Designing for Self-Directed Learning

Have a question?

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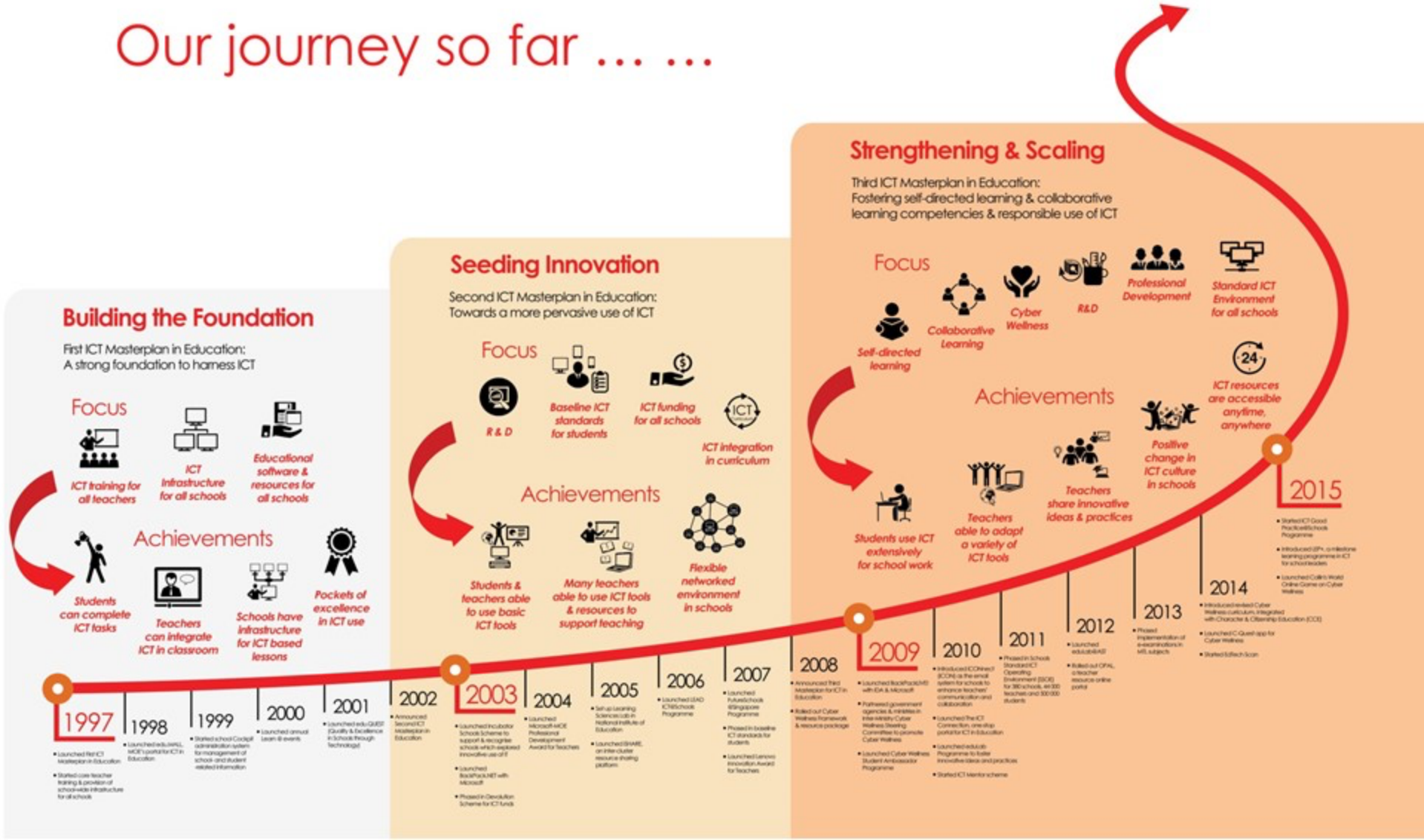
What started us on self-directed learning?

ICT IN EDUCATION SINGAPORE

Deepening Learning, Sharpening Practices

Preparing students who will be
Future-Ready & Responsible Digital Learners

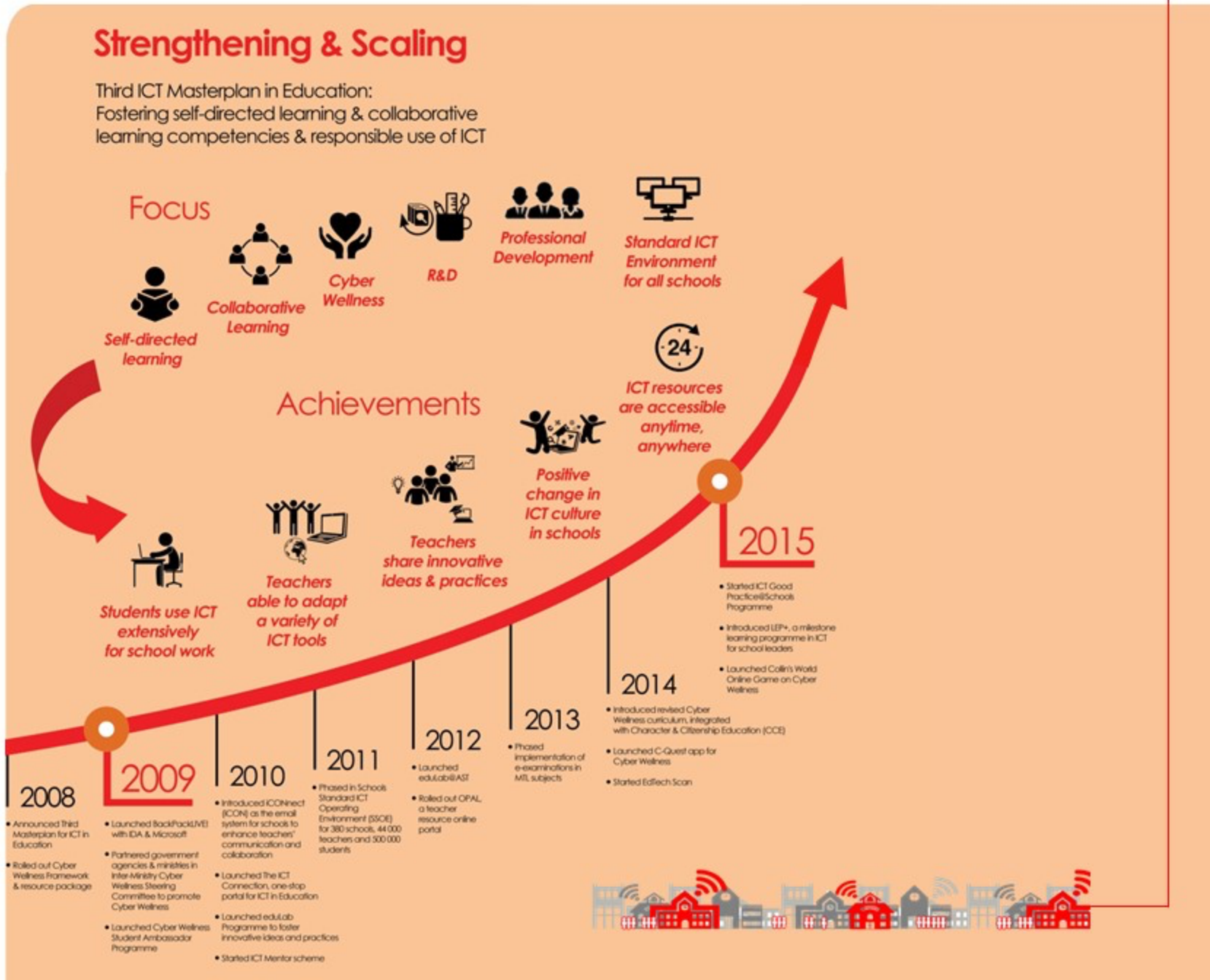
Our journey so far ... ...



2009 - 2014

Strengthening & Scaling

Third ICT Masterplan in Education:
Fostering self-directed learning & collaborative learning competencies & responsible use of ICT



Pause & Consider

What constitutes self-directed learning?

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Extract from **Self Directed Learning with ICT: Theory, Practice and Assessment** (p.12-13)

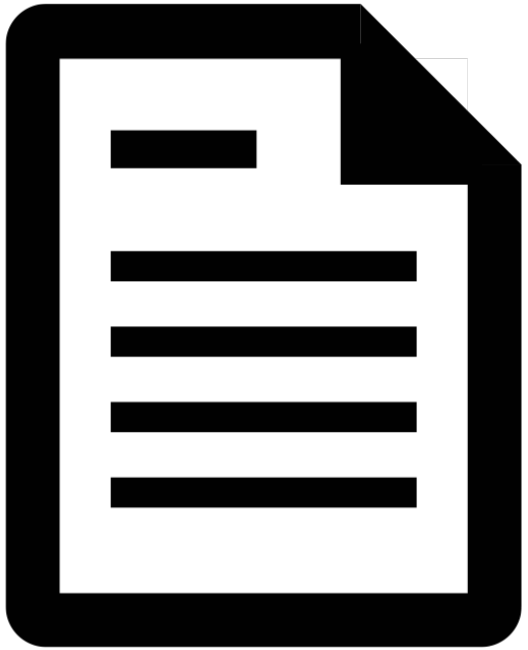
Amongst these diverse perspectives of SDL, we find the definition proffered by Gibbons (2002) most useful for our formal education in Singapore. According to Gibbons (2002), SDL is "any increase in knowledge, skill, accomplishment, or personal development that an individual selects and brings about by **his or her own efforts** using any method in any circumstances at any time" (p.2). Gibbons' (2002) notion of SDL stresses the importance of developing ownership of learning as it will motivate a learner to pursue a learning goal and persist in the learning process. Based on his perspective, SDL involves **initiating** personally challenging activities and **developing** personal knowledge and skills to pursue the challenges successfully. This notion of SDL resonates with what our Singapore Education Ministry aims to achieve through the third ICT masterplan. Specifically, we think it leads to three important aspects entailed in self-directed learning: (a) ownership of learning; (b) self-management and self-monitoring; as well as (c) extension of learning.

Relevant ISTE Standards for Students: Empowered Learner & Knowledge Constructor

Phases of SDL (Gibbons, 2002)	Student's readiness	Student's SDL characteristics		
		Ownership	Monitoring and Management	Extension of learning
Self-directed learning	High	High ownership, identify and commit to learning goals	Skilful in managing and monitoring own progress of learning	Extend learning beyond school's curriculum
Self-planned learning				
Self-managed learning				
Teaching students to think independently				
Incidental self-directed learning	Low	Low ownership, dependent on teachers to direct learning	Unable to manage and monitor learning	Learning is limited to resources provided in classrooms

What are some examples of SDL tasks?

Let's refer to Handout 1 & 2 in the conference digital tote...



Grade 7 Singapore History
Sample SDL Task 1

Grade 8 Russian History
Sample SDL Task 2

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Read & Review

What other observations can you make about these SDL tasks?

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DEVELOPING DESIGNERS THROUGH DIGITAL JOURNALING

For Secondary students in the Design and Technology classroom using Microsoft OneNote

By Lee Huan Leng and Tan Lok Huang

This practice develops students' disposition for design, focusing on idea generation. It seeks to help students overcome individual limitations to expand the variety and quality of ideas generated by enculturating students to work in a community. This entails guiding students to maintain their design journals online and to share initial ideas for feedback and suggestions for improvement, leveraging the Microsoft OneNote tool. The learning outcome is for students to acquire the working dispositions of professional designers.

WHY

Inadequate idea generation and development

Design and Technology (D&T) seeks to raise students' awareness and appreciation of design, and develop a positive attitude for enterprise, creativity and innovation through research. Particularly in the area of innovation, project teachers observed that students tend to struggle with generating plausible solutions during ideation to meet the identified needs.

This observed struggle could be attributed to students not being equipped to work in teams to co-create solutions, often preferring instead to work alone. This in turn contributed to the limited ideas generated, both in terms of quality, quantity and variety. Students also struggled to develop initial ideas and often stumbled over the elaboration of their ideas.

HOW

Strengthen idea development

One of the first things students need to learn would be that "all ideas are improvable" (Scardamalia & Bereiter, 2006) and this mindset is developed through engaging students in a critique process facilitated by Microsoft OneNote. During idea generation, students post their design sketches for peer critique, receiving almost immediate feedback and suggestions for improvement from their group mates and other classmates. Students are then required to synthesise the feedback and

Mediated by technology, this practice allows all ideas to be recorded and thus no idea will be lost. This also allows students to revisit initial ideas easily. Using Microsoft OneNote, students are also able to easily solicit and give feedback, collaboratively expanding the realm of possibilities considered. The feedback and suggestions received become the very fodder that enriches the initial ideas, helping the students to further develop and embellish their initial ideas.

A typical series of lessons includes:

1. problematising the design situation,
2. posting initial ideas,
3. building on each other's ideas ,
4. doing a rise above to consolidate everyone's learning.

DO

Apply design principles

Activities

- [A1]Make use of prior knowledge to generate ideas
- [A2]Enable analysis and evaluation to improve ideas
- [A3]Encourage synthesis of ideas

Participation Structures

- [P1]Enable collaboration
- [P2]Establish strategies for making constructive comments
- [P3]Encourage open sharing of ideas

SAMPLE LESSON PLAN

Duration : 100 minutes
Level : Secondary 1
Subject : Design and Technology
Topic : Idea Generation

Learning Objectives

At the end of the lesson, students should be able to:

- Use the shape borrowing technique to sketch out their initial design idea on Microsoft OneNote
- Use Knowledge Building (KB) sentence starters to evaluate each other's design ideas in their group based on design factors of function, ergonomics and aesthetics, and understand that these comments are intended to improve each other's design ideas
- Make improvement to their own initial design ideas based on input from peers and the teacher

Duration	Activity	Application of DP	Resources
Tuning In			
5 min	**Step 1 |** Teacher explains the lesson objectives and articulates lesson expectations on what students need to do (idea generation using the shape borrowing technique) and how they are going to carry out the task (group work).	**[S1, S2]** Teacher reinforces the importance of collaboration, and encourages students to keep an open mind that all ideas are improvable. Teacher also promotes creating a safe environment for students to build knowledge together.	KB posters
5 min	**Step 2 |** Teacher groups students into 4s or 5s and assigns well-defined roles to each group member.	**[P1]** Assigning students specific roles is an effective way to structure group work. It helps to distribute responsibility and ensure accountability for all students' participation. As students practise different roles, they have the opportunity to develop a variety of skills.	Role tags
Lesson Development Phase 1: Problematising Design Situation			
10 min	**Step 3 |** Teacher provides the design situation and engages students to share their experience on the given situation.	**[A1, P3]** Providing a visual stimulus helps students appreciate the design situation, and is a useful way to encourage participation.	Image of a cluttered table
	Step 4 | Teacher highlights the importance of clearly defining the user need when ...tion. ...esigners		

practice⁴

Relevant ISTE Standards for Teachers: Facilitate and Inspire Student Learning and Creativity

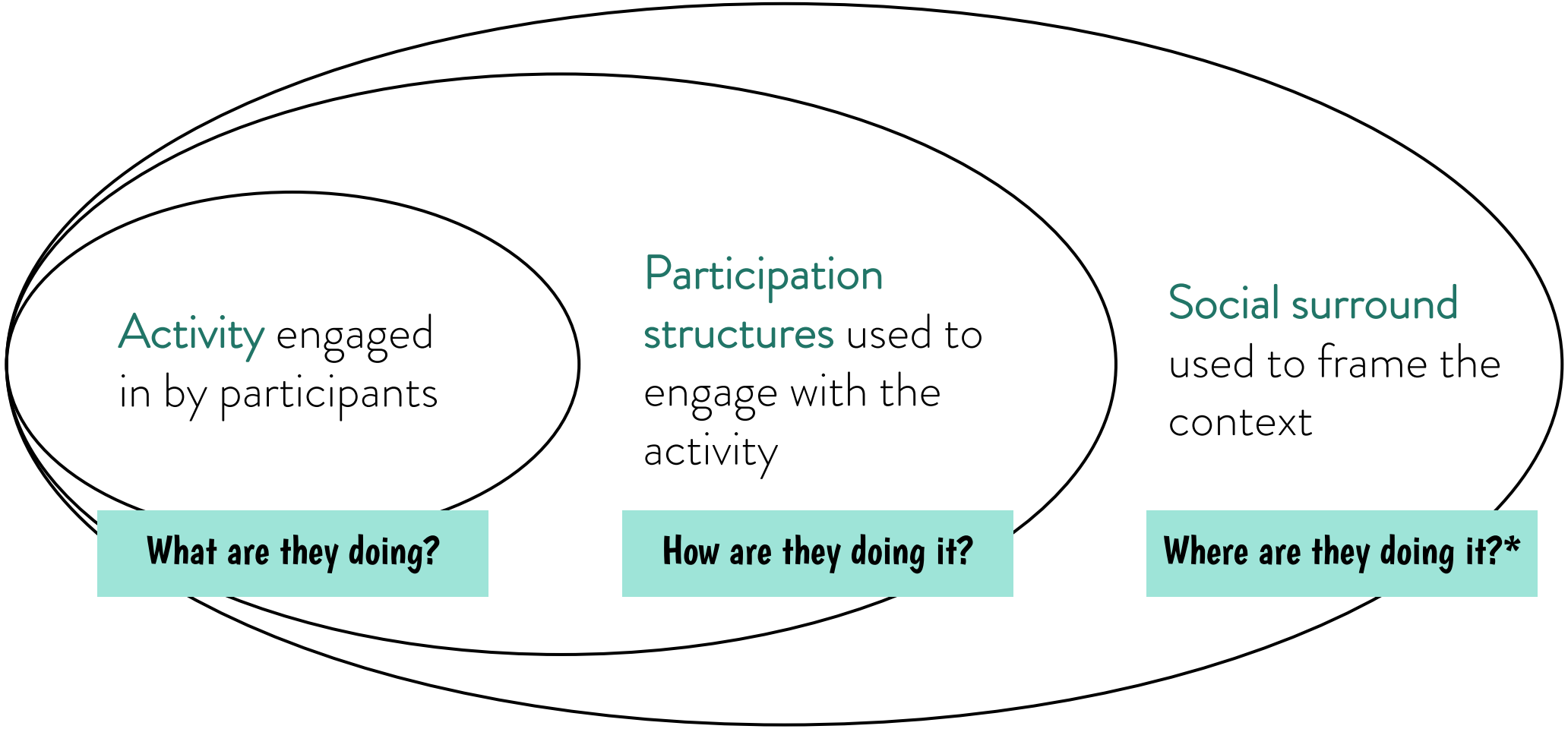
> **Design principles** mediate between learning theory and the design of learning. When based on the learning mechanisms embodied in the design of classroom activities, participation structures, and social surround, design principles provide a framework for understanding **how and why things work** in the classroom. They **make explicit** the design considerations that are critical for iteratively analysing and optimising the design and implementation of the ICT-based pedagogical practices to improve student learning.

Professor Dr. Manu Kapur
eduLab Project Consultant
Chair of Learning Sciences and Higher Education
ETH Zurich, Switzerland

Relevant ISTE Standards for Teachers: Design and Develop Digital Age Learning Experiences and Assessments

How can we design for self-directed learning?

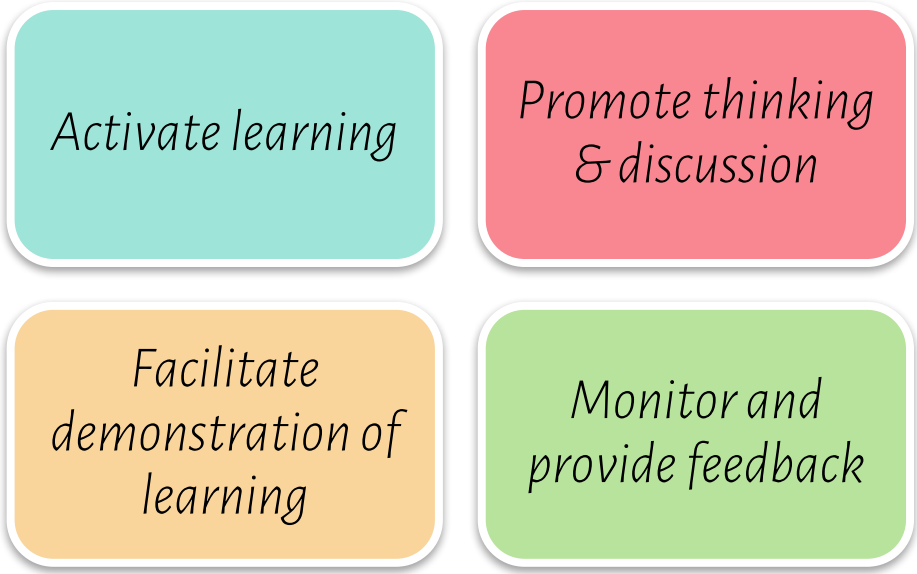
3 Layers of Learning Design



*Makes us think about physical setup & social norms, which we sometimes neglect when planning a lesson

2 Design Questions

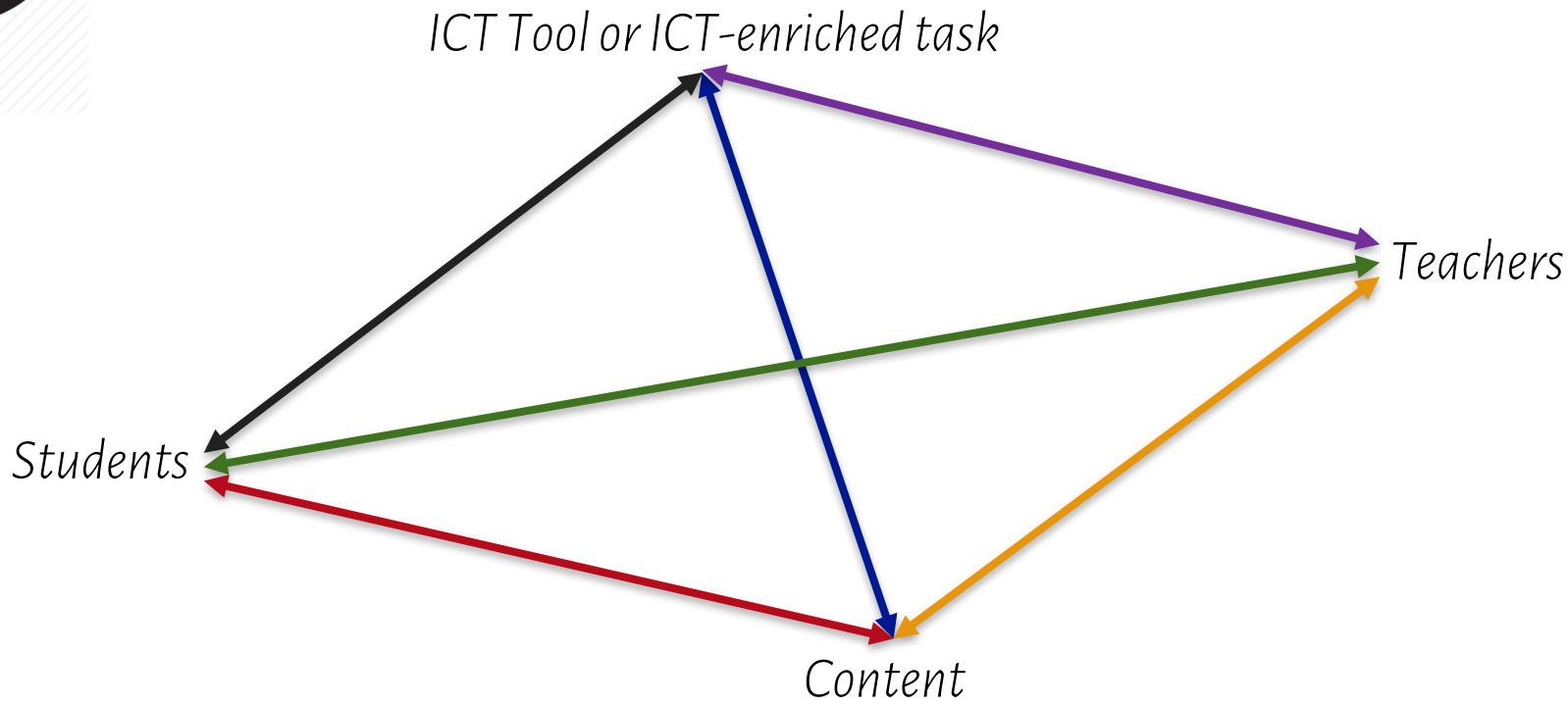
How can we design activities that promote **active learning** with technology?



Active Learning Processes

2 Design Questions

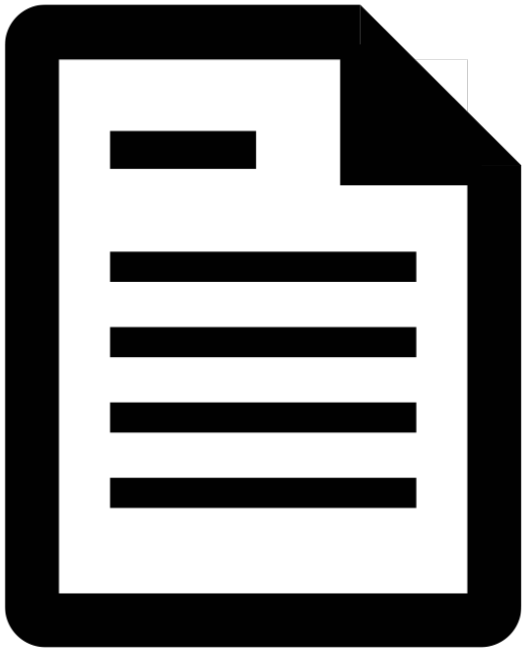
How can we facilitate the different <u>types of interactions</u> in the active learning processes?



Credit: Diagram by Dr. Choy Ban Heng from National Institute of Education, Singapore

1 Instance of Implementation with Videos

Let's turn now to Handout 3
in the conference digital tote...



Grade 9 English Language Arts
Sample SDL Task 3

1 Instance of Implementation with Videos

		Video-Based Learning Design Principles
A	• Activate thinking	• Prime students to learn through activity
	• Promote thinking & discussion*	• Guide student to attend to pertinent content in the video • Enable students organize and examine information from the video, and glean new insights using prior knowledge and/or other sources
	• Facilitate demonstration of learning	• Offer opportunities for students to apply insights gleaned, which can be similar or different from the video context
	• Monitor & feedback	• Provide students with concrete suggestions for changes and/or improvement
P	• Facilitate collaborative learning*	• Ensure students think independently before working with others • Encourage sharing of ideas among students
S		• Create a safe environment for students to explore and generate

ICT IN EDUCATION SINGAPORE

Vision

Future-ready &
Responsible Digital Learners

Outcome Goal

Quality Learning in the Hands of Every Learner-
Empowered with Technology

Enablers

Teachers as Designers of Learning Experiences & Environments

School Leaders as Culture Builders

Implementation focuses on ....

Integrating ICT into curriculum & assessment

Designing quality online resources

Developing Cyber Wellness & New Media Literacies

Providing professional development & facilitating learning communities

Innovating & developing good practices for ICT in education

Providing infrastructure to support anytime, anywhere learning

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http://www.cindyong.sg

http://www.videobasedlearning.sg

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Thank You!