators need a pedagogy of play? What does playful learning look and feel like? and How can educators promote playful learning?

Educators have been drawn to three fundamental Pedagogy of Play ideas regarding playful learning, that learning should include wonder, choice, and delight. Including these playful elements in a discussion on playful learning reflects the aspects of the pedagogy that many teachers gravitate towards and choose to incorporate in their teaching. How then can teachers provide wonder, choice, and delight in their teaching?

The Pedagogy of Play framework offers six core principles to address the questions, *Why playful learning?*

1. Play supports learning.
2. Playful learning in school requires play with a purpose.
3. Paradoxes between play and school add complexity to teaching and learning.
4. Playful learning is universal yet shaped by culture.
5. Playful mindsets are central to playful learning.
6. Supportive school cultures enable playful learning to thrive.

The framework then explores what playful learning looks and sounds like. According to the researchers, playful learning takes place when a learner is

- Leading learning—“exercising choice, ownership, empowerment, and autonomy in their learning”
- Exploring the unknown—“experiencing wonder, curiosity, and learning that is meaningful”

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

- Finding joy—“experiencing feelings of delight and enjoyment”

The framework presents cross-cultural indicators of playful learning, a generalized view of what playful learning looks and sounds like in the four diverse settings, the International School of Billund in Denmark, three schools in Johannesburg, South Africa, five schools in Bogota, Colombia, and six schools in Boston, MA. According to the researchers, “We do not claim that the cross-cultural indicators are universal. Rather, they synthesize commonalities across four cultural contexts.”

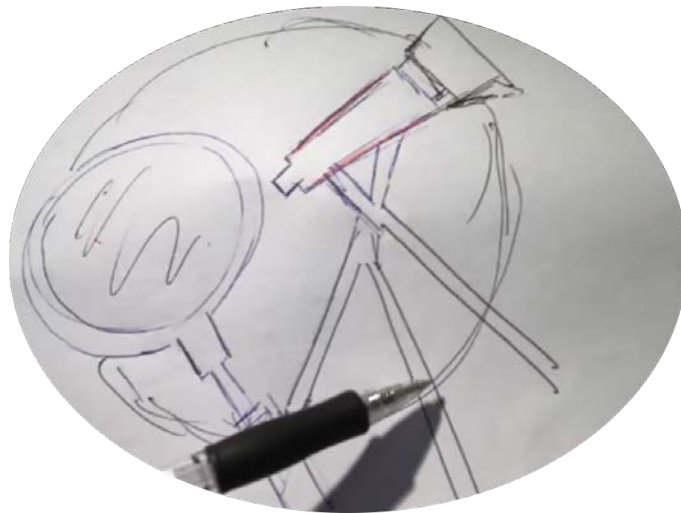
The Pedagogy of Play framework offers practices and tools that *support playful learning* in the classroom and support the development of a culture of playful learning in school. These include practices that “empower learners to lead their own learning, to build a culture of collaborative learning, promote experimentation and risk-taking, encourage imaginative thinking, and welcome all emotions generated through play.”

The Pedagogy of Play framework also offers the welcoming concept of “more than one way.” There is more than one way to approach and support playful learning in your educational context. The Pedagogy of Play framework invites you to explore and experience the meaning and joy of playful learning in your own context and to find *your own way* to support learners through playful learning.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION B

TOOLS AND RESOURCES FOR
ENVISIONING AND COMMENCING
AN INQUIRY PROJECT



"What does innovation look like?"—Sketch by Rupert Chiu

B1. Inquiry Focus Guidelines^{vi}

Guidelines for crafting an inquiry focus

An *inquiry focus* is a question or area of growth an educator is pursuing through a process of experimenting with new approaches to practice over time. Inquiry focus questions should be both grounded in practice and inherently interesting to an educator.

Inquiry focus questions are meant to drive educators' work during longitudinal inquiry projects. An inquiry focus question can help you to narrow down the types of changes in practice you would like to try out in the system you have identified. While it is important to establish a strong inquiry focus question early on, it is expected that an inquiry focus question will evolve over time. Many educators, successful in developing their practice through inquiry driven innovation, will find ways to continue to inquire and learn through multiple inquiry cycles across units and terms. To articulate an initial inquiry focus question, (1) reflect on what you have learned through earlier explorations with your practice within the system you have identified (this may also be the start of an entirely new exploration for you), (2) ask "what challenges and opportunities are surfacing as potential areas for innovation within my teaching and learning environment?" (3) if it is helpful, make a list of challenges and opportunities and related questions that arise based on your experiences so far, (4) then select one question you might pursue, and consider sharing with your colleagues to gain their feedback.

If working as a study group that would like to select a shared question, you can generate a list of challenges and opportunities and related questions, and then work as a group to narrow down to a single shared question to explore as a group.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

What Makes a Good Inquiry Focus Question?

Some ideas on what makes a good inquiry focus question include the following. A good inquiry focus question is...

Interesting and personally meaningful.

A matter of consequence for a broader community of practitioners.

Researchable, you can collect data or documentation to learn more about it.

Poses a problem or adds a new spin to an existing problem.

Contains specifics and is not overly vague.

Invites deeper inquiry and is not easily answered with a yes or no answer or quick Internet search.

Encourages (or at least leaves the door open to) trying out new practices, strategies, resources, or tools.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B2. Inquiry Cycle Guiding Questions

Guiding questions to support *Try, Share, Revise* inquiry cycles

The facilitation of inquiry projects is built on the *Try, Share, Revise* inquiry cycle, where educators are encouraged to:

- *Try*—Facilitate learning experiences to support their inquiry.
- *Share*—Examine documentation generated from the learning experiences with a small group of colleagues interested in inquiry-driven innovation. What did the experience look like? What might the teacher and students have learned through the experiences?
- *Revise*—Reflect on how the experiences you facilitated have informed your inquiry, and what you would like to do next to continue your inquiry.

The following questions are designed to support educators through a single cycle of *Try, Share, Revise*. We encourage you to revisit these questions over time as you engage in multiple inquiry cycles in pursuit of an inquiry focus question.

I. Framing Your Inquiry (As you prepare to facilitate learning experiences to support your inquiry):

Frame your inquiry by sharing your Inquiry Focus Question for the coming few weeks. In sharing your inquiry—please respond to the following items:

- a. *Inquiry Focus*: What is your current inquiry focus question, and what do you want to learn about yourself, your students, your teaching and learning context, or your curriculum by exploring this question? Have any additional related sub-question(s) emerged as a result of your continued inquiry process?
- b. *Initial Experience(s)*: In 2-4 sentences, please describe an initial learning experience(s) you may facilitate to support your inquiry.
- c. *Inquiry Strategy*: List one or more of the Envisioning Innovation in Education focal inquiry strategies (documentation, reflective practice, slow looking, looking at student work) that you

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

hope to explore in the weeks ahead (See the introductions and related tools for each inquiry strategies in the following sections of this toolkit). In 2-4 sentences, describe how you plan to use this strategy to support your inquiry.

II. Looking Back and Planning Forward (After facilitating learning experiences associated with your inquiry):

Please take this opportunity to reflect upon your inquiry process from the last few weeks. In doing so, please respond to the following items:^{vii}

- a. *What did you do?* In 2-4 sentences, describe the learning experience or unit associated with this inquiry. In an additional 2-3 sentences, describe how you incorporated an inquiry process (documentation, reflective practice, slow looking, looking at student work) into your practice in pursuit of further understanding regarding your inquiry focus question. Be sure to include the date of the experience you are describing.
- b. *What did it look like?* Share some documentation (e.g., photos, video, audio, student work, etc.) that illustrate what this inquiry into your practice looked like.
- c. *What did you learn?* In 2-4 sentences, describe one or more things you learned by engaging in this process of inquiry. How, if at all, has what you learned from this experiment affected what you would do differently if you were to lead this same activity again.
- d. *What did your students learn?* In 2-3 sentences, describe one or more things your students may have learned when you engaged in this process of inquiry.
- e. *Informing your inquiry?* In 2-3 sentences, describe how what you and your students may have learned from this inquiry has informed what you understand about your inquiry focus question. Have any sub-questions emerged?
- f. *What will you do next?* Now take a moment to think about what you will do next. Based on the learning experience you just documented, what is the next inquiry experience you'll be experimenting with in your classroom?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B3. Dreaming Systemically

A tool for taking a systems-based approach to innovation in education

The argument can be made that changes to pedagogical practice do not occur in isolation. Educational innovations—whether big or small—are always situated within broader systems. The purpose of this tool is to support educators in *dreaming systemically* about innovation by taking a systems-based approach to experimenting with their classroom practice.

Many tools and materials have already been developed to support systems thinking in education. Rather than introduce a wholly new resource, this tool serves as a collection of resources that are each designed to support a systems-based approach to innovative teaching and learning. The steps below each reference one or more tools that educators and administrators may use to dream systemically about educational innovation. Though presented in a linear sequence, these steps can be re-mixed, re-organized, and returned to in any way that makes the most sense for you (thinking routines referenced throughout this tool are available online at Project Zero's Thinking Routine Toolbox: <https://pz.harvard.edu/thinking-routines>).

1. To begin, identify a system that you would like to focus on in your practice.

The system you focus on can be big or small—or anywhere in between. A system may be a particular lesson, a sequence of lessons, a unit in your curriculum, a school policy, or the entire structure of a school. Whatever the size of your system, just be sure to place boundaries around it so that you don't go down the messy path of everything-is-connected-to-everything.

2. What are the various parts of your system, and who are the people involved in your system?

You can begin to look closely and explore the complexity of your system by making a list of all of the parts of your system, as well as a list of all of the people involved in your system. To do this work, consider using the *Parts, People, Interactions* thinking routine.

3. What is at stake for the various people in your system? What do the various people in your system think, feel, and care about?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Look more closely at the various stakeholders in your system—and consider exploring the complexity of their diverse perspectives. To do this work, consider using the *Think, Feel, Care* thinking routine, the *Circle of Viewpoints* thinking routine, the *Step Inside* thinking routine, or the *People, Systems, Power, Participation* thinking routine.

4. What role(s) do you play in your system? How do you participate in your system?

It is important to recognize that you are not separate from the system you hope to change, but rather you participate in it by playing one or more roles. To consider what roles you play in your system and how your participation matters, consider using the *Parts, Perspectives, Me* thinking routine, or the *People, Systems, Power, Participation* thinking routine.

5. What role does power or policy play in your system?

Power and policy (and politics!) are always at play within any given system. You can begin to explore the roles that power and policy play in your system by once again using the *People, Systems, Power, Participation* thinking routine.

6. What are the opportunities for change within your system?

Once you have looked closely and explored the complexity of your system from several angles, you can begin to find opportunities to institute change from a more informed perspective. This is where you can dream about the possibilities. Try to be expansive in your thinking; What is the change that you would like to see, even if you don't see a clear path forward yet? To do this work, consider using the *Imagine if...* thinking routine.

7. What might change look like?

Having identified opportunities for change in your system, you can now dream up and envision what that change might look like. To do this work, consider developing a mind map, sketching out your thoughts, free writing, building a 3D model, or roleplaying a scene with colleagues or friends—anything to embody the change you hope to bring about in your system. To do this work, consider using the *Constructing Complex Concepts* (Toolkit Resource B7), *Mapping Systems*, or *Playing Around with Roles* tools.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

8. *What is the optimal threshold for change in your system?*

Change within a system is unlikely to stick if it is either too little—or too extreme. Once you have identified opportunities for change within your system, consider what the scope of that change might be. To do this work, consider using the *Sweet Spot of Innovation* tool.

As you move through these steps for dreaming systemically about innovation, consider what more you need to know about your teaching and learning environment, your students, or other stakeholders in your system. Also consider how you might move from establishing a big vision for change in your system to a first experiment you might do to bring about that vision.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B4. Population, Innovation, Outcome^{viii}

A tool for considering change of practice and the populations involved in that practice

When developing an innovation strategy for your school or community, it is helpful to consider who you would like to impact, and what goals or objectives you have for working with this community. The following tool is designed to help teachers and administrators begin developing innovation strategies by considering the populations they would like to impact and their goals and objectives for working with this community.

Divide a sheet of chart paper into three columns. Place the headings Population, Innovation, Outcome(s) at the top of each column, in that order. Then respond to the following questions, in the following order.

Population: Who are the people you most hope to impact by pursuing your innovation (be specific)?

Outcomes: What specific change(s) would you like your target population to experience as a result of your innovation (be specific)?

Innovation: How can you change your practice to achieve your intended outcome(s) for your target population? What strategies can you employ to achieve your desired outcome(s) for your intended audience?

Once you have established the population you would like to focus on, the innovations you would like to pursue, and the outcome(s) you hope to achieve, work with your study group members to develop a plan to put the innovation you identified into action.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B5. Where are the Pirates?

A tool for introducing the unexpected, inspiring curiosity, and sparking student and teacher wonder

Imagine this scenario: During a lesson about economics and trade in Hong Kong, a teacher is conveying information to her students in a fairly traditional stand-and-deliver manner. As a result, her students' interest and attention—not to mention their enthusiasm for the content—are waning. Then, in a slight departure from the prescribed curriculum, the teacher notes that during the 18th and 19th centuries, pirates disrupted trade in the region and had an impact on the Hong Kong economy. All of a sudden, ears perk up and eyes open wider. One student's hand raises into the air. The teacher calls on him. "Were there really pirates in Hong Kong?" the student asks.

Where are the Pirates? is a strategy for introducing the unexpected and inspiring student curiosity. This pedagogical strategy prompts teachers to always be looking for the pirates in their curriculum. Not necessarily real pirates, of course, but elements of surprise that will spark student wonder. *Where are the pirates?* can also be re-imagined as *Where are the dinosaurs?* *Where are the robots?* or *Where are the (insert names of the pop stars/sports icons of the moment)?* What this strategy attempts to do is to serve as a reminder to educators that as they are delivering their content in their classrooms, they should always be looking for a means to connect to their students' interests and spark wonder. They should further be on the lookout for opportunities to spark a renewed sense of personal interest in their course content and teaching practice. Finding the pirates in one's discipline is just as much about sparking curiosity and wonder for oneself, as it is about sparking curiosity and wonder for one's students.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

The *Where are the Pirates?* strategy can be enacted by engaging in the following steps:

Step One: Set Your Learning Goals

- Ask: *What are my understanding goals for my students?*

The *Where are the Pirates?* tool has been designed to inspire curiosity, spark wonder, and foster student agency, but it is also meant to support you in meeting your curricular goals. To set your understanding goals, you may want to articulate in advance what you want your students to think, know, or be able to do as a result of experiencing the piratical pedagogical intervention you are planning to implement. For more support on establishing an understanding goal, be sure to review the *Teaching for Understanding* framework (available in section A of this toolkit).

- Ask: *What are my deeper learning goals?*

In addition to the curricular goals you hope to achieve through your *Where are the Pirates?* intervention, you'll likely also have a variety of non-curricular—or deeper learning—goals. Such goals may include inspiring curiosity and sparking wonder, as well as supporting individual and collective agency (as has been mentioned throughout this book), but they may also include other deeper learning goals, like fostering creativity, encouraging perspective taking and empathy, or supporting global and/or cultural competence.

- Ask: *What professional goals do I have for myself?*

Consider the areas of growth you would like to pursue as an educator, as a professional within your content area, or as an expert within your field. You may also consider how you would like to push yourself professionally on any of these levels. It may be useful to think in terms of the short-term, mid-term, or long-term visions you have for yourself as an educational professional.

Step Two: Know Your Students, Know Yourself

- Ask: *Who are my students, and what are their interests?*

When considering your students and their interests, it is important to understand who the young people in your classroom are and where they are coming from. It may be helpful to think of your

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

students as a group, as a set of several groups, or as individuals with differing interests. Beyond giving it your best guess (and to avoid the practices of essentializing, othering, and resorting to stereotypes), in order to find out more about your students and their interests you may consider using the *Think, Feel, Care* thinking routine, the *Step Inside* thinking routine, the *Circle of Viewpoints* thinking routine, or the *Interviewing Strategies* tool.^{ix}

- Ask: *Who am I, and what are my interests?*

While making an effort to fully know and understand the perspectives of your students and where their interests may lie, take a reflexive approach to this same process as well. Consider who you are, what excites you about being an educator, what excites you about the content you teach, and what other interests do you have that may be applicable to your work in the classroom.

Step Three: Find the Hook

- Ask: *What is the hook or the lure within my curriculum that will tap my students' interests (and my own interests), inspire their curiosity, spark wonder, and draw them in?*

This is where you look for the pirates! Finding the hook involves going deep into your content to see where there may be elements of surprise that will inspire curiosity and spark wonder for yourself and your students. This may involve peeling back the layers of your curriculum to unearth those interesting obscurities, fun facts, or fruitful tangents that are deep in the history of your discipline—or culturally specific to the population of students in your classroom, or geographically specific to the region of the world where you teach. Finding the hook may further involve tapping into popular culture or current events.

Step Four: Give it a Go!

- Act: *Place your ideas for inserting the unexpected in your curriculum into action.*

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Once you are ready, decide upon an intervention to introduce into your practice—and give it a go! Be sure to keep your feet firmly grounded in your curriculum, while at the same time following your students' interests. Be sure to likewise keep your eyes set on both your understanding goals and your deeper learning goals. Expect that things will not always go according to plan, and have a sense of humor about it all while you experiment, learn, and adjust.

What kind of thinking and learning does the *Where Are the Pirates?* strategy support?

By leveraging the power of surprise and the unexpected within one's curriculum—while at the same time being intentional about tapping students' and teachers' interests—the *Where are the Pirates?* strategy supports curiosity, wonder, and student-centered learning. It further encourages individual and collective agency, as students are prompted to follow their own interests. Additionally, it supports teacher agency, as educators are encouraged to follow the items they are most interested in within their discipline, as opposed to following the script.

Connections and Extensions

To extend the curiosity, wonder, and student agency that this pedagogical strategy promotes, the *Where are the Pirates?* strategy may be paired with the *Think, Puzzle, Explore* thinking routine, or with the *Surface a Wonder, Follow a Wonder* (see Toolkit Resource B6) pedagogical tool to further support student and teacher interest and self-exploration.^x

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B6. Surface a Wonder, Follow a Wonder^{xi}

A tool for supporting curiosity through student-centered learning

This pedagogical strategy prompts students to look for things that are interesting—things they wonder about—within their school content areas, and then to go deeper with their wondering. Once wonders surface in the classroom, the *Surface a Wonder, Follow a Wonder* strategy then prompts educators to follow their students' interests—and to let their students' curiosity lead the way.

1. While exploring a topic in your curriculum, pause to ask students the following questions: *What do we know about this topic? and What big questions do we have about this topic—What does this topic make us wonder about?*
2. *Which of these wonders are we most curious about?*
3. *Why are we interested in these particular wonders? What are we hoping to learn or understand by surfacing these wonders?*
4. *How might we follow these wonders further?*

Surface a Wonder, Follow a Wonder can be used to support curiosity and deeper learning in the classroom. Providing students with the opportunity to surface and explore the wonders they are most curious about—while establishing their own approach to inquiry—is a means of taking a student-centered approach to learning and fostering individual and collective agency. The *Surface a Wonder, Follow a Wonder* tool may be complemented by the *Think, Puzzle, Explore* thinking routine from Project Zero's Visible Thinking project.^{xii}

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

B7. Constructing Complex Concepts

A tool for articulating and discussing complex phenomena

When addressing complex words or concepts, conversations may be helpful, but sometimes it is useful to express complex ideas by working with materials. The *Constructing Complex Concepts* activity has been designed for small groups to explore complex phenomena by working with materials in a constructive way. This activity may be used at the beginning of a unit of study or when introducing a new phenomenon. You may also return to this activity at a later point in a unit of study, exploring the ways that participants' understanding of a word or concept evolves over time.

Think and Construct

Working in small groups, have each group member individually use materials (e.g., clay, cardboard, LEGO bricks, etc.) to construct a three-dimensional representation of their understanding of a complex word or concept.

Interpret and Discuss

Once everyone has constructed their understanding of the word or concept you are exploring, spend time looking at each person's structure. First, make interpretative guesses as to what the various components of a particular structure are saying about that person's understanding of the word or concept under review. Next, have that person reveal their understanding of the word or concept under review by describing their design choices. After engaging in this process with one person's construction, move onto the next.

Build a Shared Understanding

Now working collectively as a small group, combine each individual member's construction to develop a shared understanding of the word or concept you are exploring. You may also start from scratch, leaving the individual structures intact, and building a new shared understanding of the word or concept you are exploring.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Document, Share, Reflect

Be sure to document your constructions to share with others or to reflect on later to show the evolution of participants' thinking.

SECTION C

TOOLS AND RESOURCES TO SUPPORT DOCUMENTATION (INQUIRY STRATEGY)



"What does innovation look like?"—Sketch by Gary Wan

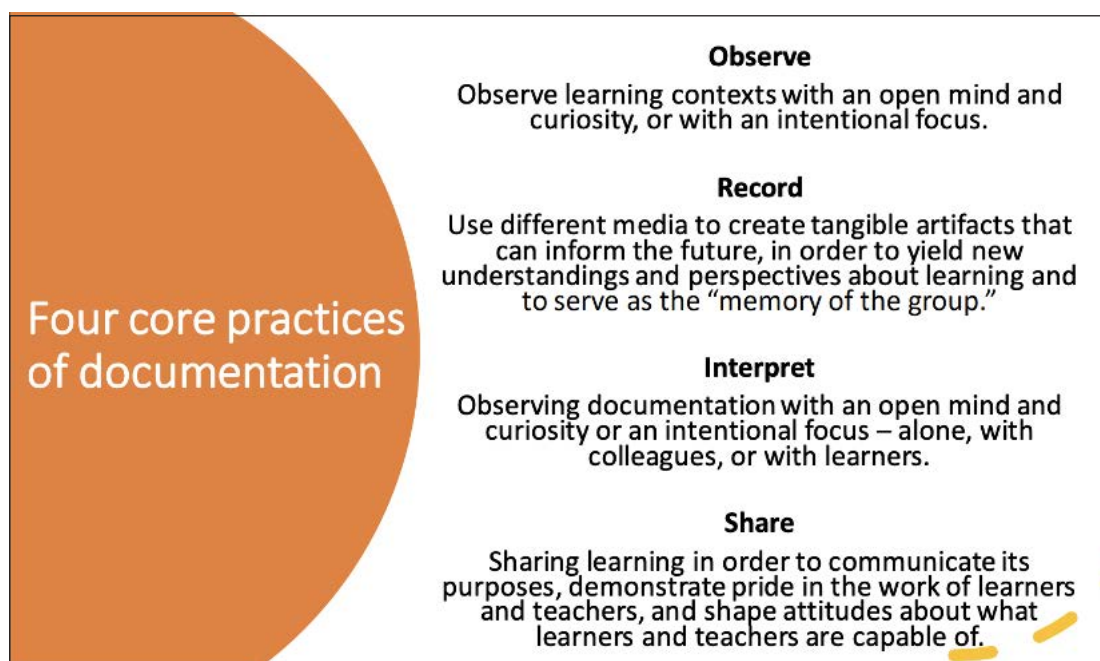
C1. What is Documentation?

A brief introduction to Documentation as an inquiry strategy

The practice of documentation draws from the rich educational context of Reggio Emilia, Italy. As the founder of the Reggio Emilia approach to early childhood education, Loris Malaguzzi, shares,

Stand aside for a while and leave room for learning. Observe carefully what children do. And then, if you have understood well, perhaps teaching will be different than before.^{xiii}

As Malaguzzi suggests, documentation begins with close observation. At Project Zero, documentation is described as, “the practice of observing, recording, interpreting, and sharing in different media the processes and results of learning in order to deepen and extend learning.”^{xiv}



A core tenet of documentation shared by the Making Learning Visible initiative at Project Zero is that “Documentation is not only retrospective, it is also prospective; it shapes the design of future contexts (and direction) for learning.”^{xv} As Project Zero researchers note, “In order for

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

documentation to be useful, teachers have to do something with it. Teachers use documentation practices to deepen learning—their own, their students', their colleagues', parents', and even the larger publics."^{xvi}

The practice of documentation links closely to the pursuit of providing opportunities for authentic thinking, cultivating students' thinking dispositions (habits of mind), and making thinking visible during the learning process. As Ron Ritchhart shares in the book, *Making Thinking Visible*,

Some ways you might document

- Take photographs or video
- Write down quotes of what students say
- Write down your own reflections as an educator
- Create a classroom journal or portfolio
- Any other way that you might use to capture learning (your learning, or students' learning)!



"Teachers must be vigilant observers and listeners. When teachers capture students' ideas, they are signaling that those ideas and thoughts have value and are worthy of continued exploration and examination."^{xvii}

It may be helpful for the collection of documentation to be grounded in a specific question. In the Envisioning Innovation in Education project, documentation was introduced as a method for supporting educator's inquiry projects—where each project was based on an inquiry question, something the participants wanted to learn or explore about their students or practice (For more information on crafting an inquiry question and facilitating inquiry cycles, see resources B1 & B2 of this toolkit).

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

C2. 10 Cent Design Challenge^{xviii}

An activity for practicing and reflecting on the process of documentation

How can we familiarize ourselves with the documentation process? How can we gain insight into the role documentation can play in making student thinking and learning visible? The 10 Cent Design Challenge is a playful activity that provides an opportunity to practice the process of documentation and reflect on the role of capturing and examining documentation.

Materials: A ten cent coin (or whatever lightweight coin may be available for use), one piece of paper, tape

Step I: The Activity

Divide your study group into *learners* and *documenters*. (For example, in a group of four, you will have two learners and two documenters).

Instructions for Learners:

You will have 12-15 minutes to come up with a strategy to get your ten cent piece across the room with the materials that have been made available.

Instructions for Documenters:

Please observe the learners as they attempt the activity.

Keep the following questions in mind:

What do you notice about the learner's approach to the activity?

What can you point to that makes you say that?

What do your observations say about the learning that took place?

Document your observations in any way you choose—jot down bits of conversation, take still photos, write short descriptive notes, draw pictures or diagrams.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

STEP II: Small Group Debrief

Documenters: Share with the learners 1-2 observations and your documentation of how they engaged with the activity. Offer an interpretation of the learners' process.

Learners: Share your responses to the documenter's observations and interpretations as well as your own reflections regarding your process.

As a small group: Choose one thing you learned about the process of documentation to share with the whole group.

STEP III: Whole Group Discussion

Small groups report one thing they learned about the process of documentation with the whole group.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

C3. Exhibition Board Sharing Guidelines & Template^{xix}

A process for sharing documentation from recent inquiry cycle(s)

During the process of facilitating cycles of inquiry, it can be beneficial to engage in an informal works-in-progress exhibition. Using an exhibition board provides the opportunity to share the explorations of the inquiry focus questions that you have been pursuing in your educational space—and to receive feedback and new ideas from your colleagues.

The preparation and sharing of exhibition boards is meant to be a light-lift, fun, and enriching experience. The feedback you receive from your colleagues can be used to inspire you to iterate, improve, or shift your work's trajectory.

Prior to the Exhibition

In advance of this informal works-in-progress exhibition, each educator engaging in inquiry project work should develop a works-in-progress exhibition board (poster, trifold board, etc.) that will include the following information:

Information about you and your classroom:

- Your name, school, and grade level/content area taught
- Your inquiry focus question
- Additional context (if any) about your teaching and learning objectives (e.g., teaching a unit about the Ming Dynasty, focus on developing social emotional learning, developing student collaboration skills, etc.)

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Information about your experimentations in practice:

- What did you do? A description of one or two ways that you experimented with your practice to pursue inquiry since your last sharing with fellow educators
- What did it look like? Documentation of your inquiry experiences
- What did you learn? A brief description of what you learned (insights) from this process
- What did your students learn? A brief description of what your students may have learned from this process
- New Puzzles: Specific questions you have for your colleagues

Tip: Use what you already may have developed using the Inquiry Cycle Guiding Questions (see resource B2 in this toolkit) to help in your preparation for the exhibition!

During the Exhibition

- Participants can be placed into groups of approximately six people per group. Each group can have multiple participants sharing their exhibition boards.
- Each presenting participant should receive a total of 15 minutes to share their work and receive feedback. We recommend presenting participants split that time by offering a 7-8 minute overview of the works-in-progress exhibition board, concluding with the specific set of questions they would like their colleagues to address.
- Following the 7-8-minute overview, colleagues in the group will spend approximately 7-8 minutes offering feedback using the *Appreciate, Wonder, Suggest* protocol (see Toolkit Resource E4), with a focus on the questions that presenting educators have asked of them. Participants offering their colleagues feedback are encouraged to do so both orally and by leaving written comments on Post-it Notes.
- Each participant will present one time and offer feedback on other presentations.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Sample Exhibition Board Template

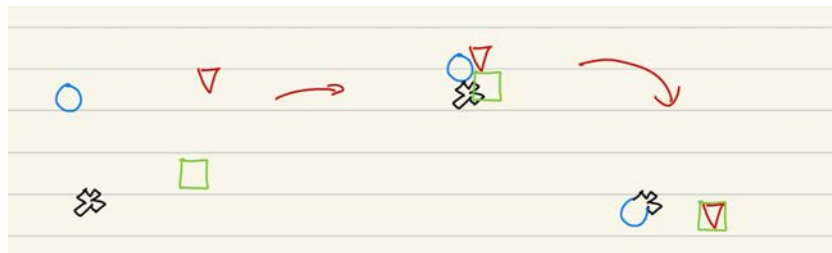
Participating educators are encouraged to be creative and make the exhibition board their own, incorporating the key questions in the template provided below.

Name School, Grade/Subject Taught	
Current Inquiry Focus Question:	
Additional context about teaching and learning objectives: <i>What unit(s) are you teaching? What skills are you focusing on? (e.g., teaching a unit about the Ming Dynasty, developing social emotional learning, building student collaboration skills, etc.)</i>	What did you learn?: <i>What initial insights have you had <u>as a result of this work</u>?</i>
What did you do?: <i>How have you experimented with your practice to pursue inquiry in your classroom these last few weeks/months?</i>	What did your students learn?: <i>A brief description of what your students have learned since the start of this first inquiry cycle.</i>
What did it look like?: <i>Documentation (in whatever form you collected) can go here.</i>	Puzzles: <i>What are some new questions and challenges you have for your colleagues about your work as you move forward? This will guide the feedback portion of your presentation.</i>

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION D

TOOLS AND RESOURCES TO SUPPORT SLOW LOOKING (INQUIRY STRATEGY)



"What does innovation look like?"—Sketch by Sam Leung

D1. What is Slow Looking?

A brief introduction to Slow Looking as an inquiry strategy

In today's fast-paced world, advances in technology allow us to do more in a day—in a more expedient way. While we may be able to get immediate access to information through a simple internet search or arrive at a faraway destination in record time, we often miss many of the details and finer points in life.

In our lives—and our classrooms—many of us can benefit from slowing down our thinking to gain key insights and trigger curiosity. The disposition for slowing down and noticing the finer points of life, which we will refer to as slow looking, allows us to surface insights and gain knowledge by paying attention to the details in our worlds that might normally be overlooked.

Project Zero researcher Shari Tishman defines slow looking as “taking time to carefully observe more than meets the eye at first glance.”^{xx} While slow looking can, and should, take place in a variety of settings, it can be extremely valuable when utilized in the classroom. By applying the practices of slow looking with our students, with fellow educators, or in our own teaching practice, we can move beyond assumptions we have about our teaching and learning environments, and find new opportunities to support our students, staff, and even ourselves.

The concept of slow looking is supported by three key principles:

- The more you look, the more you see
- Looking at an object or situation from different points of view can help us see and understand more
- Slow looking can provide opportunities for uncovering complexity

While there is no one correct way to engage in slow looking, there are various thinking routines, strategies, and pedagogical tools that lend themselves to slowing down our thinking, taking new perspectives, and exploring the finer details in our worlds. Through practice, we can develop

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

certain skills and dispositions that allow us to better engage in this work and the world around us. A selection of thinking routines that may support slow looking is included in the following pages of this toolkit (Toolkit Section D4).

As with all new inquiry strategies, the practice of slow looking may not come naturally. In fact, slow looking may even feel uncomfortable at times. Embrace it! Our hope is that through the practice of slow looking you may shed new light on the unnoticed and unseen in your classrooms—and surface opportunities for transformation and innovation in your teaching and learning environments.

Four “Slow” Experiences to Support your Inquiry

- I. Record a class or learning experience that you facilitate. Watch the recording, observe closely, and think about connections between students’ experience and your inquiry question. (Optional protocols for review: *See, Think, Wonder* or *See, Think, Me, We.*)^{xxi}
- II. Shadow a student. Follow a specific student through a period, half day, or whole day. (Optional resources: [Stanford d.School Shadow Toolkit](#), Video: [Shadowing students in an urban high school, Sample teacher testimonial.](#))^{xxii}
- III. 1-on-1 chats, small group chats, or surveys. Ask students for input about what’s working and ideas for improvement regarding learning experiences related to your inquiry.
- IV. Look closely at student work alongside students. Spend additional time (e.g. 5-15 minutes) asking a student(s) to talk about their thoughts or learning process using documentation from a learning experience students may have created. Helpful phrases to support slow looking: I notice... I wonder... Tell me more about... What makes you say that?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

D2. Take Apart^{xxiii}

A practice for looking closely and exploring complexity

Getting under the surface of the objects we encounter every day can reveal a lot about the way things work and how they were constructed. The practice of taking things apart can also support us in looking closely, exploring complexity—and understanding systems.

Choose an object to examine.

- Check out your object thoroughly. What does it do? How does it work?

Before taking apart your object consider:

- What tools do you need to disassemble the object?
- What do you think you might learn about the object by taking it apart?

As you take apart your object:

- How would you name or describe each part?
- What seems to be the purposes for the various parts? How do the parts work together?

What seems to be the function for each part?

- Does it seem like it was designed to be taken apart?

As you examine your disassembled object, consider these questions:

- What new questions do you have about the object as you take it apart?
- Would you be able to rebuild it?
- What ideas do you have for redesigning this object now that you are familiar with it inside and out?
- How might you use the components from this object for other purposes?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

The practice can be used on its own or along with other thinking routines or practices. Here are some considerations for implementing this practice:

- Taking things apart is exciting. In order to slow things down and focus on the learning opening an object can yield, try the practice along with the *Parts, Purposes, Complexities* thinking routine. The thinking routine can be used throughout the process as a discussion prompt with individual students and as a method for the whole group to reflect on their learning after a take-apart.
- Learners can make their thinking visible by displaying the parts of their object on large paper as they disassemble it and sharing what they found with written labels. Todd McLellan's book, *Things Come Apart: A Teardown Manual for Modern Living* provides inspirational documentation of dissected items from a digital clock to an entire piano.^{xxiv}
- Taking things apart is a dynamic way to move from a close study of objects into the various systems and subsystems connected to objects and their parts.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

D3. Observational Drawing^{xxv}

An activity for learning to look closely at an object

Observational drawing may be defined as looking closely at an object through the practice of sketching it out in detail. Anything, from a piece of fruit to a garden tool, to a piece of furniture or a kitchen appliance could be used for observational drawings.

Choose an object to examine. Before you begin, consider: What do you think you know about this object?

Make a series of quick observational drawings of your object: Don't worry about making changes or erasing, make several sketches on the same page and use the experience to look at your object from many perspectives.

- Give yourself time to look closely and draw an initial sketch of your object.
- Zoom in and draw just one portion that you notice.
- Turn your object or move yourself to a different viewpoint and do another sketch that shares this new perspective.
- Consider adding labels to some of the parts you have drawn.

As you examine your observational drawing consider these questions:

- How do you think this object was made?
- Who do you think made this object?
- What new thoughts do you have about the design of this object?
- What questions do you have about the object now that you have had a chance to examine it closely?
- What ideas do you have for redesigning this object now that you are more familiar with it?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

D4. Thinking Routines that Provide Opportunities for Slow Looking

For more information and application tips for each thinking routine, visit Project Zero's Thinking Routine Toolbox at <https://pz.harvard.edu/thinking-routines>

Units, Functions, Objective (UFO)

A thinking routine for looking closely and considering innovations

Choose an object or system and ask:

What are the objects' units? What are its various parts or components?

What are the units' functions? What does each of these units do?

What might have been the objective behind the invention or innovation? What are likely problems that this object's invention or innovation originally aimed to solve?

Parts, Purposes, Complexities

A thinking routine for exploring the purposes and complexities within an object or system

Choose an object or system and use the following prompts.

What are its parts?

What are its pieces or components?

What are its purposes?

What are the purposes of each of these parts?

What are its complexities?

How is it complex in its parts and purposes, the relationship between the parts?

Looking: Ten Times Two

A thinking routine for making careful observations about images, visual art, or objects

Look at an image quietly for at least 30 seconds, letting your eyes wander.

List 10 words or phrases about any aspect of the image.

Repeat Steps 1 and 2: Look at the image again and try to add 10 more words or phrases to your list.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

See, Think, Wonder

A thinking routine for making loose and thoughtful observations and stimulating curiosity

Look at an image or object:

What do you see?

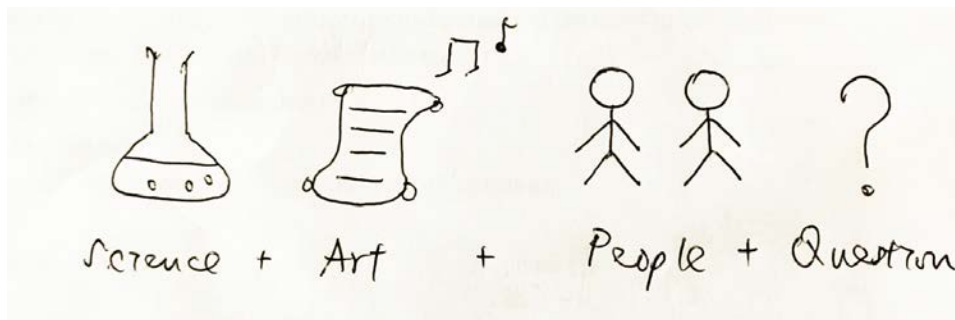
What do you think about that?

What does it make you wonder?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION E

TOOLS AND RESOURCES TO SUPPORT LOOKING TOGETHER AT TEACHER AND STUDENT WORK (INQUIRY STRATEGY)



"What does innovation look like?"—Sketch by Jeff Siu Chung

E1. Why Look at Student and Teacher Work Together?

A brief introduction to looking at student work and teacher work as an inquiry strategy

Teachers engage in looking at student work daily. What might be new is looking at student and teacher work *together*. Multiple perspectives allow for better understanding of the student's learning, give insights to the teacher for future planning, and inspire others in the group to think of their own students' needs. The process of looking closely at student and teacher work is a crucial part of the *share* phase of the *Try, Share, Revise* inquiry cycle, which if facilitated effectively, can provide educators with valuable support, ideas, and insights as they *revise* and plan to facilitate their inquiry cycles in pursuit of the inquiry focus question they are exploring (see resource B1 & B2 of this toolkit for more information).

Looking at student and teacher work together can be done in a school-based study group of 3-6 teachers, or in a cross school educator group such as Project Zero's Rounds (hosted by Steve Seidel) which has been active for over 25 years, meeting on a monthly basis to practice looking at student work together and discussing pertinent questions in the field of education with others. The Rounds project page describes that at these meetings, "everyone is considered to have special perspectives and expertise to offer the group, and those who attend engage in serious and spirited dialogue about educational matters."^{xxvi}

Selecting Student Work to Review

During study group meetings, a single educator may often select a piece of student work to share that relates to their Inquiry Focus Question. The piece may involve experimentations or projects facilitated with students (e.g., a student presentation, work of art or writing assignment, etc.) featuring a student's thinking and/or expression. To assist participants in withholding judgment of the piece and leaving room for interpretation, remove any markings or grades assigned, and at times specific assignment instructions. The piece (or excerpt) should be short enough that it can be reviewed in a few minutes by a group of colleagues. To support your inquiry, pieces selected over time should represent a range of student experiences, not just exemplars of student work.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Selecting Teacher Work to Review

In certain instances, a teacher may wish to share an idea for a coming inquiry project and/or learning experience they would like to facilitate. During the study group meeting, an educator may prepare a written outline that details the desired topic or direction of inquiry or may choose to verbally detail what they are beginning to envision for the project or experience. The sharing should be short enough that it can be reviewed in a few minutes by a group of colleagues. Oftentimes, it can be helpful to share an idea during a stage when the educator is still open to new ideas and learning opportunities.

After participating educators have reviewed the selected piece of teacher or student work, there are a number of protocols that can be used to facilitate the sharing of ideas. In the following section, we share one such protocol useful for longer sessions, the Collaborative Assessment Conference. We also share two feedback protocols (👍 +, and *Appreciate, Wonder, Suggest*) that can be used to share positive leaning feedback within 5-10 minutes after sharing.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

E2. Collaborative Assessment Protocol^{xxvii}

A protocol for looking closely, asking questions, and sharing ideas about student work

Looking closely at student work can support educators in gaining a better understanding of their students' learning and finding a path forward to support their students. The collaborative assessment conference was designed by Steve Seidel at Project Zero to provide a structure for looking together at student work.

1. Getting Started (approximately 5-10 minutes)

- Choose a facilitator to oversee the looking at student work process and to serve as the primary timekeeper.
- Have the presenting teacher share a piece of student work by placing it in an area where everyone in the group can see it—or by sharing a copy with each group member. The presenting teacher should say nothing about the work, the context in which it was created, or the student, until Step 5.
- The group members observe or read the work in silence, perhaps making brief notes about aspects of it that they particularly notice.

2. Describing the Work (approximately 10 minutes)

- The facilitator asks the group: "What do you see?"
- The group members describe what they see without making interpretations or judgments about the quality of the work.
- If an interpretation or judgment emerges, the facilitator asks for the evidence on which the interpretation or judgment is based. The facilitator may do so by asking "What makes you say that?" repeatedly until the study group member just describes what they see.

3. Asking Questions About the Work (approximately 10 minutes)

- The facilitator asks the group: "What questions does this work raise for you?"
- The group members state any questions they have about the work, the student, the assignment, the circumstances under which the work was carried out, and so on. Group members may use the sentence starter "I wonder..." to state the questions they have about the work.
- The presenting teacher may choose to take notes about these questions, but they do not respond to them now.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

4. Speculating About What the Student is Working On (approximately 10 minutes)

- The facilitator asks the group, “What do you think the student is working on?”
- Participants, based on their reading or observation of the work, make speculations about the problems or issues the student might have been focused on while carrying out the assignment.

5. Hearing from the Presenting Teacher (approximately 10 minutes)

- The facilitator invites the presenting teacher to speak.
- The presenting teacher provides their perspective on the student’s work, describing what they see in it, responding (if they choose) to one or more of the questions raised, and adding any other information that they feel is important to share with the group.
- The presenting teacher also comments on anything surprising or unexpected that they heard during the describing, questioning, and speculating phases.

6. Discussing Implications for Teaching and Learning (approximately 10 minutes)

- The facilitator invites everyone (including the presenting teacher) to share any thoughts they have about implications for their own practice or ways to support this particular student in future instruction.

7. Reflecting on the Collaborative Assessment Conference (approximately 5 minutes)

- The group reflects on the experience of using the Collaborative Assessment Conference including what they enjoyed about the process, what they found challenging, what surprised them, and what they might change for next time.

8. Thanks to the Presenting Teacher

- The group thanks the presenting teacher for sharing their work and selects another group member to present work when they meet next.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

E3. Wishes, Challenges, Opportunities^{xxviii}

A tool for considering inspirations, opportunities, and challenges

Looking closely at documentation to determine next steps for teaching and learning is an important part of the innovation process. This tool can be used to take stock of some of the documentation you've been collecting and help guide you towards a long-term inquiry focus. The tool can be used individually, or with a small study group.

If working alone, spend time looking at a collection of documentation from your classroom. If working with a small study group, have your study group members each lay out a small sample of documentation from their classrooms.

Once you have spent ample time looking at the documentation you have collected either individually or as a group, consider the following prompts:

- Wishes: What is an aspirational or long-term goal for teaching and learning in your context that comes up for you as you look at your documentation?
- Challenges: Are there any explicit or implicit challenges suggested by your documentation?
- Opportunities: Are there any explicit or implicit opportunities suggested by your documentation?

After you and/or your study group members have articulated your wishes, challenges, and opportunities, begin to consider what might be an inquiry focus that you would like to pursue over time—either individually or as a group. You may also consider what new practices, strategies, curricular approaches, or resources you would like to try out to address the wishes, challenges, and opportunities you articulated.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

E4. Feedback Protocols to Support Looking at Teacher and Student Work



A feedback protocol for sharing generative support and new ideas

For some of us, innovating with our practice may come easily. But for others of us, innovating with our practice is more challenging. When we try something new in our classrooms, it can be difficult as we push ourselves to step outside of our habits and routines.

This 👍 + feedback protocol (pronounced “cool plus”) helps provide generative feedback between you and your colleagues when sharing your experiments in your practice. This simple two-step protocol offers a non-judgmental approach to constructively support your colleagues to feel more confident about the experimental work they are sharing.

Step One: 👍

Consider what you appreciate, enjoy, and find “cool” about your colleague’s work. Offer your colleague upbeat and positive input on what interests you in their story and the underlying innovation project.

Step Two: +

In the spirit of improvisation’s one rule — “yes, and...”—how might you build positively upon what your colleague has done? Offer your colleague any suggestions, extensions, or ideas that they might try in their experimentations with their practice. Emphasize moving forward in a positive direction, for example: “I’d love to see more of/hear more about...” or “An idea that’s coming to mind is...”

Variations for Using this Protocol

When using the 👍 + tool: You can have an open discussion one-on-one or in small groups. You can offer silent feedback on index cards or Post-it Notes. You can combine these two approaches by offering your colleagues the benefit of a generative discussion followed by the bonus of giving them your notes from the discussion!

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

E5. Appreciate, Wonder, Suggest

A tool for offering positive feedback within professional learning community experiences

In order to improve one's practice, it is important for educators and students alike to have the opportunity to participate in group critique experiences where they present their work and receive feedback from their colleagues. A time-honored approach to offering feedback within professional learning communities has been to use the prompts appreciate, wonder, and suggest. This concise feedback protocol has been successfully employed within in-person and online courses, and within every manner of collaborative inquiry experience.

The *Appreciate, Wonder, Suggest* feedback protocol is an abridged version of the popular Ladder of Feedback protocol originally designed by David Perkins and Daniel Wilson at Project Zero.^{xxix} The *Appreciate, Wonder, Suggest* tool may be used to quickly generate constructive feedback or to respond to ideas, documentation, or other material presented by a practitioner in an exhibition, charrette, or group critique setting.

The elements of this feedback protocol include the following:

Appreciate—offer what you appreciate, enjoy, or admire about your colleagues' work

Wonder—ask questions or state outstanding puzzles you have about your colleagues' work

Suggest—offer your colleagues concrete suggestions or other advice

Tips for using this tool:

1. *Connect:* When engaging with the *Appreciate, Wonder, Suggest* tool, consider also making *connections* throughout the protocol. You can connect the work of your colleagues to the work of others—or to other resources—at any phase of this protocol. For example, you might appreciate how a colleague's work connects to a particular curricular unit or current event, you may wonder how a colleague's work might connect to a particular theory of practice, or you may suggest that one of your colleagues connect with another so that the two may learn from one another.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

2. *Jump Around:* As you engage in a feedback discussion with your colleagues, don't feel beholden to the sequence that this protocol presents, jump around instead. While it is always good to start with appreciations, it is also good to come back to them too! At the same time, new wonders may surface for you as you and your colleagues get further into a discussion of one another's work.
3. *Write it Down:* While this protocol was designed to be conversational, it may also be helpful to write down what you appreciate, wonder, and would like to suggest to your colleagues about their work. This may be done by using different colored Post-it Notes and then organizing them into themes—or by simply giving those notes to your colleagues after a group critique. If you are meeting in a digital space, consider using a chat function to offer your colleagues written feedback that they can copy, paste, and refer to later.
4. *Be Kind, Be Specific, Be Useful:* The popular educational leader Ron Berger is an expert on many things, especially the power to support students and teachers within group critique settings. Ron's simple principles *be kind, be specific, and be helpful* have been translated here as *be kind, be specific, and be useful*. By following these easy to remember principles, we can best support our colleagues in reflecting on—and refining—their work.^{xxx}

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION F

TOOLS AND RESOURCES TO SUPPORT REFLECTIVE PRACTICE (INQUIRY STRATEGY)



"What does innovation look like?"—Sketch by Lydia Wong

F1. What is Reflective Practice?

A brief introduction to reflective practice as an inquiry strategy

When we engage in the work of teaching and learning, we bring our whole selves into the classroom. This includes our teacher preparation, content knowledge, and credentials as educators, but it also includes our past experiences in our personal and professional lives. Our past experiences shape our wishes and dreams for ourselves and our students—just as they also shape our implicit preferences, prejudices, and biases.

When engaging in the process of inquiry and innovation in education, it is important to understand who we are, who our students are, and what is the nature of our teaching and learning context. To do this, it is helpful to engage in the process of reflective practice.

Reflective practice can be described as the process of probing our identities, and understanding how our identities influence how we view and understand our students, as well as how we view and understand the teaching and learning environments where we work.

From the perspective of the Envisioning Innovation in Education project, the concept of reflective practice has many roots. Primarily, our orientation to reflective practice is informed by the concepts of positionality and reflexivity in qualitative research. Positionality can be understood, quite literally, as how one understands her position in the world, especially in regard to others, whereas reflexivity can best be understood as being conscious about one's own subjectivity, and how that subjectivity influences the way a researcher may design a study, work with research participants, interpret data, and report findings. Being conscious of one's positionality and engaging in the practice of reflexivity are located on the opposite end of the spectrum from objectivity, which suggests that researcher bias does not exist and one's positionality has no bearing on her work as a researcher.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

When we think of reflective practice in the classroom, we think of it much in these regards—understanding who we are as educators and how that understanding of ourselves affects the way we view and understand our students and our teaching and learning environments. How we view and understand our students and our teaching and learning environments—and our position within those communities and spaces—has a great effect on what’s possible (or ethical, or appropriate, etc.) for the inquiry and innovation work we pursue within those communities and spaces.

Three questions will guide the pursuit of reflective practice:

1. Who am I?
2. Who are my students?
3. What is my context?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

F2. Surfacing Our Identities to Understand Our Subjectivity (The Subjectivity Specs Activity)^{xxx1}

An activity for unpacking our identities and perspectives

Our past experiences and multiple identities inherently influence how we see ourselves, our students, and our contexts. Being conscious of the multiple lenses through which we view the world is a foundational part of reflective practice and the inquiry process.

It is important to acknowledge and appreciate the unique lenses through which we see the world—but it is also important to be open to the idea that others may view us, our students, and our contexts from perspectives that are vastly different than our own. This reflective practice tool can be used to support you in synthesizing the various aspects of your identity to better understand your subjectivity.

The materials you will need to engage with this tool include: One large pair of novelty sunglasses per participant. Glue and/or tape. An assortment of arts and crafts items that can be glued or attached to the novelty sunglasses. Participants may also bring small items that relate to their identity or perspective that can be used in the crafting of glasses.

This tool builds off of the [Looking Ten Times Two](#) thinking routine,^{xxxii} and follows the following steps...

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Step One:

On a piece of paper, jot down ten words or phrases that come to mind in response to the question *Who am I?* You can use the sentence starter *I am...* or *I am a...*

Step Two:

Jot down ten more words or phrases that come to mind in response to the question *Who am I?* Push beyond the obvious to explore the more guarded or personal aspects of your identity.

Step Three:

Look at the full list of words and phrases that you have written down in response to the question *Who am I?* Group these words and phrases into themes or categories.

Step Four:

Working with a variety of craft materials and personal effects, adorn a pair of novelty glasses to make the various aspects of your identity visible. Celebrate your unique lens on the world—while being candid and critical about your own subjectivity.

Step Five:

Try on your new subjectivity specs! Working with a small group of colleagues—and wearing your subjectivity specs—describe how the various aspects of your identity inform your unique outlook on the world. Be sure each person in your group has the opportunity to share.

Step Six:

Now remove your subjectivity specs and discuss how the various aspects of your identity inform how you see yourself, your students, and your context. Be sure to discuss with your colleagues what each of you can see from your unique perspectives, while also considering what each of you cannot see (or choose not to see) based on your subjective lenses.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Step Seven:

Thank your colleagues for engaging in this conversation about their identities with you.

Step Eight:

Keep your subjectivity specs nearby so that you can try them on whenever you need to remind yourself of your unique perspective—including what you are inclined to see or not see—based on your unique view of the world.



Participants in the Envisioning Innovation in Education project don their subjectivity specs.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

F3. Thinking Routines to Support Reflective Practice

For more information and application tips for each thinking routine, visit Project Zero's Thinking Routine Toolbox at <https://pz.harvard.edu/thinking-routines>

See, Think, Me, We

A thinking routine for connecting oneself to the bigger picture

Choose an artwork, topic or image:

See: Look closely at the work. What do you notice? Make lots of observations.

Think: What thoughts do you have about the work?

Me: What connections can you make between you and the work?

We: How might the work be connected to bigger stories—about the world and our place in it?

Parts, Perspectives, Me

A thinking routine for exploring the complexity of objects, systems, and perspectives

Choose an object or system and use the prompts:

What are its parts?

What are its various pieces or components?

What perspectives can you look at it from?

Different users, makers; different physical perspectives.

How are you involved?

What connections do you have? What assumptions, interests, or personal circumstances shape the way you see it?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

SECTION G

TOOLS AND RESOURCES FOR SUSTAINING INQUIRY AND SHARING INNOVATIONS

The following section includes tools and resources that support reflecting on lessons learned and the future direction of inquiry project work (resource G1), exploring opportunities to extend an inquiry project's reach and connect with others (resource G2 and G3).



“What does innovation look like?”—Sketch by Alison Wong

G1. Thinking Routines for Reflecting on the Current Progress and Direction of Inquiry Project Work

For more information and application tips for each thinking routine, visit Project Zero's Thinking Routine Toolbox at <https://pz.harvard.edu/thinking-routines>

I used to think, Now I think, Now I'd like to...^{xxxiii}

A thinking routine for reflecting on how one's thinking has changed during the inquiry process, and envisioning next steps.

Thinking about the inquiry cycles and associated learning experiences you've facilitated thus far, jot down a response to the following.

I used to think...

Now I think...

Now I would like to...

If facilitating this thinking routine alongside other educators, take turns sharing your responses with each other after completion.

Think, Puzzle, Explore

A thinking routine that sets the stage for deeper inquiry.

Consider a subject or topic:

What do you think you know about this topic?

What questions or puzzles do you have about this topic?

How might you explore your puzzles about this topic?

Compass Points

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

A thinking routine for examining propositions.

Considering the idea, question, or proposition before you:

E = Exciting: What excites you about this idea or proposition? What's the upside?

W = Worrisome: What do you find worrisome about this idea or proposition? What's the downside?

N = Need to Know: What else do you need to know or find out about this idea or proposition? What additional information would help you to evaluate things?

S = Stance or Suggestion for Moving Forward: What is your current stance or opinion on the idea or proposition? How might you move forward in your evaluation of this idea or proposition?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

G2. Making Connections and Extending our Reach (The Octopus Activity)

An activity for making connections and extending the reach of our inquiry project

Materials: A stuffed octopus doll/toy and 8 multi colored ribbons that are wide enough to be written on for each inquiry project. (Alternatively you can draw an octopus with eight tentacles extending in different directions in the middle of a large piece of paper, and draw ribbons during steps 2 & 3.)

Inquiry projects can be thought of as living systems. In Hong Kong, the Octopus (transit card) is used as a metaphor to represent the system that interconnects the community. In the same way, in the Envisioning Innovation in Education project, the octopus is a metaphor for the reach and connections educators can make with their inquiry project work.

When your inquiry project has reached a mature stage after multiple *Try, Share, Revise* inquiry cycles, and you're ready to share your findings and lessons learned with a greater number of educators, your project is prime to extend its tentacles and connect with others. The following activity provides an opportunity to consider how you can extend your inquiry project's reach and connect with others.

Acquire a stuffed animal octopus that represents your inquiry project (or draw one in the middle of a large sheet of paper with eight tentacles extending in different directions). The tentacles represent the connections and relationships that your team has formed. Identify these connections by considering who you have reached, connected with, or influenced through your project work, such as students, colleagues, other departments, administrators, parents, and beyond.

Step 1—Prepare Your Resources: Place your stuffed octopus toy (or drawing) in the middle of a table with ribbons and pens accessible.

Step 2—Connecting Groups: Identify up to four groups and relationships you have made through your inquiry project work. Title each of these groups or roles who have encountered or been influenced by your work. Write these titles on ribbons of a certain color and attach each one to

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

a different tentacle. What additional groups might you be able to connect with going forward? Write these titles on ribbons of a different color and attach each one to a different tentacle.

Step 3—Connection Ribbons: Consider how you might *extend* the reach of your inquiry and innovation work further into each of the groups or roles you wrote on a ribbon. Now, on another color ribbon, write an aspiration for how you would like to extend your influence in the group or role. Tie this second ribbon to the group’s title ribbon connected to one of your octopus’s tentacles.

(Optional step if completing this activity with multiple octopuses from multiple groups or participants.)

Step 4—Consortium Ribbons: A group of octopus is called a consortium. In this setting, we also are a consortium. Consider what connections you can make between your octopus/innovation project work and its influences and the octopus/influences of other teams. Use a new ribbon(s) to physically connect your ribbons to their ribbons. Think about how the connection works: how do the two innovation projects and their influences on groups and roles link with each other?

Step 5—Discussion: What does the intended reach of our collective inquiry project work look like?

What connections do we see? What future reach, connections, and influence do we hope

To learn more about the Teaching for Understanding framework, see Wiske, M. S. (1998). *Teaching for understanding: Linking research with practice*. San Francisco, CA: Jossey-Bass.



An octopus created during an Envisioning Innovation in Education learning community.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

G3. Sharing Our Stories of Innovation

Activities to support the crafting and sharing of learning journey stories

“The truest courtesy in human interaction, and in pedagogy (which, after all, is just an extension of such interaction) is to help others discover what their experiences mean in their minds and hearts.”

– Jerome Bruner^{xxxiv}

Stories are powerful. They hold potential to connect with others deeply and can provide a starting point for engaging in meaningful discourse about educational innovation. After engaging in multiple *Try, Share, Revise* inquiry cycles, the Envisioning Innovation in Education project encourages educators to reflect on the learning journey that has taken place and to consider sharing the story of their learning journey with a greater number of fellow educators. This includes inviting educators to reflect and share:

A Prologue:

How and where did your journey begin? Was there a moment that sparked curiosity about a new aspect or approach to learning? Or a time when as an educator, you realized something needed to change or develop to best support your students? What are you trying to solve or improve in your classroom or school and why?

The Chapters of Your Story:

How did you experiment with your practice in pursuit of your innovation question? What moments of success and challenge did you meet along the way? What documentation (e.g., photos, video, audio, student work, etc.) can be shared to illustrate what this experiment with your practice looked like? What are one or more things you and your students may have learned when you engaged in this process of inquiry?

Room for a Sequel?

Based on these experiments with your practice, what will you do next to explore your innovation question? What questions or puzzles remain? How might you ask fellow educators to think and inquire alongside you?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

During the learning community meetings of the Envisioning Innovation in Education project, we offered educators opportunities to explore the notion of storytelling as a way of sharing and connecting with others regarding their inquiries and innovations. The opportunities to share, listen, and engage included “*Sharing Pages from Our Notebooks*” and “*Creating a Scene*.”

Sharing Pages from Our Notebooks

Prior to an educator gathering or learning community, teachers who have engaged in long term inquiry projects can prepare to share “a page from their notebook.” To support this preparation, inquiring educators can consider the *Prologue*, *Chapters*, and *Possible Sequels* to their story, utilizing the questions shared in the previous section.

During the gathering, give inquiring educators the opportunity to share their work in small groups of 3-6 educators, or provide space for presenting educators to share with all participants present at the event. Presenting participants will be given a short amount of time (about 5-8 minutes) to share a “page from their notebook” about inquiry and innovation work since the group’s previous gathering. The idea is to learn from each other’s experiences and to support one another in moving forward.

After each sharing, consider inviting the audience to discuss “the page” in small groups or partners, using the *Appreciate, Wonder, Suggest* or 👍+ protocol (see resource E4 of this toolkit for more information.)

The following guidelines offer suggestions to help educators prepare for this sharing. Educators can lean into some of these guidelines more than others, or entirely find their own approach to share.

What do we mean by “a page from your notebook?”

- A page from your notebook comprises select documentation and inquiry cycle contributions since your prior gathering with fellow educators. It can be a rough sketch or an idea that intrigues you. It can focus on a challenge or two that you have experienced. It can be thoughts about your project’s current status or next steps.

You are telling a story not giving a presentation

- Use a relaxed tone, invite people into your narrative, and consider what kind of story you want to tell—is it a comedy? A drama? A cliffhanger? A ghost story?

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Clearly articulate your innovation focus question

- To ground your colleagues in the goals and objectives of your inquiry, share your innovation focus question and why it is important to you.

Do not try to share everything you have done

- A good story is selective—not all inclusive. Perhaps focus on 1-2 highlight moments, including some challenges that you may have faced.

End with a bang—or a big question

- Think about how your storytelling's ending will continue to resonate with your audience. Will it have a final hurrah, a mystery ending, or hang on a puzzle?

Creating a Scene

Inspired by artistic forms that engage audience members as active participants in a shared scene, *Creating a Scene* asks inquiring educators to create and facilitate a scene to share their learnings and understandings with others.

What does it mean to create a scene? Creating a scene is an opportunity for an educator to share their inquiry cycle work by way of a 15-minute interactive experience, followed by 15 minutes of feedback and discussion with colleagues. Examples of a scene could be: sharing a portion of a key learning experience from an educator's inquiry and innovation project, creating a short play, a hands-on activity or game, a scenario, a song, a poem, or another form that highlights the educator's learnings and understandings gleaned from their innovation work.

For example: Edward might design a play and invite participants to join in the action and then engage in a dialogue about innovation. Lindsey might design a scenario around an innovation question with a provocation that participants grapple with, act out, and discuss. Devon might design a hands-on activity where participants co-construct and discuss a new model of in-school professional development.

Below is a series of suggestions to support the creation of your scene. You can lean into some of these suggestions more than others or find your own approach to sharing your story.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

Create a scene—not a presentation

- Remember that you are creating a scene or experience for others to participate in, not giving a formal presentation for them to listen to. Take a relaxed tone, invite people into your scene, and consider what kind of experience you want them to have. How do you hope they will feel, what will they perceive, how will they interact with your team and each other over the course of about 15 minutes?

Establish a setting

- Consider creating a setting and ambiance for the scene.
- Consider the props, materials, and documentation you can use to make what you have learned from your innovation project visible, audible, and tangible.

Introduce the scene

- Contextualize your scene, animate it, and bring it to life for participants.
- Clearly articulate your innovation focus question and why it is important to you, so you ground your colleagues in the goals and objectives of your inquiry and innovation project work.

Draw on your inquiry cycle documentation

- Sharing documentation of your inquiry cycle contributions is foundational to your innovation story so be sure to reference it in your experience.

End with a bang—or a big question

- Think about how your experience will end. Will it have a final hurrah, a “to be continued...,” or hang on a puzzle or provocation?

Remember you always have “permission to hack”

- We hope these suggestions are helpful, but feel free to hack them and create your scene in whatever way makes the most sense to you!

Have fun with it!

- You are creating an interactive experience. We hope that you enjoy sharing your innovation work and understandings of pedagogical and systems change in this way.

Individual tools and resources appearing in the Envisioning Innovation in Education Toolkit are licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International. Users are free to adapt and share these individual tools and resources if users credit the Envisioning Innovation in Education team at Project Zero, a research center at the Harvard Graduate School of Education in Cambridge, MA, USA. Users must also indicate whether modifications have been made to the tools without suggesting that the Envisioning Innovation in Education team has endorsed the modifications. Tools and resources may not be used commercially.

- ⁱⁱProject Zero. 2023. Teaching and Learning for Understanding. <https://pz.harvard.edu/professional-development/events-institutes/teaching-and-learning-for-understanding>
- ⁱⁱⁱTo learn more about the Agency by Design framework for maker-centered learning, please visit www.AgencybyDesign.org. The framework image was designed by Matt Riecken with conceptual development by Andrea Sachdeva and the Agency by Design research team. See also, Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). *Maker-centered learning: Empowering young people to shape their worlds*. San Francisco, CA: Jossey-Bass.
- ^{iv}See Bandura, A. (2006). Towards a psychology of human agency. *Perspectives on Psychological Science* 1(2), 164-180.
- ^vTo learn more about the Pedagogy of Play project, see <https://pz.harvard.edu/projects/pedagogy-of-play>
See also, Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schultz, T.S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools*. Cambridge, MA: Project Zero. <https://pz.harvard.edu/resources/pedagogy-of-play-book>
- ^{vi}This tool was adapted from the Agency by Design: Early Childhood in the Making and Creating Communities of Innovation projects. Special thanks to Andrea Sachdeva. To learn more, see <https://pz.harvard.edu/projects/creating-communities-of-innovation> <https://pz.harvard.edu/projects/early-childhood-in-the-making>
- ^{vii}Adapted from the Agency by Design Inquiry Cycle. To learn more, please see <http://www.agencybydesign.org/inquiry-cycle>
- ^{viii}The Population, Innovation, Outcome tool was developed by the Creating Communities of Innovation Project at <https://pz.harvard.edu/projects/creating-communities-of-innovation>
- ^{ix}The thinking routines listed here are available through Project Zero's Thinking Routine Toolbox <https://pz.harvard.edu/thinking-routines>. The Interviewing Strategies tool from the Creating Communities of Innovation project is available at: <https://pz.harvard.edu/sites/default/files/CCI%20Interviewing%20Strategies.pdf>
- ^xSee Project Zero's Thinking Routine Toolbox for more information: <https://pz.harvard.edu/thinking-routines> <https://pz.harvard.edu/resources/think-puzzle-explore>
- ^{xi}*The Surface a Wonder, Follow a Wonder* tool was developed at Bialik College in Melbourne, Australia as part of the Exploring Communities of Curiosity and Creative Participation project. It appears in Clapp, E. P. & Rains, J. (2024). *The participatory creativity guide for educators*. New York: Routledge.
- ^{xii}To learn more about the Think, Puzzle, Explore thinking routine, see <https://pz.harvard.edu/resources/think-puzzle-explore>
- ^{xiii}See Edwards, C., Gandini, L., & Forman, G. (2012). *The hundred languages of children: The Reggio Emilia experience in transformation*. Third Edition. Santa Barbara, CA: Praeger.
- ^{xiv}See Krechevsky, M., Mardell, B., Rivard, M., & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. San Francisco, CA: Jossey-Bass.
- ^{xv}See Krechevsky, M., Mardell, B., Rivard, M., & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. San Francisco, CA: Jossey-Bass.
- ^{xvi}See Krechevsky, M., Mardell, B., Rivard, M., & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. San Francisco, CA: Jossey-Bass.
- ^{xvii}See Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.
- ^{xviii}This activity is adapted from the Visible Learners Toolkit (Krechevsky et. al, 2013).
- ^{xix}These Exhibition Board Sharing Guidelines and Template were adapted from tools originally created by the Creating Communities of Innovation, and Early Childhood in the Making initiatives at Project Zero, and the Thinking and Learning, Today and Tomorrow: Project Zero Perspectives course at the Harvard Graduate School of Education (taught by Edward Clapp and Carrie James). To learn more, see <https://pz.harvard.edu/projects/creating-communities-of-innovation> <https://pz.harvard.edu/projects/early-childhood-in-the-making>

^{xx}To learn more about Shari Tishman's work on slow looking, see Tishman, S. (2017). *Slow looking: The art and practice of learning through observation*. New York: Routledge.

^{xxi}To learn more, see Project Zero's Thinking Routine Toolbox. Available at: pz.harvard.edu/thinking-routines

^{xxii}For more information on these sample resources visit the Stanford d.School Shadow a Student Challenge website at <https://dschool.stanford.edu/shadow-a-student-k12>

^{xxiii}This take apart activity was adapted from the Mechanical Dissection and Take Apart tools originally created by the Agency by Design initiative at Project Zero. To learn more, see <http://www.agencybydesign.org/sites/default/files/AbD%20Take%20Apart%20.pdf>

^{xxiv}McLellan, T. (2013). *Things come apart: A teardown manual for modern living*. New York: Thames & Hudson.

^{xxv}This observational drawing activity was adapted from the Observational Drawing tool developed by the Agency by Design initiative at Project Zero. To learn more, see <http://www.agencybydesign.org/sites/default/files/AbD%20Observational%20Drawing%20.pdf>

^{xxvi}To learn more about the practice of Rounds at Project Zero, see <https://pz.harvard.edu/projects/rounds>

^{xxvii}To learn more about the Collaborative Assessment Conference, see http://www.makinglearningvisibleresources.org/uploads/3/4/1/9/3419723/modified_collaborative_assessment_conference_protocol.pdf

^{xxviii}This tool was adapted from the original Wishes, Challenges, & Opportunities tool developed by the Creating Communities of Innovation initiative at Project Zero. To learn more, see <https://pz.harvard.edu/sites/default/files/CCI%20WCO.pdf>

^{xxix}To learn more about the original Ladder of Feedback protocol, see <https://pz.harvard.edu/resources/ladder-of-feedback>

^{xxx}To learn more about Ron Berger's work, see <https://eleducation.org/about/staff/ron-berger>

^{xxxi}This tool was adapted from an activity originally designed by Sarah Sheya as part of the Making Across the Curriculum project. To learn more about the Making Across the Curriculum project see <http://www.agencybydesign.org/making-across-the-curriculum>

^{xxxii}To learn more about the *Looking Ten Times Two* thinking routine see https://pz.harvard.edu/sites/default/files/Looking%20-%20Ten%20Times%20Two_0.pdf

^{xxxiii}This thinking routine was adapted from the *I used to think... Now I think...* thinking routine. For more information visit <https://pz.harvard.edu/resources/i-used-to-think-now-i-think>

^{xxxiv}Bruner, J. (1996). Comments made by Jerome Bruner at the Milano Memorial Conference for Loris Malaguzzi. ReChild 0.

References and Suggestions for Further Reading

The below list of references serves as a bibliography for the Envisioning Innovation in Education—Hong Kong book. While the majority of the works cited herein are referenced in the preceding chapters, some additional materials are listed below for readers who are eager to learn more about the topics discussed in this book.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science*, 1(2), 164-180. <https://doi.org/10.1111/j.1745-6916.2006.00011.x>

Blythe, T., Allen, D., & Powell, B. S. (1999). *Looking together at student work*. New York: Teachers College Press.

Blythe, T., Allen, D. & Powell, B. S. (2015). *Looking together at student work: A companion guide to assessing student learning, second edition*. New York: Teachers College Press.

Bruner, J. (1996). Comments made by Jerome Bruner at the Milano Memorial Conference for Loris Malaguzzi. ReChild 0.

Cheung, E., & Ng, K. (2023). A look at Hong Kong's COVID-19 restrictions and their long-term effects. *South China Morning Post*. <https://www.scmp.com/news/hong-kong/health-environment/article/3205783/hong-kongs-covid-19-curbs-were-among-worlds-toughest-what-were-their-long-term-effects-city>

Chiu, M. M. & Ho, E. S. C. (2007). Family effects on student achievement in Hong Kong. *Asia Pacific Journal of Education*, 26:1, 21-35. <http://dx.doi.org/10.1080/02188790600607846>

Clapp, E. P. (2019). Introducing new voices to the creativity studies conversation: W. E. B. Du Bois, double-consciousness, and The Souls of Black Folk. In V. P. Glăveanu (Ed.), *The creativity reader* (pp. 543-559). New York: Oxford University Press.

Clapp, E. P. & Rains, J. (2024). *The participatory creativity guide for educators*. New York: Routledge.

- Clapp, E. P., Dawes Duraisingh, L., & Sachdeva, A. R. (2019). *The Creating Communities of Innovation toolkit for inquiry-driven innovation*. Cambridge, MA: Project Zero/President and Fellows of Harvard College. <https://pz.harvard.edu/sites/default/files/CCI%20Toolkit.pdf>
- Clapp, E. P. & Kamilah, A. (2019). Critical lenses for progressive education (encyclopedia entry). In M. A. Peters & R. Heraud (Eds.) *Springer encyclopedia of educational innovation*. Singapore: Springer Nature.
- Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). *Maker-centered learning: Empowering young people to shape their worlds*. San Francisco, CA: Jossey-Bass.
- Clapp, E. P., Sollis, S. L., Ho, C. K. N., & Laguzza, K. (2020). *The maker-centered learning playbook for early childhood education*. Cambridge, MA. Project Zero/Presidents and Fellows of Harvard College. http://www.agencybydesign.org/sites/default/files/AbD_Playbook.pdf
- Couros, G. (2015). *The innovator's mindset: Empower learning, unleash talent, and lead a culture of creativity*. Dave Burgess Publishing, Incorporated.
- Creating Communities of Innovation. (2019). The Creating Communities of Innovation Model for Inquiry-Driven Innovation. <https://pz.harvard.edu/sites/default/files/CCI%20Model.pdf>
- Creating Communities of Innovation. (2019). Developing an Inquiry Focus: Sweet Spot of Innovation. <https://pz.harvard.edu/sites/default/files/CCI%20SSI.pdf>
- Creating Communities of Innovation. (2019). The Population, Innovation, Outcome tool. <https://pz.harvard.edu/projects/creating-communities-of-innovation>
- Dawes Duraisingh, L. & Sachdeva, A. R. (2021). *Inquiry-driven innovation: A practical guide to supporting school-based change*. San Francisco, CA: Jossey-Bass.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Text-Book Series in Education. New York: The Macmillan Company.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston, MA.
- Djoub, Z. (2023). 6 reasons for students' resistance to participation in class. *EduLearn2Change*. <https://edulearn2change.com/article-6-reasons-for-students-resistance-to-participation-in-class-and-ways-to-deal-with-them/>

- DuFour, R. (2004). What is a professional learning community? *Education Leadership*, pp. 6-11. <https://www.allthingsplc.info/wp-content/uploads/2023/10/DuFourWhatsAProfessionalLearningCommunity.pdf>
- Education Bureau. (n.d.). Secondary school education. <https://www.edb.gov.hk/en/edu-system/primary-secondary/secondary/index.html>
- Education Bureau. (2022). Guidelines on the compilation of school development plan: Annual school plan, school report. https://www.edb.gov.hk/attachment/en/sch-admin/sch-quality-assurance/sse/Guidelines_on_the_Compilation_of_SDP_ASP_SR_en_2022.pdf
- Education Bureau. (2023). Innovation and technology education. <https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/InnovationAndTechnologyEducation/resources.html>
- Edwards, C., Gandini, L. & Forman, G. (2012). *The hundred languages of children: The Reggio Emilia experience in transformation*. Third Edition. Praeger.
- Gardner, H. (2013). Harvard Project Zero: A personal history. <https://pz.harvard.edu/sites/default/files/pz-history-9-10-13.pdf>
- Ginsberg, M. (2016). Shadowing students in an urban high school. <https://www.youtube.com/watch?v=dXDk4kwNCcc>
- Government Information Centre. (2021). EDB announces guidelines and curriculum arrangements for safeguarding national security and national security education. <https://www.info.gov.hk/gia/general/202102/04/P2021020400806.htm>
- Government Information Centre. (2021). EDB announces measures to optimize four senior secondary core subjects. <https://www.info.gov.hk/gia/general/202104/01/P2021040100300.htm>
- Government of the Hong Kong Special Administrative Region. (2023). Hong Kong: The facts— Education. <https://www.gov.hk/en/about/abouthk/factsheets/docs/education.pdf>
- Government of the Hong Kong Special Administrative Region Education Bureau. (2019). School-based management and school-based management governance framework. <https://www.edb.gov.hk/en/sch-admin/sbm/gov-framework/index.html>

- Harvard Graduate School of Education. (2021). "Usable knowledge" and linking research to practice." <https://youtu.be/4hlz9psaeqI?feature=shared>
- Heifetz, R. A. & Linsky, M. (2002). *Leadership on the line: Staying alive through the dangers of leading*. Boston, MA: Harvard Business School Press.
- Heifetz, R. & Linsky, M. (2002). A survival guide for leaders. *Harvard Business Review*. <https://hbr.org/2002/06/a-survival-guide-for-leaders>
- Hirsh-Pasek, K., Golinkoff, R. M., Nesbitt, K., Lautenback, C., Blinkoff, E., & Fifer, G. (2022). *Making schools work: Bringing the science of learning to joyful classroom practice*. New York: Teachers College Press.
- Hong Kong's Information Services Department. (2023). HK ranked 7th in competitiveness. https://www.news.gov.hk/eng/2023/06/20230620/20230620_103241_227.html
- Kelsey, S. (2020). Chinese radicals: What are they and how to use them. Clozemaster Blog: Language Learning. <https://www.clozemaster.com/blog/chinese-radicals/>
- Krechevsky, M., Mardell, B., Rivard, M., & Wilson, D. (2013). *Visible learners: Promoting Reggio-inspired approaches in all schools*. San Francisco, CA: Jossey-Bass.
- Lee, D. H. L. & Chiu, C.S. (2017). "School banding": Principals' perspectives of teacher professional development in the school-based management context. *Journal of Educational Administration*, Vol. 55 No. 6, pp. 686-701. <https://doi.org/10.1108/JEA-02-2017-0018>
- Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schulz, T. S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools*. Cambridge, MA: Project Zero.
- McLellan, T. (2013). *Things come apart: A teardown manual for modern living*. New York: Thames & Hudson.
- Nagel, T. (1986). *The view from nowhere*. New York: Oxford University Press.
- New Vision for Public Schools. (2023). Marathon runner. <https://curriculum.newvisions.org/science/course/biology/marathon-runner/>

- Patnaik, E. (2013). Reflexivity: Situating the researcher in qualitative research. *Humanities and Social Sciences Studies*, 2(2), 98-106.
- Pearson, N. O. (2022). Elite international schools have a racism problem. https://www.bloomberg.com/news/features/2022-03-04/elite-international-school-education-runs-on-systemic-racism?in_source=embedded-checkout-banner
- Perkins, D. N., Jay, E., & Tishman, S. (1993). Beyond abilities: A dispositional theory of thinking. *Merrill-Palmer Quarterly*, 1-21.
- Piaget, J. & Inhelder, B. (1969). *The psychology of the child*. New York: Basic Books.
- Project Zero & Reggio Children. (2001). *Making learning visible: Children as individual and group learners*. Cambridge, MA: Project Zero. (2003).
- Project Zero. (2023). Thinking Routine Toolbox. <pz.harvard.edu/thinking-routines>
- Project Zero. (2023). Teaching and Learning for Understanding. <https://pz.harvard.edu/professional-development/events-institutes/teaching-and-learning-for-understanding>
- Ritchhart, R. (2023). *Cultures of thinking in action: 10 mindsets to transform our teaching and students' learning*. San Francisco, CA: Jossey-Bass.
- Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.
- Ritchhart, R. & Church, M. (2020). *The power of making thinking visible: Practices to engage and empower all learners*. San Francisco, CA: Jossey-Bass.
- Seidel, S. (n.d.). Collaborative Assessment Conference. http://www.makinglearningvisibleresources.org/uploads/3/4/1/9/3419723/modified_collaborative_assessment_conference_protocol.pdf
- Stanford d.School. (n.d.). Shadow a Student Challenge: Toolkit. <https://drive.google.com/file/d/17Tc1r0LXaPBPYH4SihsET33ZFnhS02wZ/view>
- Tishman, S. (2017). *Slow looking: The art and practice of learning through observation*. New York: Routledge.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (2004). Imagination and creativity in childhood. *Journal of Russian and East European Psychology*, 42(1), 7-97.

Whiting, S. B., Wass, S. V., Green, S., & Thomas, M. S. C. (2021, May). Stress and learning in pupils: Neuroscience evidence and its relevance for teachers. *Mind, Brain, Education*, 15(2), 177-188.

Wiggins, G. (2014). A veteran teacher turned coach shadows 2 students for 2 days – a sobering lesson learned. *Authentic Education*. <https://authenticeducation.org/a-veteran-teacher-turned-coach-shadows-2-students-for-2-days-a-sobering-lesson-learned/>

Wiske, M. S. (1998). *Teaching for understanding: Linking research with practice*, first edition. San Francisco, CA: Jossey-Bass.

Yong, J. (1961-63). *The heaven sword and dragon saber*. Hong Kong: Ming Pao.

What does innovation in education look like?

How does innovation in education take shape differently across a variety of teaching and learning environments?

What is the relationship between inquiry and innovation?

What might it mean to lead for innovation?



Based on the work of a cohort of educators and school leaders representing a diverse array of teaching and learning environments, *Envisioning Innovation in Education—Hong Kong: Experiments in Teaching and Learning* explores these questions by offering a window into the process of *inquiry-driven innovation* within the context of the Hong Kong educational landscape. Grounded in the work of the Envisioning Innovation in Education project, a multi-year collaborative inquiry conducted by Project Zero—a research center at the Harvard Graduate School of Education in the United States—and funded by the CATALYST Education Lab in Hong Kong, this new book for educators and school leaders includes in depth pictures of practice that highlight school-based inquiry and innovation projects, lessons learned along the way, and a host of teacher-tested tools and resources designed to support the process of envisioning and inquiring about innovation. Whether in Hong Kong, Havana, or Houston, *Envisioning Innovation in Education—Hong Kong* is sure to offer tools, strategies, and resources that will be immediately applicable to educators and school leaders interested in the process of positive change for themselves, their colleagues, and their students.