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EDUCATION RESEARCH FOR TEACHERS

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Ignite Imagination, *Empower* Communities,
Transform Practice



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We believe education research can be practical and relevant to the classroom. *SingTeach* was initiated in 2005 to bridge the gap between research and practice for you, the teacher.

Published quarterly by the Office of Education Research at the National Institute of Education, Nanyang Technological University, Singapore, *SingTeach* is a magazine dedicated to improving teaching and enhancing learning. Each article is crafted with teachers in mind.

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Learn, Connect, Engage

SingTeach Editorial Team

The aim of the biennial Teachers' Conference and ExCEL Fest (TCEF) organized by the Ministry of Education, Singapore has remained the same since when it was first held in 2001: to bring together local educators to learn, connect and engage with thought leaders and practitioners by offering a wide range of learning experiences, many of which are hosted by teachers themselves.

In this 10th edition of TCEF, both conference presenters and participants saw themselves immersed in a fully virtual experience instead of one that is a blend of face-to-face and online due to restrictions brought about by the ongoing COVID-19 pandemic. Hosted over three days from 1 to 3 June 2021, the conference focused on the theme *Ignite Imagination, Empower Communities, Transform Practice* with Education Minister Mr Chan Chun Sing as Guest-of-Honour.

This issue of *SingTeach* features one out of the two keynote addresses presented at the conference. Dr Helen Beetham, a British education consultant, writer, researcher and commentator, delved deep into the importance of adopting new ways of thinking, teaching and learning as we prepare our youths for an increasingly complex world. This issue also highlights several concurrent sessions that cover a wide range of topics such as English language, assessment for learning, innovation and design thinking.

As we continue to adapt to new changes and challenges in the education landscape, we must also persevere in upholding our commitment towards bringing out the best in each and every student. We hope that the stories we tell have played a part in nurturing the existing network of support and collaboration among the education fraternity. Let us continue to uplift each other in our collective effort to mould the current and future generations of learners. ■

ONLINE EXCLUSIVES

CLASSROOM PERSPECTIVES

Empowering Students to Create Solutions for Real-World Problems

HIGHLIGHT

The *SingTeach* website recently went through a revamp and is now sporting a new look and feel! Readers can also now contribute an article on topics related to education research, teaching and/or learning through the website under "Virtual Staff Lounge".

We are more than happy to receive feedback on how we can improve our website and contents to meet your needs better. Reach out to us at sgteach@nie.edu.sg.



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Tackling Current and Future Challenges of Education

Originally planned as a blended face-to-face and virtual experience, the 10th Teachers' Conference led by the Ministry of Education, Singapore had to quickly pivot to a fully online conference after stricter COVID-19 measures were announced. While having to address the immediate challenges faced by teachers due to the ongoing pandemic, the conference also seeks to reinforce the emphasis on enhancing classroom practice and lifelong learning. *SingTeach* speaks to Ms Tham Mun See, Executive Director of the Academy of Singapore Teachers, about the key objectives of the conference as well as the need for transforming the teaching practice to gear up for a more globalized and uncertain world.

Future-Proofing Learners

The theme of the Teachers' Conference and ExCEL Fest 2021 (TCEF2021)—*Ignite Imagination, Empower Communities, Transform Practice*—aims to meet three key objectives: to spark new ways of teaching and learning in a challenging world; to foster collaboration between the teaching fraternity; and to transform teaching practices for a post-COVID world.

In line with the objectives, TCEF2021 offers a wide array of learning experiences to help teachers equip students with skills for a fast-changing world such as self-directed learning. It also supports the shift to increasingly digital and technological classrooms. "The various Concurrent and Spotlight sessions, ExCEL Fest exhibition booths and poster presentations cover themes such as student well-being, differentiated instruction, inquiry-based learning, e-Pedagogy, home-based learning (HBL), Information Communications Technology and cyber wellness—all of which are relevant to

both the immediate and post-COVID education landscape," says Ms Tham.

She highlights the conference's first keynote address by Dr Mary Helen Immordino-Yang for its timely message on why teachers should consider the role of emotional engagement in their teaching practices. She notes that the idea of learning and emotions being interconnected has always been a topic of interest among researchers.

"What this means for schools now is to make learning more relevant to the students and provide more opportunities for them to make meaning of their experiences," she explains. "This is how we can guide our students to invent themselves and their possible futures."

The importance of preparing students for the future is an imperative also shared by the Minister for Education Mr Chan Chun Sing. In his virtual address to the teaching fraternity at the conference, he shared a personal anecdote from his childhood.

He recalled how a teacher, whom he identified as a Miss Low of MacPherson Primary School, had encouraged him to finish reading a “more than 100-pages long” book from the library—a far cry from the picture books that he was used to.

That experience, he says, kindled his curiosity for learning and boosted his confidence. “The foundation of all competencies is the combination of curiosity and discipline,” he says, emphasizing the need to make curiosity and confidence as one of the cornerstones of 21st century competencies.

“There are three dimensions of confidence that we should be aware of: confidence to compete in a globalized world; confidence to accept ourselves; and confidence to chart our own path as a people,” he adds.

Digital Competency in Teachers and Students

The pandemic has resulted in the acceleration of the use of digital technology in education. This shift reinforces the need for digital literacy education among students.

Touching on this issue, the second keynote address by Dr Helen Beetham (read more on page 13 in this issue) discusses the importance of digital resilience and cyber wellness among students. She reminds us that students have to be empowered with the necessary digital literacy competencies, such as creativity to create within a digital space and online communication skills, so that they can navigate the digital landscape safely and responsibly.

This means that it is pertinent for educators to be versatile in their pedagogy. Ms Tham notes that with HBL and blended learning becoming a mainstay in education today, teachers have to be adept at toggling between different modes of teaching as well as leveraging technology to transform their teaching practices.

“Dr Beetham’s address leads the way for us to better understand how technology can lead to new ways of thinking and how those ways of thinking can be intentionally taught or supported in our schools,” Ms Tham shares.

Envisioning the Path Ahead

Ms Tham observes that the conference’s quick turn to an online format parallels the swift adaptation of HBL at the height of COVID-19 outbreak. It reflects the teaching fraternity’s commitment to embrace adaptability and flexibility as part of their skillset.

With more than 15,000 participants registering for the 260 live sessions as well as the Exhibition and Poster Gallery over the three days, Ms Tham shares that she is inspired by the enthusiasm shown.

“The presenters and participants found the online conference sessions to be interactive and engaging. We saw teachers interacting actively online in the virtual rooms, with breakout room ‘table’ discussions,” she says.

In particular, she highlights the Teachers’ Special which allows the teachers to have enriching discussions on what lies ahead for education, and how the role of the teachers must evolve to cater for new ways of learning. “When teachers look to the future and exchange perspectives, they inspire one another, foster a sense of fraternity and collectively shape the future they want to see. Nothing is more powerful than our teachers having a voice in how teaching and learning should evolve in the new education landscape,” she shares. ■



Key Takeaways from Teachers' Conference and ExCEL Fest 2021

According to Ms Tham Mun See, Executive Director of the Academy of Singapore Teachers, there are three key takeaways that the participants should take heed of: maximizing each student's full potential, redefining the role of a teacher, and strengthening the teaching profession.

Maximizing Each Student's Full Potential

In his speech, the Minister for Education Mr Chan Chung Sing reiterated the need for our education system to be able to nurture the talent of every student and bring out the best in each of them.

Sharing his sentiment, Ms Tham says that even as teachers and school leaders deal with the immediate and urgent issues of COVID-19, they must also remain focused on the important and existential work to develop the potential of every student.

"We must continue in our efforts to instill curiosity and confidence in our students, and let them see the world as their oyster," she affirms.

Redefining the Role of a Teacher

Ms Tham shares that the consolidated input gleaned from the Teachers' Special and other platforms will go a long way in exploring the changing roles and responsibilities of the teacher. Cultivating 21st century skills in our learners, for instance, will involve teachers being co-creators of knowledge, together with their students, rather than just being mere imparters of received knowledge.

One factor that will play a crucial role in shaping how teachers perceive themselves is technology. "Technology will feature heavily in the future of education. The challenge will be for our teachers to unlock the potential of new technologies, and with it, find new ways to teach and learn," Ms Tham says.

Strengthening the Teaching Profession

Ms Tham shares that countries all over the world are leveraging the pandemic to strengthen the professional standing of teachers. As parents witness the resilience and resourcefulness of the teachers during home-based learning (HBL), there is greater appreciation for teachers and the work that they do.

"As a profession, it is important for us to continually deepen our professional practice and rise above the challenges. That the teachers and schools are able to pivot to full HBL so well is largely due to the spirit of learning and collaboration that we have in our fraternity," she comments.

"Our educators are anchored in our mission of looking after the growth and the well-being of our students, and fostering the spirit of collaboration and generosity. While the COVID-19 pandemic has resulted in challenges, it has also shown the strengths of our fraternity. I echo the Director-General of Education's remarks at the Welcome Address that the camaraderie of the teachers is something that we can be truly proud of," she concludes.

ABOUT THE INTERVIEWEE



Ms Tham Mun See is the current Executive Director of the Academy of Singapore Teachers (ED/AST). She strongly believes in teacher agency and the philosophy of Teacher Ownership and Teacher Leadership (TOTL). She had also served as Deputy Director for Professional Development at AST from 2011 to 2012, when the Teacher Growth Model for PD was introduced to the teaching fraternity.

Ms Tham also brings with her 15 years of experience leading schools. She was first appointed as Principal of Anderson Secondary School in 2006. She then returned to her alma mater Raffles Girls' School, as the Principal, from 2013 to 2019. Following that, she was appointed as Superintendent of West 6 Cluster in 2020.



REPURPOSING, RECONCEPTUALIZING AND REHUMANIZING THE ENGLISH LANGUAGE

Since Singapore's independence, linguistic, social, and economic change has been dramatic and fast. At the recent Teachers' Conference and ExCEL Fest 2021, Dr Sally Ann Jones, NIE Senior Lecturer, presents an argument, as to where, why, and how we need to repurpose, reconceptualize, and rehumanize the teaching and learning of English in response to changing times for the benefit of our present and future students.

English in Schools

After independence, the English language became a lingua franca for inter-ethnic communication and an enabler of economic development through international business and technology. Since then, the role of English has expanded to include semiotic systems such as the visual and digital. We are now a multilingual, multisemiotic society who teach and learn in English.

To explore what this linguistic shift means for the English curriculum, Sally, who is from the English Language and Literature (ELL) Academic Group at NIE, draws on her own research and her review of published research about English teaching and learning in Singapore from 2010 to 2020.

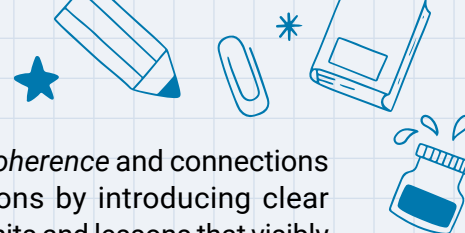
Her own study in primary schools showed a strong teacher belief that the primary purpose of teaching English is for communication, reflecting the lingua franca policy without recognition of the role of language in individuals' linguistic, cognitive, and social development.

So, what can teachers do to ensure that their teaching of English suits the times and our students? Sally argues that we need to:

- repurpose the curriculum, that is, how we structure and present knowledge,
- reconceptualize the relations between knowledge and the knower which we mediate with our pedagogy and language, and
- rehumanize the classroom by increasing our professional knowledge of our diverse students.

English in the Curriculum

Research shows that the English curriculum is segmented literally by the way it is named, conceptually in the minds of teachers and students, and physically in the associated materials and workbooks. We teach according to sections of the syllabus or by assessment components, such as comprehension, composition, synthesis and transformation, and vocabulary. We search for the "content" of English as a subject to present to students.



However, Sally explains, “The stronger the boundaries, and the greater the segmentation and bite-sizing, the less likely it is that students will be able to transfer their learning within English and across the whole curriculum.”

Other research shows that we still maintain a rather narrow, linear view of literacy, expecting staged development. This means we lose confidence in students when they progress as individuals and we refrain from providing the intellectual challenge of critical, cross-disciplinary literacy.

Language Learning

According to Sally, a Vygotskian perspective on language learning suggests that as children learn and their thinking becomes less associated with the everyday and more sophisticated and abstract, so language must develop in complexity to allow them to express abstract, scientific concepts. Academic English is different from the English used in homes and therefore the former needs to be taught. For multilingual, diverse, and low-progress learners, this is best done explicitly.

Learning conceptually through exploratory, dialogic approaches produces *principled* knowledge (Edwards & Mercer, 1987). This contrasts with learning through memorization or practice which produces *ritual* knowledge. Principled learning leads to metacognitive and metalinguistic awareness. When we are aware of our cognitive and linguistic knowledge, it can be mentally manipulated and therefore we can decide how and when to use it and when to transfer it and connect it to fresh situations and texts, for instance.

Four Examples of Responsive Teaching

Sally suggests that responsive teaching can accommodate the aims of repurposing, reconceptualizing, and rehumanizing English language teaching. She gave four examples.

First, employ *dialogic teaching*, that is, two-way dialogue over one-way monologue in the classroom. This means asking “*why*” questions to engage students in deep thinking and explaining instead of steering them to the “right” answers.

“In this way, not only do students learn the language, but they also become aware of their thinking,” Sally explains.

Second, *create visible coherence* and connections across units and lessons by introducing clear learning outcomes for units and lessons that visibly show connections over the different segments. Additionally, provide a high level of intellectual challenge based on what we assess diverse students already know instead of simply modelling the “right” language.

Third, *use the logic of the language*, such as *morphology*, to explain the underlying relationship among language and concepts. As an example, when introducing the concept of quantifiers, a word before a noun to express the quantity of the object, ask “Does it remind you of another word that you are familiar with? Could quantifiers be related to quantity?” Knowledge derived from understanding concepts is more likely to be transferable than ritual knowledge derived through drill and practice.

Finally, *use translinguaging pedagogies that encourage students to talk about different languages* to notice contrasts and similarities, which leads to greater awareness of language itself. A combination of a translinguaging approach with a conceptual one makes it more likely that students will be able to transfer conceptual understandings to their own speaking and writing.

Our Students

Sally suggests broadening our ideas of diversity and thinking of personhood as a spectrum of the interplay of more obvious ethnic, gender, and linguistic affiliations as well as less visible physical and neurological talents and interests. Responsive teaching and assessment for learning (AfL) help us rehumanize and relate to individuals, recognize them, and have confidence in their desire to learn and explore.

Sally observes that research in English classrooms does show how students appreciate the challenge and space given to them to think deeply and critically about language. “Students like the feelings of success, and the confidence shown in their abilities and their mastery of the subject,” she shares.

While she acknowledges that the processes involved in repurposing, reconceptualizing and rehumanizing the English curriculum for current times may be challenging, Sally sees the endeavour as an urgent and important one. “We’re all aware of changing times, so let’s change English education to adapt to them.” ■



CREATING PRINCIPLED KNOWLEDGE THROUGH DIALOGIC TEACHING

Below is an excerpt from some groupwork in a General Paper lesson where the teacher uses inclusive language like “Let’s” and “We” and asks questions that encourage students to think, reason and justify their answers. The teacher builds on and extends students’ responses, while still focusing on the form of the language. The extract is from research by Associate Professor Peter Teo from ELL at NIE (Teo, 2016, pg 56.).

Teacher: Let’s go.

Student 1: We are going to give money to the poor and train them to start a small business on their own so that they can sustain themselves.

Teacher: Okay so some sort of entrepreneurship project. Is this, where is this located?

Student 1: Er (6 seconds). The ...

Teacher: There must be a reason. If you have no reason, don’t suggest anything yet. If you don’t know where you are going to invest your project in, you must have a context okay. For now, Joshua’s group, what do you hear in (...) and Joshua’s project for his group?

Student 2: Donate money to the poor to train them in something.

Teacher: Some sort of business venture for them to? The reason for that please, er Richard, what do you think? What’s the reason for teaching them how to be entrepreneurs?

Richard: So that they can be self-sustainable.

Teacher: Self-sustainable.

Richard: Don’t need to rely on others for ...

Teacher: Don’t have to keep relying on charity for help. Okay but we have a question here, a gap that we don’t know is.

Student 3: Philippines, I think.

Teacher: The country. So, you are suggesting the Philippines. Why Philippines as compared to the rest of the world?

Student 4: Because like ...

Teacher: Okay I will come back to you. The other groups, why am I asking about context? Everybody, why am I asking you all to identify a country?

ABOUT THE PRESENTER



Dr Sally Ann Jones is a Senior Lecturer at the National Institute of Education, Singapore where she leads and teaches courses in English language and literature pedagogy. Apart from pedagogy and teacher education, her research specialisations are language in education, reading, the curriculum and the sociology of childhood and families. Her study (AFR 01/16 SAJ) referred to in the presentation was funded by the Ministry of Education (MOE) under the Education Research Funding Programme and administered by NIE. This article is based on her concurrent session at the Teachers’ Conference and Excel Fest 2021 titled “Repurposing, Reconceptualising, and Rehumanising English Language Education for Twenty-first Century Times”.

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Twin Engines to Nurture Self-Directed Learners



At Bukit Batok Secondary School (BBSS), the school mission is to nurture self-directed learners with abundance mentality. To accomplish this, Assessment for Learning (AfL) and Habits of Mind (HoM) are used as twin engines. Three BBSS teachers share how this is implemented at BBSS at the recent Teachers' Conference and Excel Fest.

What are the Characteristics of Self-Directed Learners?

Starting off the session, Upper Secondary Year Head at BBSS Mdm Dianah Bte Abdullah asks the audience to submit their responses to the question "What do you hope your students become?" on *Mentimeter*.

Agreeing with the top four answers in the word cloud generated, Dianah notes that the answers—resilient, independent, hardworking and confident—are traits of self-directed learners, adding that she believes "our aim as educators is to future-proof our students to face the VUCA (volatile, uncertain, complex and ambiguous) world."

To do so, it is necessary to nurture students who are resourceful, motivated to learn and able to apply learning to future tasks, or, in summary, a

self-directed learner. "According to Costa and Kallick," Dianah shares, "the three capabilities of a self-directed learner are the three 'selves': self-manage, self-monitor and self-modify."

There are observable dispositions when students practice these three "selves". For instance:

1. When a student is clear on their outcomes and has a plan of action, they are self-managing.
2. When a student makes good decisions and acts to change plans that have proven to not work, they are self-monitoring.
3. When we see a student apply their learning to future tasks, we know that they are self-modifying.

“Thus, to develop these observable dispositions in our students, we identified HoM and AfL as the twin engines to drive our student’s growth into self-directed learners,” Dianah concludes.

Developing Habits of Mind

The 16 HoM were developed by Prof Arthur L. Costa and Dr Bena Kallick after studying the behaviours of efficient and effective problem solvers. Some examples of HoM are managing impulsivity, finding humour, and responding with wonderment and awe.

“We believe that HoM develops future-ready individuals,” Head of Mathematics Department Mr Goh Thye Heng explains, “and provides a common language for our school to nurture dispositions of self-directed learners and builds the environment for students to be inculcated with the habits we would like them to have. By teaching students the HoM dispositions, we are helping them build the capabilities of self-directed learners.”

Some methods BBSS has adopted to create a HoM culture in the school include timetabling of explicit HoM lessons for lower secondary students and providing HoM training for new staff.

“We understood that building a HoM culture and habit formation would take time. Our school programmes, academic or co-curricular activities are guided by the process of teach, apply, experience and reflect, and we ensure that we give our students ample opportunities to apply HoM dispositions,” Thye Heng shares.

Citing an example, he adds that in his Mathematics department, the curriculum is taught in a spiral manner in which students go through the three strands (algebra, geometry and statistics) every year. “So, we emphasize the HoM of applying past knowledge to new situations verbally or even through visual reminders on worksheets.”

For schools that want to begin implementing HoM, Thye Heng recommends picking one or two HoM to infuse into lessons for starters.

“BBSS has implemented HoM school-wide and it is now managed by a HoM committee but in the beginning, it was the school management committee and senior teachers who crafted lesson plans for explicit HoM lessons and drove the school-wide implementation of HoM. The BBSS website has a page on our HoM journey that we hope will inspire you on your own HoM journey.”



Practising Assessment for Learning

Where HoM helps build the capabilities of self-directed learners, the challenge for teachers then becomes making self-directed learning an explicit outcome for students. This is where AfL is used by BBSS teachers to promote self-directed learning within and beyond the classroom.

The enactment of these AfL strategies and HoM dispositions facilitates the development of self-assessment and reflection in learning, and provides opportunities to close the gap between current and desired performance.

The focus of AfL is improving student learning. This is achieved through these five AfL strategies: student-friendly learning target, effective questioning, effective feedback, peer and self assessment, and formative use of summative assessment. AfL prompts students to ask: *Where am I going? Where am I now? How can I close the gap?*

School Staff Developer (Int) Mr Low Yizong shares, "For example, take the AfL strategy of effective questioning, which is related to the HoM disposition on questioning and posing problems. Teachers start the process by asking effective questions, giving students who have adopted the HoM disposition of questioning and posing problems a stepping stone to form their own questions."

Yizong believes that effective questioning is a process that starts before the lesson, where teachers plan questions to deepen the learning of their students. To him, it is a deliberate process to engage students, monitor their progress and understanding, and close any learning gaps.

The questions asked have to be student-friendly (i.e. catered to their level of understanding) yet provide effective scaffolding and remain focused on the students' learning objective. Effective questioning

not only helps students discover their learning gaps, but also develops higher order thinking skills as they answer the questions, organize their thoughts and ideas, and find questions of their own.

"In implementing AfL, it is important to set the stage for our students. We need to make sure students understand not just what they need to learn, but the depth of learning they should demonstrate," Yizong emphasizes.

Twin Engines in Action

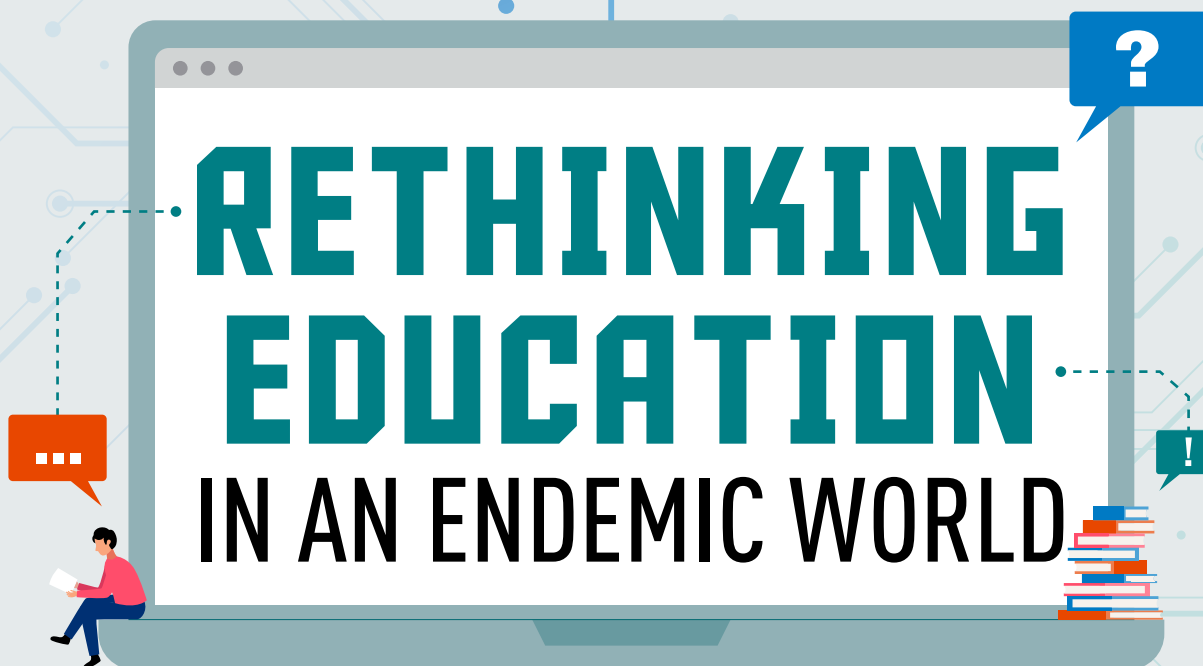
For the three of them, learning is a lifelong task and not just a singular event meant to satisfy a teacher. It is their hope to see their students develop a love of learning and not feel dependent on the judgement of others to determine the value of what they are learning.

As Yizong concludes: "Through nurturing HoM dispositions and the implementation of AfL, we empower our students to learn for life, and to take ownership of their own learning." ■

ABOUT THE PRESENTERS



(From left) Goh Thye Heng is Head of Department (Mathematics), Dianah Bte Abdullah is Year Head (Upper Secondary), and Low Yizong is School Staff Developer (Internal) at Bukit Batok Secondary School. This article is based on their concurrent session at the Teachers' Conference and Excel Fest 2021 titled "Empowering Self-Directed Learners through Habits of Mind and Assessment for Learning".



More than just a little red dot or a fine country, Singapore is also internationally recognized for its high quality education system. As COVID-19 continues to live among us despite medical breakthroughs in terms of providing people with vaccination against the virus, it becomes pertinent more than ever now that we nurture our youths to be creative and critical thinkers in order to thrive in an endemic world. In her keynote address at the recent Teachers' Conference and Excel Fest 2021, British education consultant, writer and researcher Dr Helen Beetham shares with teacher-participants the importance of adopting new ways of thinking in a rapidly changing world as we educate our youths for uncertain futures. Below is an edited transcript of Dr Beetham's keynote address.

Teaching in Times of a Pandemic

In these really difficult times we are going through, it is our teachers that have been in the frontline; second, perhaps, only to our healthcare colleagues. We have been helping children to continue with their learning during the challenges of the pandemic, and in the UK, we like to say that nobody is safe until everybody is safe.

This also rings true with learning—we can't really learn how to respond well to the crisis until we are all responding together. And it's in this spirit that I hope we can share some of the lessons that we have learned about digital learning and about digital literacy over the very difficult times we've been through.

So now, I would like to speak a little today about digital literacies; why I think they matter, and tell you a story of how they had become mainstream and where I think they might be going next. I'll talk a little bit about new kinds of thinking and how we can support our young people with those new kinds of thinking, and how they can also teach us to think in new ways.

Importance of Digital Literacy

Let's begin by asking what is now quite an old question. It was 15 years ago that I and some colleagues began to wonder: *What is this thing called digital literacy?* One of the conclusions we came to at the time was that digital literacies, having them or perhaps not having them in such

great abundance, would make a huge difference to individuals and to societies; that it would have a lifelong and lifewide impact. And how we define digital literacy is when an individual has the capabilities that allow them to live, learn and work in a digital society.

So we moved on from thinking only about how we teach with technology to thinking more about those technologies and those techniques being in the hands of learners: *What does it mean for our teaching when learners have access to this abundance of information and of technical devices? What does it mean when we focus on what they are doing, rather than what we're doing?* We have seen how important it is that everyone has access to digital functional skills but immediately once they have that access, students also need to know what to do with it.

And because we are educators, we want to know what our students are doing with knowledge in particular. *How are they engaging in new knowledge practices because they have access to these new platforms and media?* Now, there is another important aspect of digital literacy: if we were to thrive in a digital society, we know that societies are all not the same, even within one's culture. Bringing that back to education, subject disciplines are not the same. There isn't one form of digital literacy but many different methods, concepts, tools and media. Everyone will have their own style of digital participation and their own disciplinary perspective on knowledge practice.

So teachers have a special role and responsibility in guiding the next generation. We need a special set of skills and knowledge practices to be able to empower and support learners with their own digital practices. We also need to think about how we support those emerging skills that students and young people have.

Thriving in a Digital World with Technologies

I have said that digital literacies are about the capabilities that let us live, learn and work, and that having them or not, would have a lifelong and lifewide impact. The Organisation for Economic Co-operation and Development (OECD) agrees that digital skills in particular, are going to transform lives and drive economies. That goes back to

what I said earlier: As individuals and as whole communities and societies, we need to thrive through the use of these technologies.

Whatever the subject you are teaching in schools, there will be profound changes to how we research, how we teach, how we come to know and how we develop an identity as a teacher—all these things are changing rapidly. We have all been through a very difficult 15 months and I am very sure we could all point to the things that have changed for us in the ways we live, learn and work.

When I think about living today, I think about the kind of global shocks that are coming at us during this pandemic. And I think about how, with our technologies, we have found new ways of coming together socially through the use of technologies. But with these technologies also come new risks to our social cohesion—fake news, conspiracy theories, etc.

Thinking in a Rapidly Changing World

Now I'm going to talk a little bit about some of the ways that *how we think* might be changing in this rapidly changing world. I am sure some of you might have your own ideas and research about this so these are just kind of provocations for you to think about.

The first way of thinking I want to talk about is *computational thinking*—something we will be very familiar with. Algorithms and heuristics are things we may think of as being inside computers, but I'm sure they also are in your classrooms and you're beginning to help your students to think about how computers work, how algorithms work. It isn't just about understanding how to code but also about understanding what is happening when coding takes place; how we can understand also what happens when big datasets are put to use and how those datasets might in some instances be biased or might not show us the whole picture.

The second kind of thinking is *design thinking*. Now, teaching is a form of design—we think ahead about our students' needs and how we might be able to meet them by understanding their learning patterns and providing them with learning activities. So teachers are essentially functioning like designers—planning, designing,



doing and making. And increasingly, in most parts of the economy, design thinking will be used as a form of applied knowledge. So one of the things that our young people will be gathering through design thinking will be sort of spatial and visual literacy, which is very different from just reading an extended text. Design thinking requires them to understand the audiences, the user experience and how things are put together.

Finally, the last kind of thinking is *immersive thinking*. What does it mean to be able to be in a fully immersed environment where learning occurs in a sensory-rich way? This image comes from a recent exhibition at the Singapore Science Center that I liked—I thought it was really evocative of what it might be like to learn in an incredibly immersive and sensory fashion. If we are able to string together images, photographs and videos into a montage, our students can have a really rich and sensory-filled experience of the topics we want them to learn. But this is another, completely different way of coming to understand the world—it has its own limitations as well as its opportunities.

Living in an Endemic Tech World

What does this mean for us? This pandemic has made us experience global shocks and radical changes in how we work and live. We have little choice but to share our lives with technologies. Any kind of digital literacy framework that we might come up—and indeed any curriculum—is in some ways a story about the future. We are telling a story to ourselves and our young people about the kind of future they’re going to live in, and what they will need to thrive there.

So as educators, we have this extraordinary responsibility to do that thinking with our young people in a very transparent way and in a way that empowers and involves them. Living with uncertainty means creating new ways that we can be resilient which brings me to the question: *What does digital resilience mean?* For me, it means looking after each other’s well-being in new ways.

I know in Singapore, you have this concern for all these different issues that might be impacting on your young people and on your older people as well—issues around cyber bullying and your digital footprint.

So cyber resilience is about how we can flourish in a highly screen-based world in a highly screen-based society. We have to understand the risks and how we can mitigate them. More importantly, it is also how we can make our young people aware of these without disempowering and frightening them—because they need to take charge of this digital world. We need to focus also on not just how we think online, but how we feel online and how we make each other feel, and how we can develop new relationships virtually.

With technologies, one of the key things that resilience comes from would be our values. Technologies will constantly change how the world works but the values we have can stay more or less steady. We have to make sure that all the systems we are using have human beings at the center and in the heart of them. And this is a conversation we can also begin to have with our young people. ■

ABOUT THE KEYNOTER



Dr Helen Beetham is an education consultant, writer, researcher and commentator. She works for a number of global universities and international organizations. She works particularly in the areas of digital capability, digital citizenship and digital well-being, the learning experience, and curriculum design. She provides advice, analysis and strategic thinking, capacity building and stakeholder engagement in these and other areas. This article is based on her keynote address at the Teachers’ Conference and Excel Fest 2021 titled “Thinking Ahead: New Literacies for Uncertain Futures”.

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