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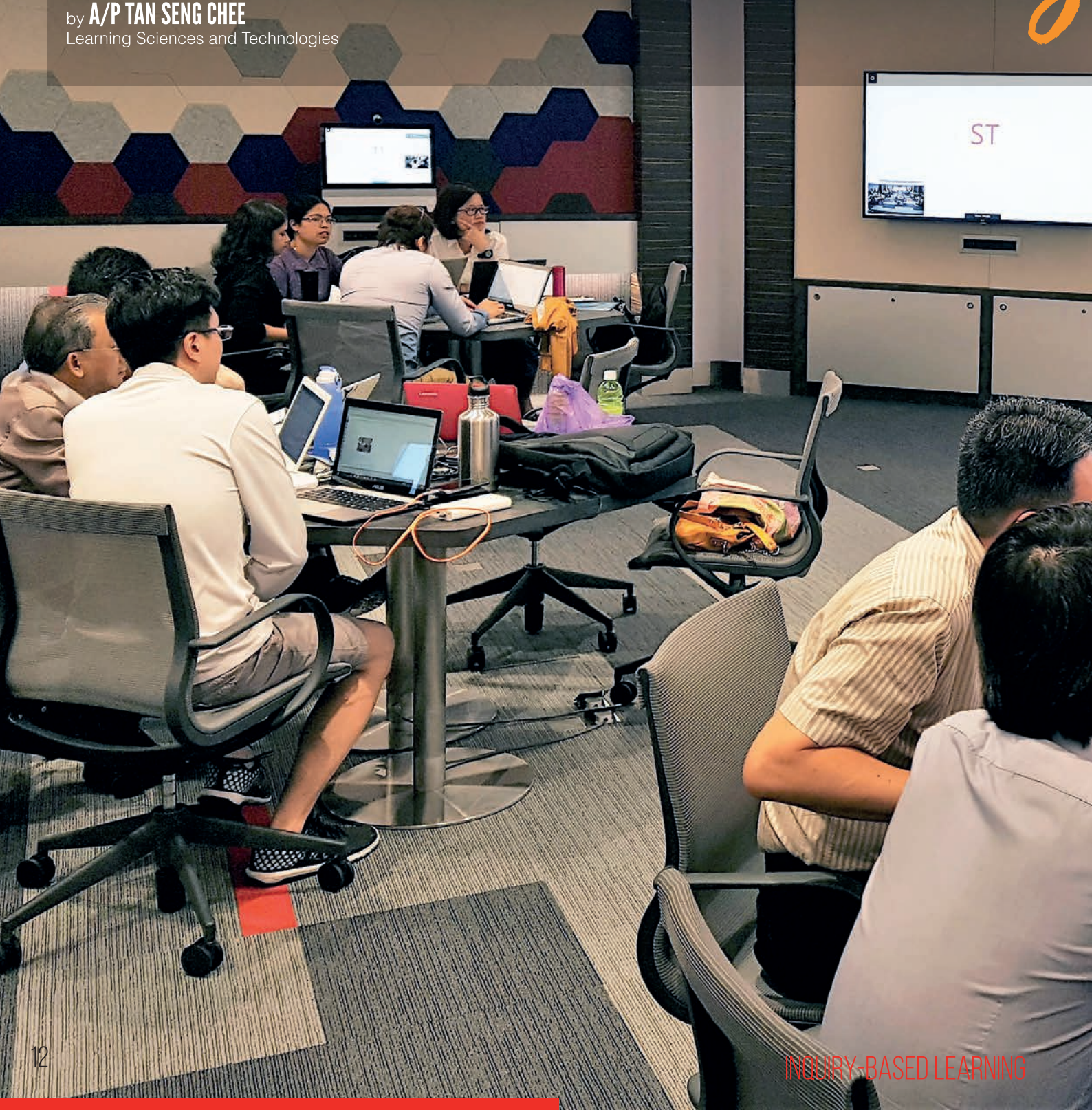
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KNOWLEDGE BUILDING PEDAGOGY: DEVELOPING TEACHERS

21st Century

by **A/P TAN SENG CHEE**
Learning Sciences and Technologies



Learning Sciences and Technologies Academic Group has been experimenting with knowledge building pedagogy since 2002. This sustained research work has since culminated in a local knowledge building community among Singapore schools, with strong support from the Ministry of Education. This research has an impact on teaching at NIE through the Master's course *Computer-Supported Collaborative Learning (CSCL) and Knowledge Building (MLT 802)*. In this course, teacher participants, together with other graduate students, learn about knowledge building by acting as a knowledge builder.

Knowledge building pedagogy, pioneered by Professor Marlene Scardamalia and Carl Bereiter from the University of Toronto, refers to an approach of learning through collaborative idea improvement among a group of learners. Learners have many ideas about how things work or why certain things happen. They communicate these ideas to their friends as explanations, conjectures and tentative theories. They then respond to one another's ideas with alternative explanations, information, evidence and questions.

Knowledge building is an idea-centric approach, using learners' ideas as the trigger and resources for learning. An idea can be a concept, an explanation, or even a question about a topic, which are related to other ideas. For example, in *MLT 802*, many teacher participants ask whether knowledge building pedagogy can work in Singapore schools, and if so, how they could design lessons and support knowledge building with CSCL. Many teacher participants wonder whether such an approach fits into Singapore classroom culture and whether their students will be able to perform well in examinations. Such questions usually generate vibrant discussions that prompt the participants to start their personal and group inquiries throughout the course.

Leveraging on **distributed expertise** and engaging participants in **collaborative** and productive talks is critical for knowledge building. When the participants contribute and share different ideas from different sources, these ideas become rich resources for learners to use when developing better ideas. In *MLT 802*, the participants share relevant journal papers and reflect on their personal classroom practices. The process is supported by a CSCL platform called *Knowledge Forum*. The *Knowledge Forum* provides the shared online space for the participants to visualise their collaborative idea development and to share resources.

One teacher, Mr Eythan Ng Beng Hong, reflected on his experience of *MLT 802* and eventually applied knowledge building for Chinese essay writing: *"Honestly, I brought with me a lot of scepticism when I first came into this course. However, as the lessons were carried out, the content and delivery simply blew my mind away... it has never come across my mind that it can ever be useful in helping the students to learn"*. Eythan also had a serendipitous discovery that knowledge building is consistent with Confucius' teaching:

“

三人行，必有我师

Among three people, one will always be your master

”

"Doesn't this coincide with Confucius' famous saying on learning? Everyone has something to teach and share with another person. This is re-applying a 1500-year-old theory in our modern days".

Even though knowledge building is considered a learning approach, the effect is beyond learning about what we know. The knowledge building process is built on the model of how scientists work. Scientists read about what others have done, find the knowledge gap, employ rigorous research to close this gap, and share their findings with others. The overall effect is the improvement of scientific theories. Similarly, when teacher participants pursue their inquiry in a shared space, they bring in different perspectives, experience and resources. The **dialogic** process can result in improvement of ideas, and sometimes generate **new ideas**. Ultimately, all participants gain from the rich discussion. Through this process, the teacher participants are put into a trajectory of developing an identity as a knowledge builder.