



The 4th Industrial Revolution and its Implications for Teacher Professional Development

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Making Sense of the 4th Industrial Revolution

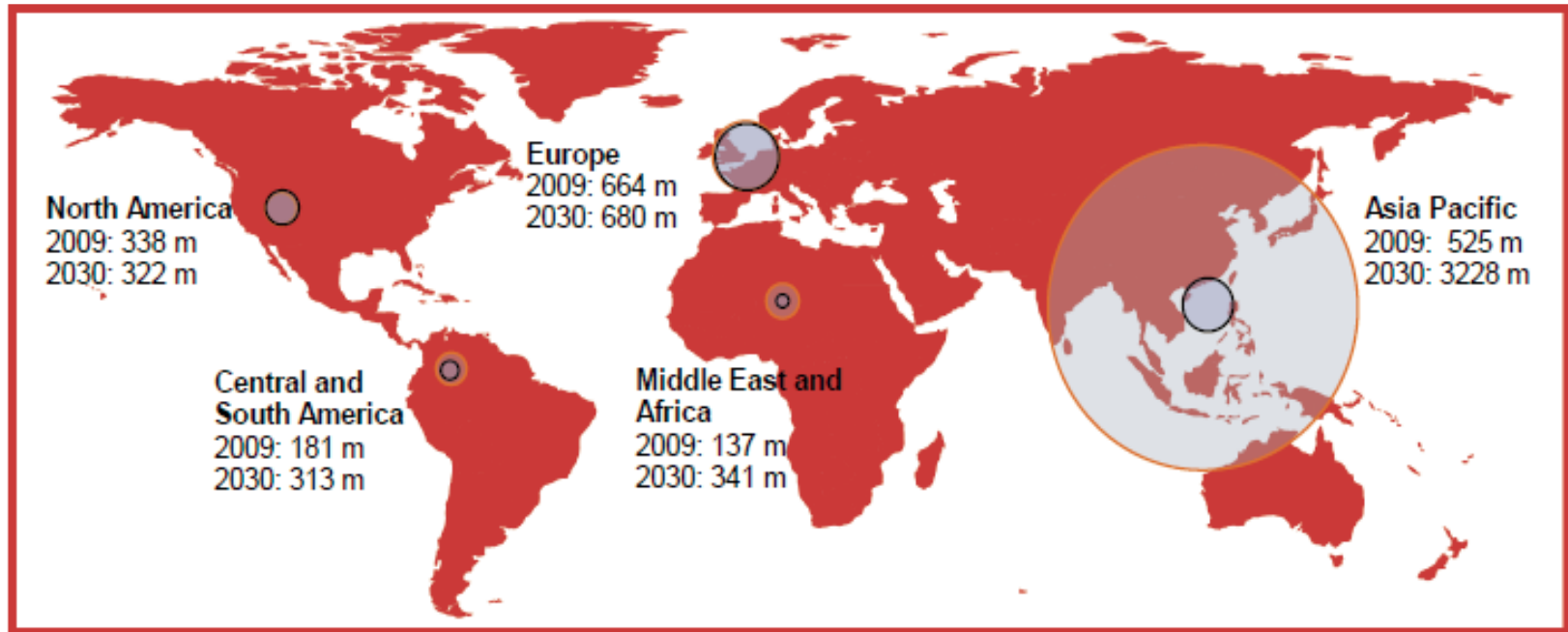
- ✔ First used at the World Economic Forum in 2016.
- ✔ It builds upon the technologies, infrastructure and processes of the 3rd industrial revolution (digital systems, communication, advances in computing power and automated production).
- ✔ Unlike the 3rd revolution that has enabled new ways of generating, processing and sharing information, the 4th revolution is about new ways of embedding emerging technologies in societies and even in human beings.
- ✔ Emerging technologies will affect our perception of the world, change our behavior and affect what it means to be human.

Concerns of the 4th Industrial Revolution



- ✔ Inequality: Will the revolution contribute to broad-base economic growth? Will everyone be able to access, afford and enjoy the innovations of the revolution?
- ✔ Security: Will a hyper-connected world that is becoming more unequal lead to fragmentation, segregation and social unrest? Will conflict be played out in the cyberspace beyond land, sea and air?
- ✔ Identity: Are digital and social media increasing diversity and enhancing the potential for collaboration or are they driving polarization in societies?

The Asian Century



Note: 'Middle class' is defined as those households with daily expenditures of between US\$10 and US\$100 per person. The black border circles and orange border circles depict the size of the middle-class population in 2009 and 2030 respectively.

Source: Kharas & Gertz (2010).

In the ADB's publication *Asia 2050*, it predicts that another 3 billion Asians will enjoy similar living standards to those in Europe today, with Asia accounting for more than half of the global output by 2050.

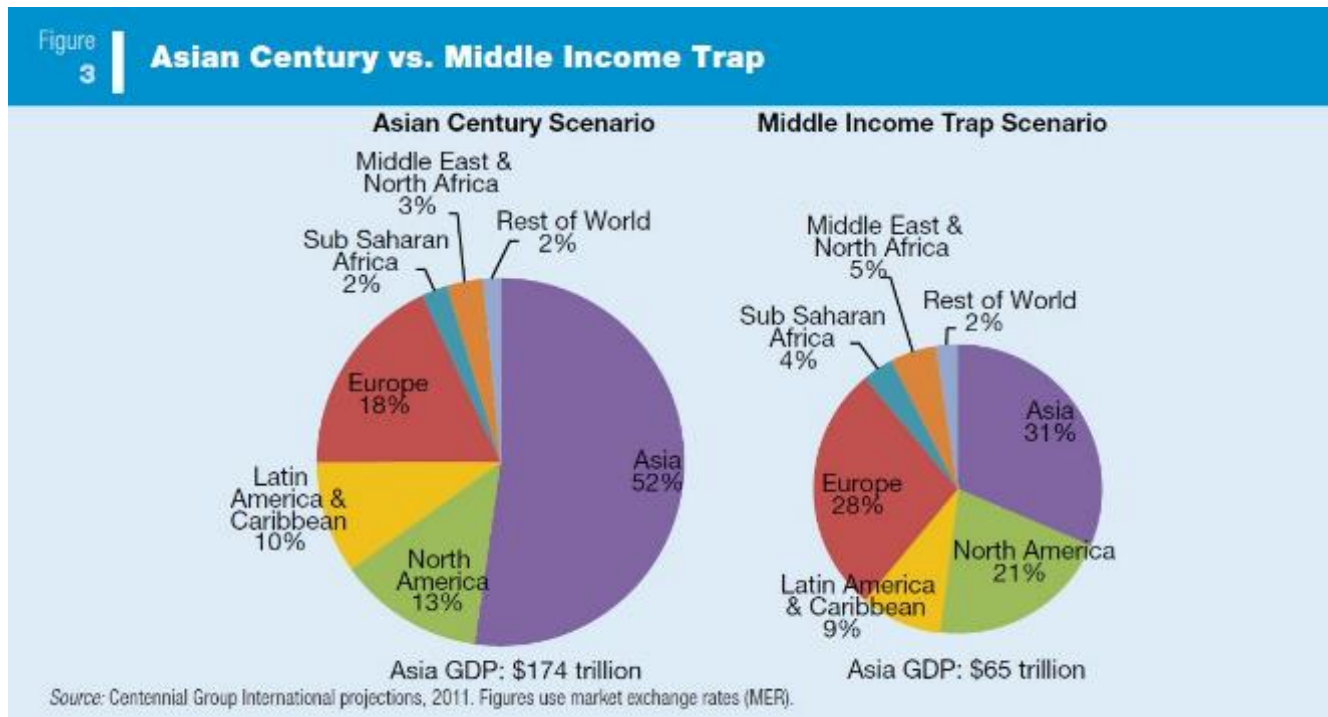
The Asian Century?



The Asian Century?



The Asian Century?



For Asia to sustain its growth and make the Asian Century a reality, it has to harness on the potential of the rapid advancement of technology, and makes sense and manage the global level of economic, ecological, social, political and cultural integration across countries that are part of globalisation.

The Asian Century



- ✔ In such a new world order, young people in Asia have to be prepared to be agents of change rather than just passive observers of world events; at the same time, to live together in an increasingly diverse and complex society and to reflect on and interpret fast changing information.
- ✔ Young people need to critically examine local and global issues across boundaries (country-country or rural-urban) and act upon them.

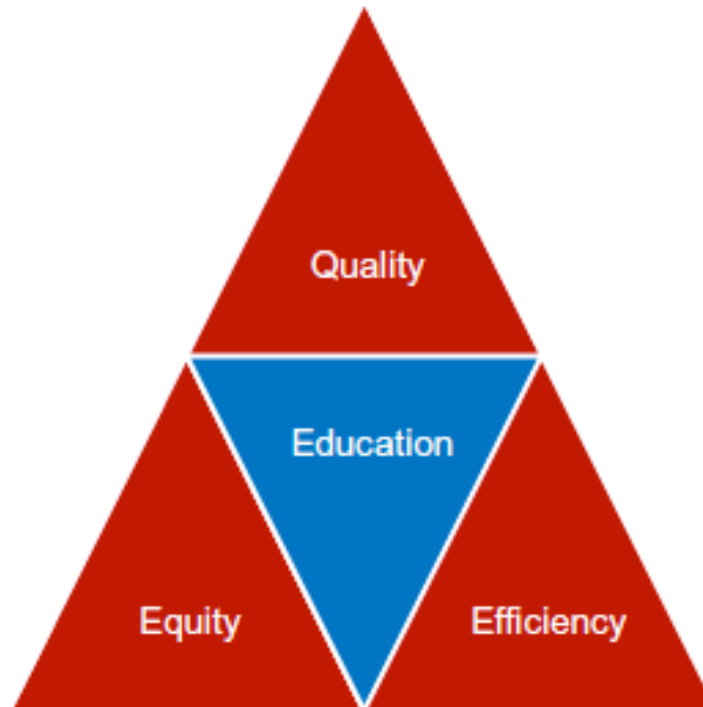
The 4th Industrial Revolution in the Asian Century

- ✔ Complex problem solving
- ✔ Creative and critical thinking
- ✔ Effective communication
- ✔ Ethical decision making
- ✔ Global perceptiveness
- ✔ Digital literate
- ✔ Lifelong learning

Education 2030

Education 2030 is aligned to the United Nation's Sustainable Development Goal 4 of "inclusive and equitable quality education and promote lifelong learning opportunities for all" (Incheon Declaration).

The Asian Century



Pivotal Role of Teachers & Professional Development

- ✔ Teachers have a pivotal role in the learning environment to engage all students in their learning, support them to monitor and manage their own learning, and provide opportunities for them to enhance their learning outcomes.
- ✔ For teachers to provide students with such quality access to learning and develop students' lifelong learning skills, they have to possess the competencies to carry out such a role.
- ✔ Continuous professional development of teachers ensures that teachers develop this set of competencies and are kept current with curriculum and assessment reforms. Teachers at various stages of their career, from pre-service through to induction and different levels of in-service experience and expertise, have to be provided with professional development opportunities to ensure that Sustainable Development Goal (SDG) 4 (quality education for all) could be realized.

SDG4 and Quality Teacher Shortage

- ✔ However, there is a “massive global teacher shortage” that acts as a critical bottleneck to achieving SDG 4. In 2016, UNESCO warned that close to 69 million teachers need to be recruited and trained in developing countries if we are to reach the goal of universal enrolment in primary and secondary education. Existing teachers are also often poorly trained.
- ✔ Among the 48 countries of sub-Saharan Africa, nearly one quarter of secondary school teachers had no formal training (Global Education Monitoring, 2016).

Challenges of Continuous Professional Development

- ✔ Continuous teacher professional development for all teachers across the entire school system poses a challenge for many countries, especially developing ones with significant rural-urban and regional gaps, and limited resources.
- ✔ Teachers from rural and remote schools may have fewer professional development opportunities due to the lack of accessibility to their schools or their lack of accessibility to professional development sites and resources; providing them with onsite and face-to-face professional development may have serious cost implications, for both financial and opportunity costs, especially for developing countries.

TPD@Scale: Role of ICT

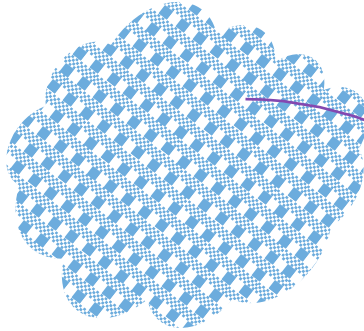
- ✔ Information and communication technologies (ICTs) enable high quality, cost-effective teacher professional development to be undertaken at large scale. ICTs enable teachers, especially in remote and rural areas, to learn anywhere and anytime by providing them with access to professional development courses and resources.
- ✔ Depending on the infrastructure of the area in which the school is situated, these courses and resources could be made available to teachers in a networked or non-networked professional learning environment. ICT-enabled courses and resources may be used to complement face-to-face courses in a program; online sessions may replace some face-to-face sessions in a professional development blended learning course; online courses may replace some face-to-face courses in a program.
- ✔ ICT-enabled professional development resources could also be used to support professional learning communities in schools, even those in remote and rural areas.

The 'cascade model': e.g. MOOCs about Blended Learning

Scaling up learning:
The 'cascade' model

From a MOOC with
10,000 teachers

- each participating teacher trains a local blended learning class of 25 teachers using MOOC resources and activities



- Professional development for 250,000 teachers (25 x 10,000)

TPD@Scale: Role of ICT

- ✔ From the equity, quality and efficiency perspectives, ICTs have the potential to provide all teachers with cost-effective and quality access to continuous professional development.
- ✔ ICT-enabled courses and resources could be developed to ensure consistency of quality and access for all teachers, irrespective of their location and circumstances. Teachers could access these ICT-enabled courses and resources without significant time away from school, and TPD experts or agencies do not need to spend an extended period of time with teachers face-to-face.
- ✔ ICTs also provide opportunities for professional learning communities of teachers to network, share and collaborate across schools and regions, and hence, supporting one another as they apply what they have learnt to their practices and reflect on these practices to enhance the quality of their student learning.
- ✔ Therefore, ICTs enable TPD@scale and as a result, school systems are more likely to realize SDG4.

TPD@Scale Example 1



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TPD@Scale Example 1



- ✔ A large-scale blended learning course *Early Language, Literacy, and Numeracy* (ELLN Digital) for K-3 teachers successfully replaced a 4-tier cascade model of face-to-face training for 193,000 K-3 teachers with significantly higher change scores for teachers from rural schools (FIT-ED, 2017).

TPD@Scale Example 1

Independent study
of courseware



Mentoring and support from Learning
Facilitators (eLFs)



Collaborative learning in
Learning Action Cells (LAC)



Each LAC should have a LAC Facilitator (LacF).
The LacF receives guidance from the course guide
and LacF guide, and mentoring from the eLFs.



LacF and eLF guides

TPD@Scale Example 1


ELL DIGITAL Module Overview ▾ Activities and Assignments Checklists and Worksheets


- Introduction
- Learning Objectives
- Pre-Lesson Activity
- Topics ▾
 - 1.0 Children's Literature and Child Development
 - 2.0 Considerations in Choosing Children's Literature for Use in a K-3 Classroom
- Lesson Synthesis
- Assignment
- References

Hide Menu

Children's interest in reading is developed by being exposed to literature for children.

Are you familiar with the major classifications of children's literature?

 Listen to this audio podcast. Do you recognize what type of children's literature was read?



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TPD@Scale Example 1





ELL DIGITAL Module Overview ▾ Activities and Assignments Checklists and Worksheets

- Introduction
- Learning Objectives
- Pre-Lesson Activity
- Topics ▾
 - 1.0 Building Vocabulary and Developing Concepts
 - 2.0 Tapping and Building Schema and Developing a Purpose for Reading
 - 3.0 Storytelling and Storytelling Devices
- Lesson Synthesis
- Assignment
- References

1.2 Strategies for building vocabulary and concept development

Although we should be ready with the meanings of words and concepts for unlocking, our role as teachers is not to give our students these word meanings but to help them figure out the correct meanings of the words/phrases by giving them clues or hints. This can be done in different ways.

 Watch the video to see how Teacher Rica unlocked the words in the sample list with her Grade 1 students.



What strategies does she employ to unlock the words? Write your answers in [Worksheet 1](#).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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TPD@Scale Example 1



ELLNDIGITAL Module Overview ▾ Activities and Assignments Checklists and Worksheets

Introduction
Learning Objectives
Pre-Lesson Activity
Topics ▾
1.0 Understanding Comprehension
2.0 Setting the Purpose for Comprehending Text
3.0 Exploring the Dimensions of Comprehension
4.0 The Art of Questioning
5.0 Developing Reader Response
Lesson Synthesis
Assignment
References

Activity 1

Below are statements based on the guidelines for selecting stories for children discussed in Module 2 Lesson 1. Go over your copy of *Araw sa Palengke* and tick the statements in the list below that you think describe the book. Take note of particular aspects or details of the book that support each statement you select.

Overall Content

- The material is something the students can relate with.

Language

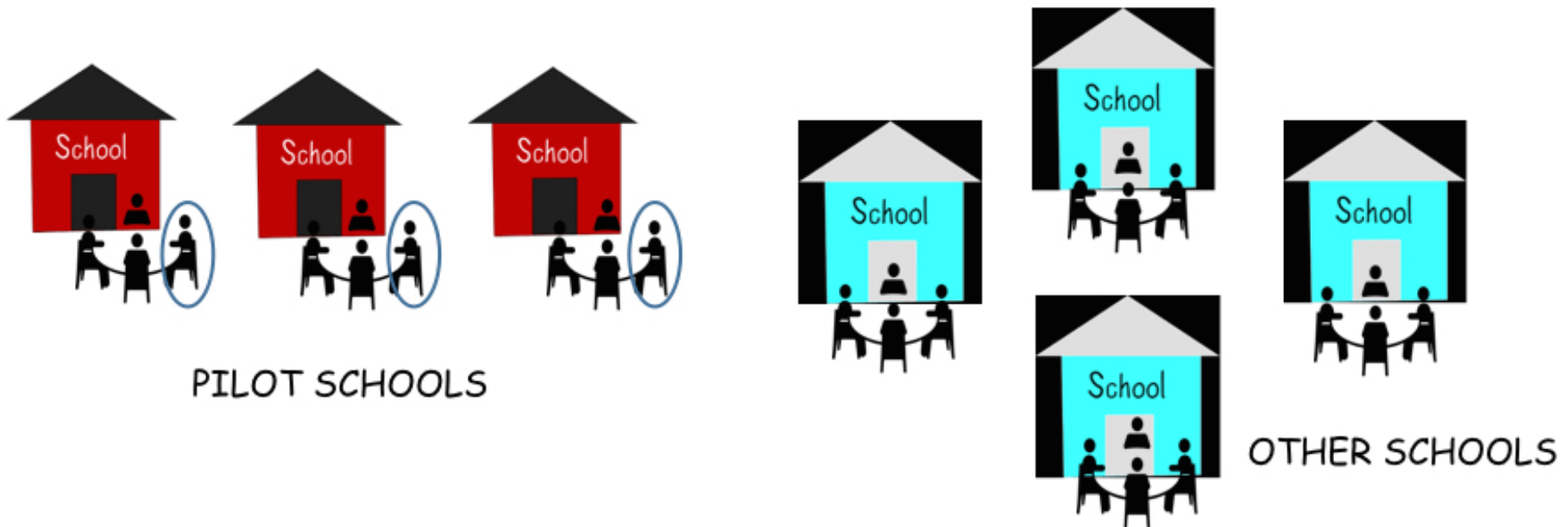
- The text enriches the students' vocabulary.
- The language is rich and concise.
- The characters engage in dialogue that allows the readers to know them better.

Characterization

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

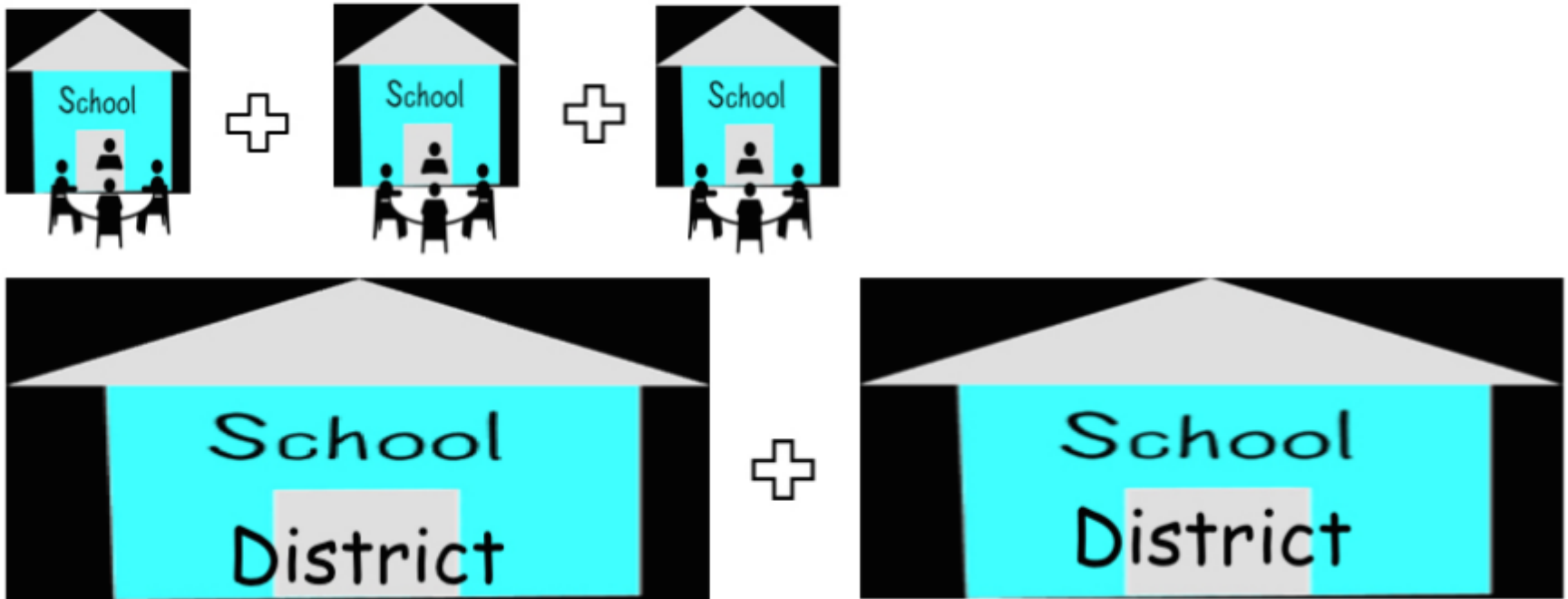
TPD@Scale Example 1

Pilot divisions can expand program reach to the rest of their schools by using their pilot LAC Facilitators as Learning Facilitators



TPD@Scale Example 1

Pilot divisions can expand program reach school-by-school, or district-by-district

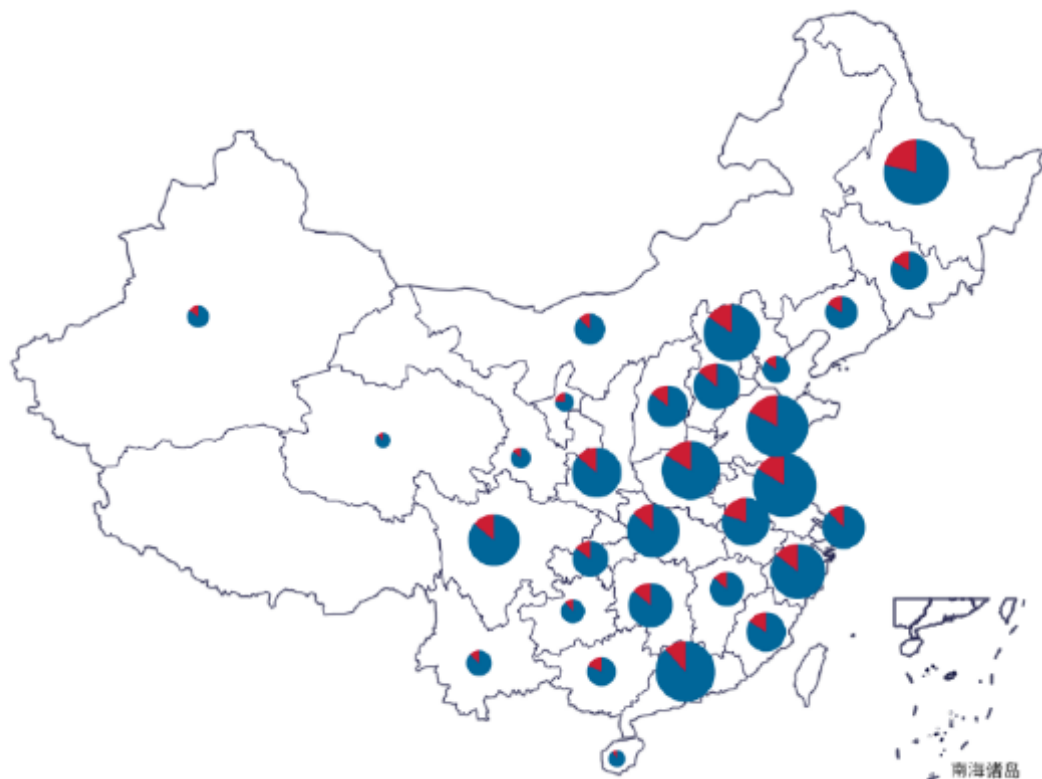


TPD@Scale Example 2



北京大学数字化学习研究中心

“翻转课堂MOOC” 团队出品



TPD@Scale Example 2

- ✔ Peking University's *Flipped Classroom Pedagogy* MOOC found that 60% of the 126,000 teacher participants came from the less developed regions of China, and more than 15% (16,570) were persistent teacher-learners, who enrolled in 2 or more runs of the course (Wang, Chen, Fan, & Zhang, 2017).

TPD@Scale Example 2

*“Last year, I went to a very famous high school in our province to observe a class taught by a veteran teacher. She made detailed lesson plans for every minute of the class. After class, some teachers questioned such rigid planning. **I was really confused at that moment!**”*

*I thought about this and **remembered our MOOC** dealt with this topic in Module 4, **so I went back** to watch the videos again.”*

-- A persistent teacher-learner

TPD@Scale Example 2

“After I learned this MOOC for 3 times, I felt like having to share with colleagues in our school. ... So in our workshop, we all started to work together on this MOOC...

One of the most exciting thing was that, teachers started arguing with each other about how to teach better. They never argued with each other before, because they used to have nothing to argue about...



Challenges to TPD@Scale

- ✔ ICT infrastructure and devices
- ✔ Quality assurance and accreditation
- ✔ Misconceptions about cost and benefits
- ✔ Teacher appraisal and policy
- ✔ Teacher competency framework
- ✔ Engagement of schools, governments, higher education institutions, development agencies and private corporations.
- ✔ Leadership support

Thank You!!



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Disclaimer

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