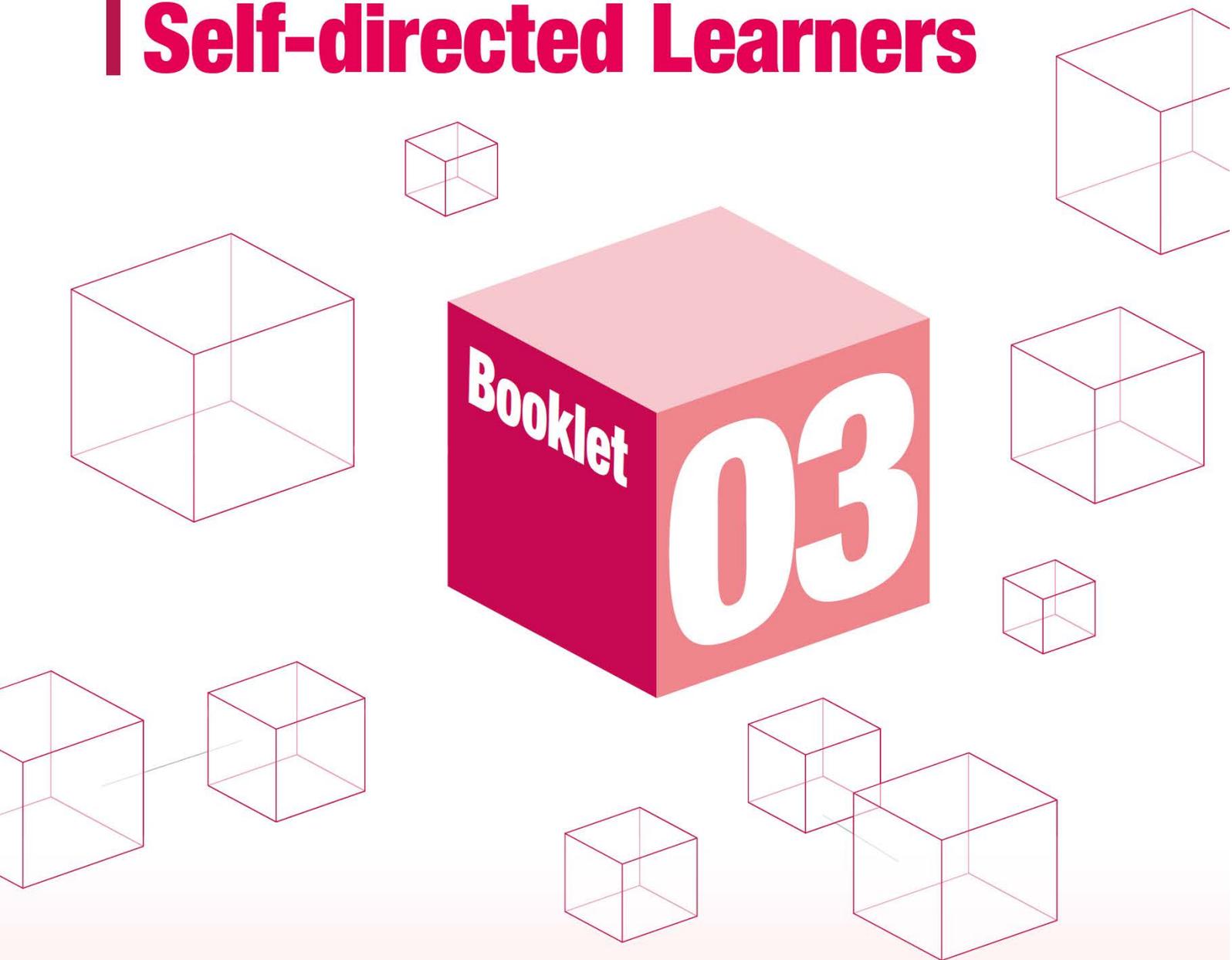


# Effective Learning and Teaching: Developing Lifelong and Self-directed Learners



## **Booklet 3 Effective Learning and Teaching: Developing Lifelong and Self-directed Learners**

This is one of the 11 booklets in the *Secondary Education Curriculum Guide*. Its contents are as follows:

### ***Contents of Booklet 3***

3.1	Background .....	2
3.2	Purposes of the Booklet .....	3
3.3	How Students Learn .....	3
3.4	Learning and Teaching Approaches and Strategies .....	6
	3.4.1 <i>Roles of Teachers</i> .....	6
	3.4.2 <i>Roles of Students</i> .....	8
	3.4.3 <i>Framework of Learning and Teaching</i> .....	9
	3.4.4 <i>Exploring Different Pedagogical Approaches</i> .....	11
	3.4.5 <i>Effective Learning and Teaching Strategies</i> .....	15
3.5	Harnessing Information Technology to Facilitate Learning and Teaching .....	25
3.6	Promoting Values Education for Effective Learning and Teaching .....	26
	3.6.1 <i>Goal of Values Education</i> .....	26
	3.6.2 <i>A Whole-school Approach to Promoting Values Education</i> .....	27
	Bibliography .....	32

### 3.1 Background

- Since 2001, the Learning to Learn curriculum reform has been implemented to promote a student-centred approach and curriculum and pedagogical changes that foster students' active learning, engagement and ownership, which are conducive to whole-person development and learning to learn capabilities to achieve lifelong learning. This is complemented by the building of communities of practice among teachers and the engagement and support of different school stakeholders.
- Teachers are now using more varied teaching approaches ranging from direct instruction to enquiry learning to facilitate students' understanding and acquisition of subject knowledge, development of generic skills and positive values and attitudes, as well as achievement of the seven learning goals. Since the implementation of the curriculum reform, there have been a lot of changes in our society and around the world. Ongoing renewal of the school curriculum is necessary so that our school education can keep up with local, regional and global changes and provide the best possible support and conditions for student learning. It is envisioned that our school curriculum will continue to focus on learning and to improve the quality and effectiveness of learning, and the curriculum will remain student-centred and continue to provide students with multifarious learning experiences and equip them to be lifelong and self-directed learners.
- In the last decade or so, self-directed learning (SDL) has been progressively promoted in primary and secondary schools as a critical learning to learn skill and attribute. Students undertaking SDL are expected to plan, monitor and review their learning with guidance and support from their teachers. With the promotion of assessment as learning, students are given opportunities to learn about the use of rubrics and success criteria, and to conduct self- and peer assessment, which help develop their ability to monitor and evaluate their own learning. With the implementation of the New Senior Secondary Curriculum since 2009, students have more opportunities to plan, monitor, evaluate and reflect on their learning through their engagement in Independent Enquiry Study and development of their Student Learning Profile.
- To maintain Hong Kong's competitive edge amidst advances in technology and innovation, there is a need to develop our students' capacity to use information effectively and ethically to acquire and construct knowledge. With the launching of the Fourth Strategy on Information Technology in Education (ITE4), e-learning is promoted across different Key Learning Areas (KLA) to support the development of students' SDL capabilities to become

lifelong learners. It is anticipated that the design of quality learning experiences that incorporate new pedagogies will be accelerated by digital technologies and help to build students' deep learning competencies. This will also enhance the development of new learning partnerships between and among students and teachers.

- The advancement of information technology (IT) creates a new dimension of learning and teaching. In addition to adopting more efficient and effective ways of learning and teaching, and taking advantage of the increasingly widespread use of information and communication technology, pedagogical practices are undergoing a process of renewal and renovation. Building on the notion of Pedagogical Content Knowledge (PCK) introduced by Professor Lee Shulman (1986) on the development of teachers' knowledge of "how" and "what" of teaching, and in response to the increasing adoption of IT in education, the framework of Technological Pedagogical Content Knowledge (TPACK) was introduced by Mishra & Koehler (2006) on the extension of teachers' knowledge to incorporating technology into teaching (*please refer to Section 6.4.2 of Booklet 6D for details*).

### **3.2 Purposes of the Booklet**

- To examine ways of equipping students to be lifelong and self-directed learners
- To discuss different pedagogical approaches and effective strategies to enhance learning and teaching
- To highlight the importance of information technology and values education in developing students' capacity to become self-directed learners

### **3.3 How Students Learn**

- It is difficult to give a single clear definition of what learning is and how it takes place. Nevertheless, there is a close relationship between learning, teaching and assessment. Through knowing more about different learning theories, observing how different teaching practices impact on learning, and examining how learning is assessed, teachers can become better informed about and more skilled at fostering and enabling learning.
- There are different theories about learning, each of which attempts to explain how learning occurs in response to the changing contextual factors and their implications for education. With our expanded knowledge and understanding

of learning sciences, theories of learning have been evolving since the past century. For instance, the study of metacognition became popular in the late 1970s, and behaviourism then gave way to cognitive theories that focus on learners' mental activities. Starting from the 1980s and 1990s, more attention has been given to the socio-cultural context of learning, as well as how learning is mediated through social interaction and dialogue among learners and with their teachers. Since the turn of the century, there has been a growing interest in educational neuroscience which investigates how the brain state of the learner could be relevant to learning and teaching, e.g. the role of emotions in learning.

- Among the various theories of learning, constructivism and the related instructional approaches to metacognition and self-directed learning form an important theoretical basis for learning how to learn and lifelong learning, both of which are the focuses of the curriculum reform in Hong Kong. Knowing about the relationship between learning theories and educational practices helps teachers understand, foster and enable student learning. To this end, a well-constructed website on learning theories and teaching practices has been developed by a project team of The University of Hong Kong (*please visit <http://kb.edu.hku.hk/> for more information.*).
- Some recent studies have revealed that learning is critically influenced by learning motivation, and high self-efficacy enhances learning effectiveness. In addition to motivation, it is also important for students to develop metacognitive skills and become more aware of their own learning process. For instance, students learn how to set goals, and during the learning process, they monitor and reflect on their learning experiences. After evaluating their learning progress, students identify ways to improve their learning. This, in essence, is what we expect of a self-directed learner.
- There is also a growing concern over surface learning and deep learning in face of the challenge of the digital age, the demands of the curriculum, and the increasing complexity of factors shaping learning and teaching inside and outside the classroom. It is a natural path for students to progress from rote learning of selected contents for the mastery of foundation knowledge to developing capabilities for learning, creating, connecting and applying the knowledge and skills acquired proactively and purposefully in authentic contexts. It is thus crucial for teachers to adopt pedagogical approaches to help students achieve deep learning and develop ownership in learning.

- In deep learning, students discover and master knowledge across disciplines in the classroom, connect it with their prior knowledge in the real world, and engage in learning tasks for meaningful application. The creation and use of new knowledge developed in the learning process is an important outcome of deep learning. With appropriate use of technology, challenging learning tasks can be designed to enhance students' intrinsic motivation and help them apply their learning in real-life contexts effectively.
- SDL is only achievable when students possess a sense of self-awareness of their own beliefs, strengths, abilities, strategies adopted, and accept responsibility for their learning. In this regard, students should be provided with an encouraging environment, ample time and authentic contexts to actively and confidently make connection with existing knowledge and apply them in real-life contexts, to co-construct knowledge with peers, and most importantly, to be responsible for their own learning and become self-directed learners.

### **Reflective Questions**

- ✧ As a teacher, how do you know that your students are learning? To what extent do the marks or grades you give your students suggest that they are learning?
- ✧ What theories of learning do you subscribe to? How do you apply them in your daily practices?

### 3.4 Learning and Teaching Approaches and Strategies

- The premise under the Learning to Learn curriculum reform is that all students can learn and succeed. Schools should provide students with essential and meaningful learning experiences to realise their potential and facilitate their whole-person development.
- One major consideration for the ongoing curriculum renewal is that we need to prepare students for real-world challenges in the 21st century. Schools are expected to equip students with generic skills, and support their acquisition of a solid knowledge base and development of positive values and attitudes. When students are engaged in meaningful learning activities, they gradually develop thinking skills and learning capabilities that support them to become lifelong and self-directed learners.
- To empower students with the ability to acquire, integrate, apply and generate knowledge to solve real-life problems, teachers need to design and provide varied learning experiences for students to collaborate with others, construct their own meaning, plan, manage and make choices and decisions about their learning. Students are more ready to internalise new skills and knowledge as they have a greater sense of ownership of their learning.
- In a rapidly changing world with an information-intensive environment, students need to develop SDL skills that enable them to develop an ever-growing capacity to learn, make sense of new information, construct knowledge, work with others and realise their potential.

“There is no competitive advantage to knowing more than the person next to you, because the person next to you can Google it...The world no longer cares what you know, it cares what you can do with what you know — and that is a radically different concept.”

(Wagner, as cited in Terrell, 2015)

#### 3.4.1 Roles of Teachers

- To create a dynamic and engaging learning environment for students who are digitally connected to massive amounts of information and ideas, teachers today need to perform multiple roles in motivating, facilitating and enabling learning in varied contexts to cater for students’ diverse learning needs and to achieve the specific targets set for different learning stages. Below is a table showing the different roles of teachers in the 21st century:

Role of Teachers	Action (examples)
Transmitters of knowledge	Give lectures and provide and present information.
Facilitators of learning	Discuss with students and provide guidance in the process.
Resource persons	Advise on sources of information and build networks for learning.
Counsellors	Provide advice on study methods and future study and career pathways.
Assessors	Inform students of their strengths and weaknesses to make plans for the next stage of learning.
Leaders	Take the lead in motivating student learning.
Co-learners	Learn alongside students.

### Example 1: Multiple Roles of Teachers in Project Learning

Teachers perform varied roles when engaging students in project work. They act as **resource persons** by providing a range of reference materials including reading texts and framing the scope of the project. While students are given opportunities to plan and manage their own project work, they still need support and guidance from teachers. As such, teachers are performing the roles of **learning facilitators** and **counsellors**. To maximise student learning, teachers can intervene and offer suggestions to help solve problems if students' plans are not practical. Throughout the learning process, teachers are also **co-learners** who learn with their students, respecting their different views and getting informed of the latest developments in connection with a particular research topic.

- In promoting SDL, teachers have to be less concerned about tracking or correcting students' errors, show greater tolerance of uncertainty and encourage risk-taking. They need to capitalise on students' strengths instead of focusing on their weaknesses as recognising students' achievements enhances their self-efficacy.

### 3.4.2 *Roles of Students*

- Self-directed learners can optimise their learning through the development of learning partnerships that engage them in purposeful collaboration and exploration with their peers and teachers, contributing to deep and meaningful learning.
- The starting point lies in the learning partnership among students and between students and teachers, and how their respective roles are changing as the partnership grows and functions. Learning is a reciprocal activity and a social process in which teachers and students are partners in learning. While students are deepening their understanding of a particular area of knowledge, teachers are also expanding their pedagogical content knowledge. A learning partnership takes place when students are entrusted with taking an active role in sharing work and ideas, giving feedback and collaboratively exploring approaches to achieving the shared target. Given their various abilities and inclinations, students can perform different roles in a learning partnership. Students with good interpersonal and collaboration skills can assume a more prominent role in leading group discussions and those who excel in critical thinking can play a leading role in examining the accuracy of given statements and formulating standpoints. As experienced learners, teachers provide support and guidance, where and when needed, to enable the learning partnership as well as a sharing and learning culture to flourish.
- To become self-directed learners, students are encouraged to:
  - set learning goals and plans;
  - raise questions and suggest topics of enquiry;
  - collaborate with peers;
  - contribute to the design of learning activities or tasks;
  - identify and use appropriate resources and strategies to support learning and/or complete a learning task;
  - connect and apply knowledge and skills in a variety of real-life contexts;
  - evaluate and suggest ways to improve the effectiveness of the learning resources and strategies used; and
  - review and reflect on their learning experiences.

**Myth 1: Teachers have a minimal role to play in promoting self-directed learning as it is equivalent to independent learning.**

Although SDL views learners as responsible owners and managers of their own learning, **the ability and motivation to learn independently do not come naturally.** To prepare students for SDL, teachers are encouraged to get students ready to learn by explicitly teaching them learning strategies, helping them set realistic learning goals, engaging them in the learning process by providing opportunities to explore what they are interested in, and guiding them to evaluate their learning. It is equally important to develop a sense of achievement and ownership in students by providing opportunities for them to showcase their learning and see the connection between different learning experiences.

### ***3.4.3 Framework of Learning and Teaching***

- A solid understanding of different pedagogical approaches and the effective use of a repertoire of learning and teaching strategies are the key to maximising student learning, realising their potential and equipping them for the future.
- Figure 3.1 presents a conceptual framework of learning and teaching in the ongoing renewal of the school curriculum. The prime goal is to develop students to be lifelong and self-directed learners and to foster their whole-person development.

#### **Pedagogical Approaches**

- Broadly speaking, pedagogical approaches can be categorised in accordance with the following notions of learning and teaching: **learning as a product of direct instruction, and learning and teaching as a process of enquiry and co-construction.**
- These pedagogical approaches are not mutually exclusive as they can be used in different parts of the learning and teaching process. The key principle for choosing suitable pedagogical approaches is “fitness for purpose”. For example, a lesson can be designed as an enquiry-based activity related to the processing of solid waste in Hong Kong. First, there may be direct instruction with the teacher explaining the background of and the key terms associated with the issue. Students may be invited to study their living environment to establish the connection to real-life context. In the course of enquiry, students may be encouraged to take part in a collaborative task to select relevant information

and resources, identify problems, propose practical solutions and evaluate the feasibility of the solutions explored.

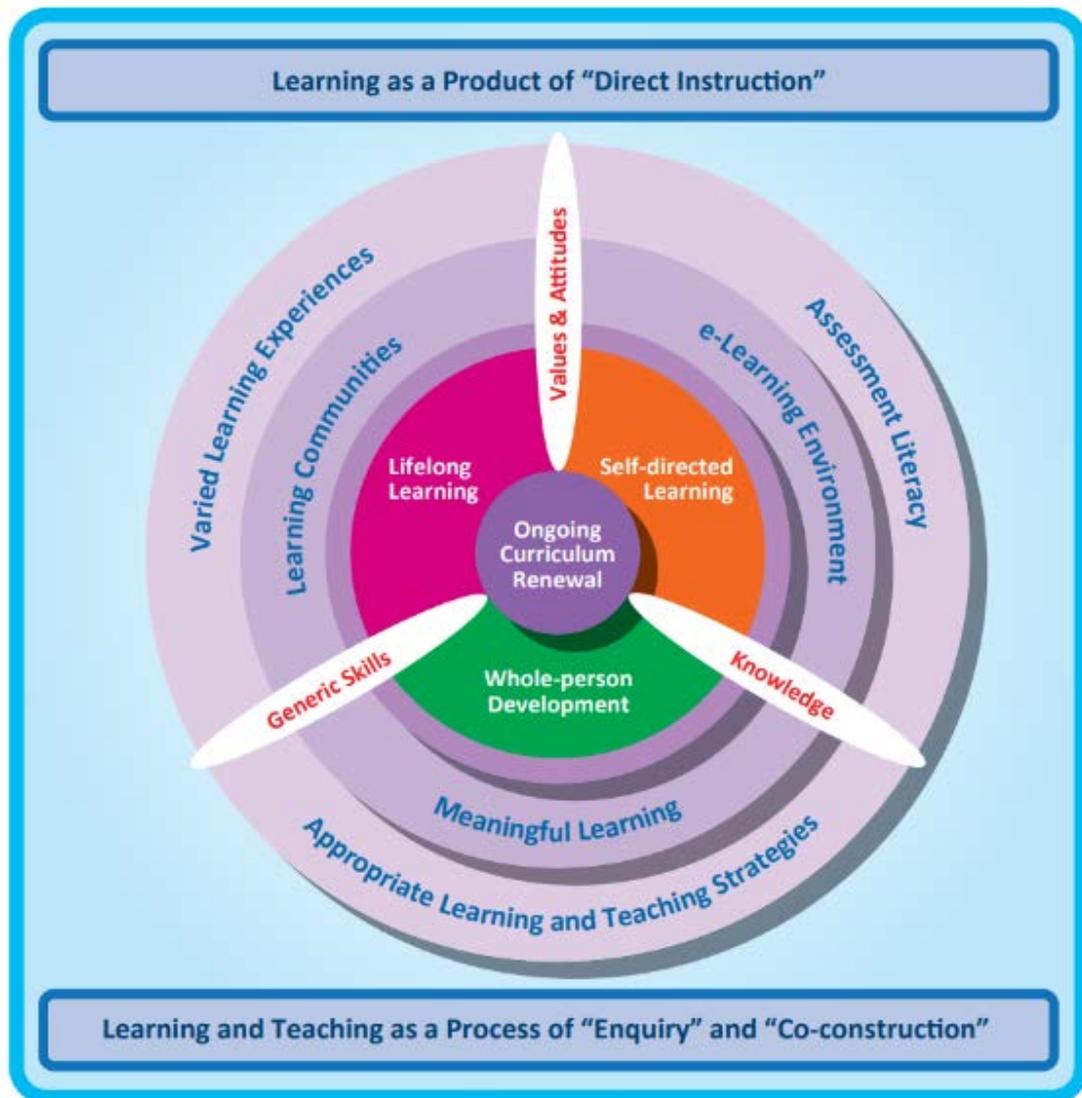
### **Varied Learning Experiences, Appropriate Learning and Teaching Strategies and Assessment Literacy**

- To address students' diverse needs and the specific targets in different learning contexts, teachers need to develop a repertoire of strategies and the ability to use different pedagogical approaches to provide varied, meaningful and engaging learning experiences.
- Students develop positive values and attitudes, generic skills and a solid knowledge base across the curriculum through their active participation in and reflection on their learning experiences.
- Assessment is an integral part of learning and teaching. Teachers need to assess whether students have mastered the concepts taught and achieved the learning targets. Throughout the learning and teaching process, teachers use different ways such as questioning and observation in class activities to collect evidence of learning, and provide timely and specific feedback to inform and improve learning (*please refer to Booklet 4 for details on how to conduct assessment in schools*).

### **Learning Communities, e-Learning Environment and Meaningful Learning**

- To better equip students to be lifelong and self-directed learners and to enable them to experience meaningful learning (see Figure 3.4), there is a need to develop learning communities that provide opportunities for collaborative learning among students, between students and teachers, and among teachers. There is also a need to build learning partnerships that engage different stakeholders.
- In this respect, technology has an important role to play. A favourable e-learning environment is one that provides easy access to information, enables learning to take place beyond physical constraints and facilitates the formation of learning communities and partnerships. In such an environment, learning is not confined to the classroom or bound by the set timetable. Both teachers and students are provided with resources and tools that support the use of different approaches to learning and teaching, as well as the use of assessment for different purposes. With technology, real-life issues can be easily integrated into the curriculum to make learning experiences relevant and authentic, which facilitate the design of deep learning tasks.

**Figure 3.1 A Conceptual Framework of Learning and Teaching**



### ***3.4.4 Exploring Different Pedagogical Approaches***

- Teachers have to understand the salient features of the three pedagogical approaches of Direct Instruction, Enquiry Learning and Co-construction outlined below and make effective use of them to help secondary students develop a strong foundation of knowledge, generic skills, positive values and attitudes, metacognitive strategies and learning partnerships which are all instrumental in promoting deep and meaningful learning.

## **Direct Instruction: To develop a solid foundation of knowledge and skills**

- This approach concerns explicit teaching of new content knowledge. Teachers introduce new concepts and demonstrate new skills. Modelling and thinking aloud are the crucial elements in the learning and teaching process.
- Teachers pose questions, check for understanding and draw connections between key concepts while making the thinking process visible to students, so that students can learn to apply the same thinking strategy to other topics and problems of similar nature.
- Direct instruction, in general, involves the following major stages:

<b>Stage</b>	<b>Purpose</b>
<ul style="list-style-type: none"><li>• Introduction of learning objectives and expected learning outcomes</li></ul>	<ul style="list-style-type: none"><li>• Help students learn better as they have a clear purpose of learning and understand what is expected of them.</li></ul>
<ul style="list-style-type: none"><li>• Teacher presentation and modelling, supplemented with questioning and checking for understanding</li></ul>	<ul style="list-style-type: none"><li>• Use various learning activities and resource materials to assist explanation and provide demonstrations to students. For example, the teacher may highlight certain parts of a video programme to illustrate key concepts.</li><li>• Make the thinking process and strategies visible for students to observe and practise.</li></ul>
<ul style="list-style-type: none"><li>• Guided practice</li></ul>	<ul style="list-style-type: none"><li>• Observe student learning and provide instant feedback. If some students cannot master the knowledge or skills required for the task, the teacher can immediately offer hints, scaffolding, clarification or further explanation.</li></ul>
<ul style="list-style-type: none"><li>• Application of what has been learnt through independent practice</li></ul>	<ul style="list-style-type: none"><li>• Provide different and yet relevant situations for students to apply the knowledge and skills acquired to consolidate their learning.</li></ul>

## **Enquiry Learning: To develop students' thinking skills and enhance student engagement in and ownership of learning**

- Enquiry learning emphasises the development of thinking skills through posing challenging questions for students, and engaging them in investigation, discussion, reflection and making connections in learning. The focus is on students' understanding and concept development.
- Throughout the learning process, students perform a range of tasks, such as formulating questions, processing information, discussing ideas, designing and selecting appropriate solutions to the problem in question, and performing an in-depth analysis of a given issue and its implications. Learning activities in the process of enquiry may involve five steps as presented in Figure 3.2. Students can go back to an earlier step at any stage when they are not fully ready for the tasks ahead.

**Figure 3.2 Process of Enquiry Learning**



## **Co-construction: To promote meaningful learning and learning partnerships**

- Co-construction is a process in which learners collaborate to work, share and reflect in the learning process, and contribute to the building of knowledge. It empowers students to generate knowledge, meaning and understanding as they work collaboratively with teachers, their peers and the wider community in the form of learning partnerships. This view of learning mirrors the functioning of research and adult learning in professional fields where members of the learning community bring in their existing knowledge, learning experiences and multiple perspectives when exploring a given issue. A learning community emphasises participation, sharing and collaboration.

Knowledge-building discourse aims to improve existing ideas or knowledge of an issue on a continuous basis.

It involves the following features:

  - New insights into the given issue, rather than simply sharing information and expressing opinions among members of the community of practice;
  - A common understanding of the issue, rather than merely agreement; and
  - An expansion of the base of accepted facts.

Bereiter, 1994 & 2002
- Learning activities or tasks that support co-construction are usually open-ended and authentic in nature.
- Teachers and students perform the roles of facilitators of learning and empowered learners respectively in this co-learning process. To facilitate collaboration and discussion, teachers create a supportive and stimulating learning environment for students to engage in the knowledge-building discourse. Instead of determining what exact information or material is to be studied, teachers guide students to select and identify relevant information and resources, provide input or instruction where appropriate, and support them throughout the learning process.

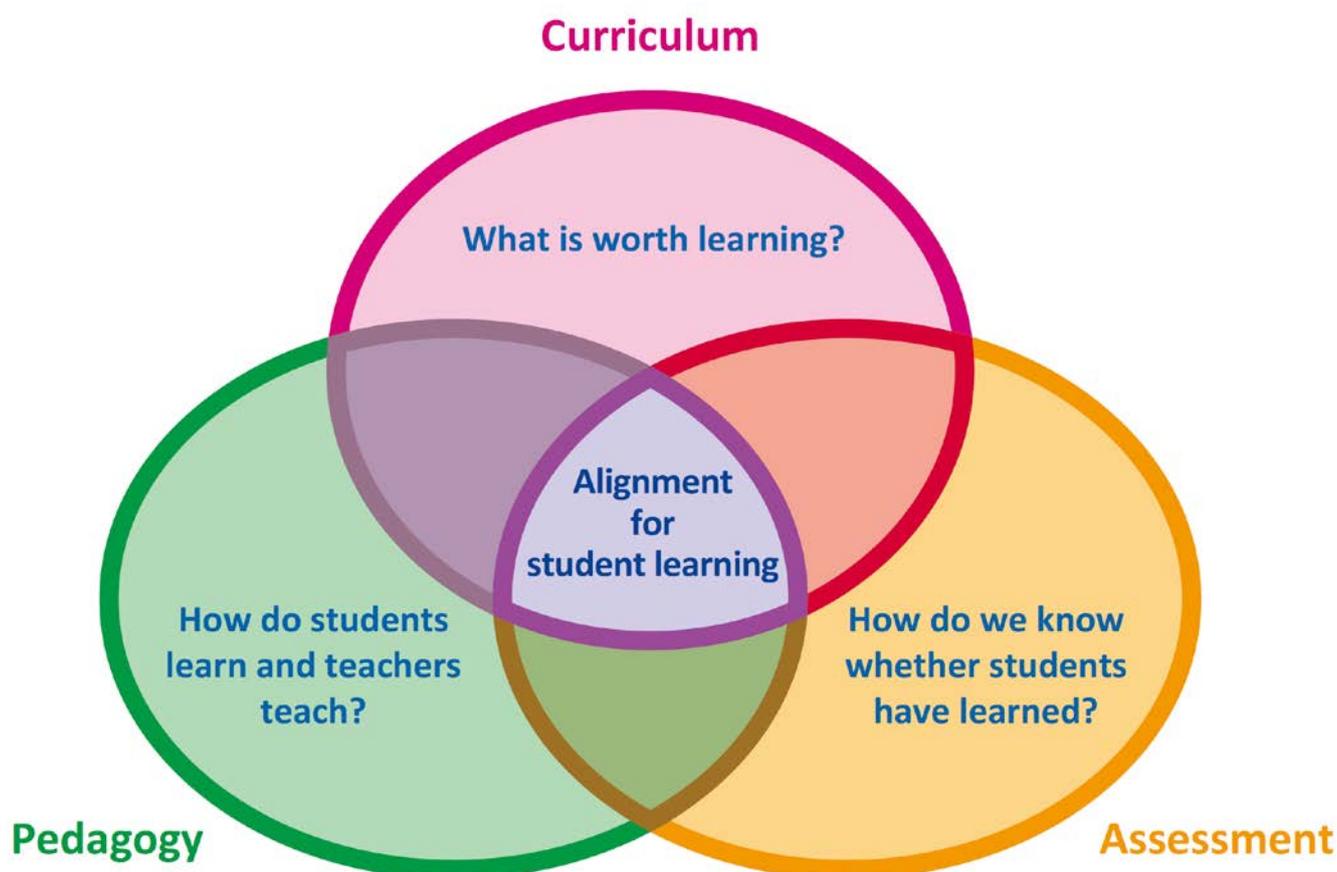
### **Reflective Questions**

- ✧ As a teacher, how do you make decisions about applying your knowledge and understanding of pedagogical approaches to support student learning?
- ✧ Which of the three pedagogical approaches above do you use most often? Which suits your students better? Do you consider them effective in enhancing students' learning? Why?

### 3.4.5 *Effective Learning and Teaching Strategies*

- Alignment between curriculum, pedagogy and assessment is instrumental (see Figure 3.3) in bringing about effective learning and teaching. In the course of lesson planning, attention needs to be given to:
  - how to build on students' prior knowledge and experiences;
  - whether the lesson or series of lessons covers adequately, in terms of breadth and depth, what is worth learning as set out in the curriculum; and
  - what specific learning, teaching and assessment strategies should be used to facilitate, monitor, inform and improve learning.

**Figure 3.3 Interlocking Relationships between Curriculum, Pedagogy and Assessment**



## **Metacognition**

- In the development of students' thinking skills and learning capabilities, teachers can introduce metacognitive strategies to enable students to think about thinking and learn about learning.
- Metacognition is broadly thought of as “thinking about thinking” and enables us to become effective learners.
- Metacognition has an important function in the course of learning as it:
  - requires students to identify how they are going to approach tasks and activities; and
  - checks on student understanding and evaluates how students are progressing towards the completion of a task or activity.

Teaching for Metacognition, ORBIT,  
University of Cambridge, 2012

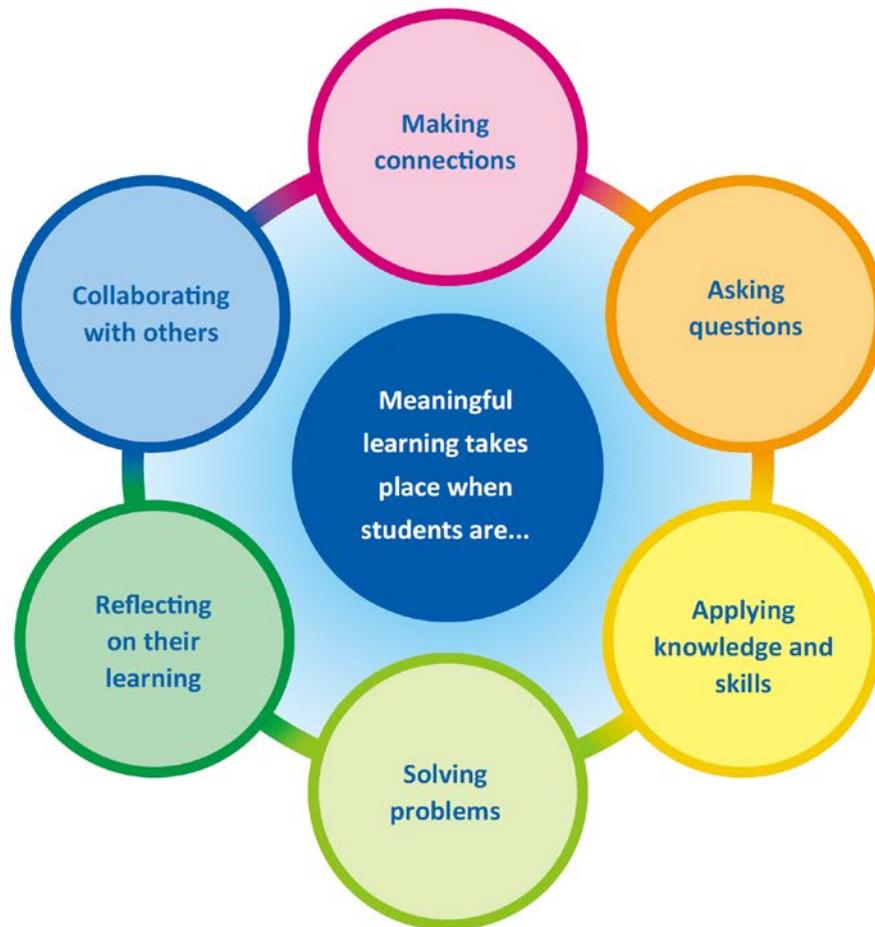
- In the learning and teaching process, we need to draw on a repertoire of learning and teaching strategies to address the learning targets set and to cater for students' diverse learning needs. To make informed decisions about what strategies to use, teachers need to understand the changing profile of their students, their prior learning experiences and knowledge, as well as their learning needs, abilities and interests. In the information age, teachers also need to keep abreast of the ways in which technology can be used to support learning and teaching.
- To enable meaningful learning, teachers need to help students develop a deeper understanding of a given topic. It is also important for students to be aware of how learning takes place and is applied to various contexts, so that they know not only what they have learnt, but also how they have learnt it.
- Given time and practice, students gradually develop a better understanding of how learning takes place. They learn how to set goals, make plans, identify useful resources and reflect on their own learning progress. This capacity for lifelong and self-directed learning is a key focus of the ongoing renewal of the school curriculum.

“Teachers must move beyond ‘teaching content’ to teaching students how to learn – that is, find and evaluate content, connect with prior knowledge, and use that knowledge to solve authentic problems.”

Robert Marzano, 2012

- Meaningful learning is generally viewed as an active process of students making sense of knowledge and developing a deeper understanding of a given topic. It is through this kind of learning experiences that students are likely to make connections, ask questions, collaborate with others, apply knowledge and skills, define and solve problems, as well as reflect on their own learning (see Figure 3.4).

**Figure 3.4 Meaningful Learning**



*These six learning processes do not necessarily follow a sequential order.*

The following section offers some practical strategies which teachers can use to plan and design meaningful learning activities to equip students with lifelong and self-directed learning skills, as well as to foster their whole-person development.

### **Making connections**

- Making connections in the context of learning and teaching can take various forms: connecting new knowledge to one’s prior knowledge and learning experiences; connecting concepts and knowledge in one Key Learning Area (KLA) with those in another; connecting newly acquired knowledge and skills to a wide range of contexts.

- What do teachers do to help students make connections?
  - Deploy strategies that help students connect new learning to their previous knowledge and experiences. For example, teachers introduce a KWL grid to help students revisit their background knowledge of the topic, and link it to the learning objectives as a pre-learning activity to generate questions in groups.

### **Example 2 : KWL Grid**

A KWL grid is a useful tool for students to recall what they already know, generate questions and record the learning process.

<b>What I Know</b>	<b>What I Want to Know</b>	<b>What I Have Learnt</b>

- Create opportunities for students to apply knowledge and skills within a certain content area or across the curriculum, and in real-life contexts. Project learning can be promoted to serve this purpose.

### **Example 3: Making Meaningful Connections through Experiential Learning Week**

- A school launches an “Experiential Learning Week” for students across all year levels.
- “Healthy Living” is the theme of the S2 programme. Teachers of the English, Integrated Science, Mathematics and Physical Education panels work collaboratively to plan and design a series of learning activities for students to practise English, take part in physical training and deepen their understanding of particular mathematics and science concepts.
- The teachers support cross-curricular collaboration as they hope students could apply learning across different KLAs and make connections between subject knowledge and daily-life applications. As observed by the Principal, experiential learning activities help transform learning and support students’ whole-person development.

### Example 4: Transferring Learning between KLAs

- With respect to the promotion of language across the curriculum (LaC), the English panel is often seen to be playing a pivotal role. However, it is important that non-language subject teachers contribute to school-level planning and play a part in implementing and reviewing the plan to promote LaC.
- A school has been promoting LaC for two years. In the first year, an LaC working group was set up, comprising both English and Integrated Humanities (Geography, Life & Society, and Liberal Studies) teachers. The working group identified LaC links and some possible entry points, such as themes/subject topics, language knowledge and skills, text structures and generic skills. Instead of introducing subject knowledge and skills of different KLAs as discrete items, the teachers made the links explicit for students to see the connection.
- In the process of curriculum planning, the teachers highlighted the LaC links and made changes to the schemes of work. The example below illustrates how curriculum mapping was done – the Geography and English teachers planned their lessons with reference to the language functions and expressions used in different contexts.
- It is crucial for students to see links between English and other content subjects. With this increased awareness of LaC, students generally paid more attention to how language was used in different contexts. Given ample opportunities for practice, they developed better confidence and competence in applying their language knowledge and skills in different subject areas.
- In the second year of promoting LaC, the school highlighted the part that LaC played in enriching students’ informal learning experiences. A newly formed Language Enhancement Team organised a number of LaC activities which provide authentic contexts for students to use English purposefully and meaningfully. One of the activities required students to plan the programme rundown for a school event. Being the school ambassadors, the students concerned had to use English to prepare the programme and introduce it to the guests on the day of the event.

Geography			English		
Topic/Unit	Objectives	Target language items	Topic/Unit	Objectives	Target language items
Food Problems	• to identify major farming problems in China	<b>(1) Cause and effect language expression</b> e.g. Since 1950, China has lost 15% of its arable land <i>due to</i> soil erosion and desertification. (p. 29)	Hero: Person	• to identify the cause and effect relationship	<b>(1) Cause and effect language expression</b>
2.4 What are the major farming problems in China?	• to <i>relate</i> the cause and effect of food production in China	e.g. <i>As a result</i> , farm production will be lowered. (p. 31)	JS2A Unit 4 Role models + an extended text of the same theme	• to highlight the relevant sentences from the extensive reading texts	<b>(2) Giving reasons</b> e.g. <i>As a result of</i> a clever business deal, the operating system they invented, MS-DOS, became a part of nearly every personal computer sold. (p.71)
+ a passage on The “Father of Hybrid Rice”, Mr Yuan Long Ping (p. 37)	• to interpret data from graphs	<b>(2) Description of graphs</b> e.g. The total area of arable land <i>had decreased</i> (v.) since 1996. (p.34) e.g. With a <i>decrease</i> (n.) in arable land, farm productivity is expected to reduce. (p. 34)		• to use appropriate signal words to give reasons • to use appropriate expressions to describe the stated information (e.g. graphs)	e.g. ...many people were critical of Gates <i>because of</i> his aggressive business methods. (p. 71) <b>(3) Describing the changes</b> <i>(a) verb/noun + prep</i> e.g. go up/down (v + prep) e.g. an increase/decrease/rise/drop/decline in (n + prep) <i>(b) adj + noun</i> e.g. a sharp increase/decrease in...

## **Facilitating learning through questioning**

- Effective questioning techniques not only promote thinking skills but also provide students with good models to develop their ability to formulate questions. Effective questions motivate students to think deeply and critically of a given topic.
- How do teachers make questioning effective?
  - Use probing, follow-up and open questions to engage more students and guide their thinking by asking students to provide more information, clarify responses or extend their answers. For example, teachers ask questions that require justifications, examples and alternatives, as well as encourage reflection.
  - Build in thinking time to encourage more and better responses.
  - Allow time for collaborative activities before answering. For example, teachers elicit more thoughtful responses from students using Think-Pair-Share.
  - Ask questions of different levels to enable a deeper understanding of a given topic.
  - Differentiate questions based on students' abilities.
- Good questions are locks that generate their own keys. Student-generated questions are exhibits of students' knowledge, interest and keenness to learn. When students are prompted to ask their own questions, they are better engaged and their ownership of learning is enhanced. It also promotes deeper learning, active student engagement and classroom interaction.
- How do teachers encourage students to raise questions?
  - Create an inviting environment where questioning is welcome and supported, and risk-taking is encouraged and appreciated.
  - Empower students to ask questions by giving prompts and providing tools such as sentence and question stems.
  - Give feedback on how to phrase questions in a concise and precise way.
  - Allow quality time for students to work out and articulate their questions.
  - Invite students to respond to and/or comment on the questions raised by their peers.
  - Encourage students to show appreciation of the efforts made by their peers in raising questions.
  - Make questioning a learning habit to cultivate learning to learn capabilities.

## **Promoting collaborative learning**

- Collaborative learning enables students to express their views, discuss ideas, learn from different perspectives and generate new insights. Group work provides contexts for collaborative learning and offers opportunities for students to learn from one another, develop confidence, and give or respond to feedback during the discussion of ideas. Think-Pair-Share and Inside-Outside-Circle are examples of common effective learning strategies to promote collaborative learning (*see details in the textboxes below*).

### **Think-Pair-Share**

1. The teacher introduces a discussion/problem solving task and allows adequate time for individual thinking.
2. Students seated in pairs take turns sharing ideas with their partner, who is expected to listen attentively.
3. Students are then asked to tell the class what their partners have shared with them.

### **Inside-Outside-Circle**

1. Students form two circles – one inside the other. Each circle consists of 4 to 6 students, depending on the complexity of the task and the amount of lesson time available.
2. Each student in the Outside Circle exchanges ideas with the classmate facing him/her in the Inside Circle.
3. Then those in the Outside Circle rotate to face a different classmate in the Inside Circle until all in the Outside Circle have had a chance to exchange ideas with their counterparts in the Inside Circle.

- What do teachers need to do?
  - Design learning tasks in a way that each group member can have equal contribution and their individual learning needs can be catered for.
  - Establish routines of turn-taking, sharing and working collaboratively in groups.
  - Assign different roles to students in a learning group to promote positive interdependence.
  - Develop students’ communication and reflective thinking skills through group work.
  - Include peer assessment for group members to evaluate each other’s contributions in the group.
  - Provide opportunities for students to do peer teaching and mentoring.

**Enhancing problem solving skills**

- Problem solving requires critical and creative thinking. When students solve problems, they alternate between critical and creative thinking patterns.
- To help students recognise thinking patterns and develop thinking skills, teachers need to model the thinking process for students to acquire and practise the same skills.
- Teachers need to provide learning opportunities for students to apply metacognitive strategies to solve problems.
- How do teachers enhance students’ problem solving skills?
  - Think aloud and model the thinking process. For example, teachers demonstrate the thinking process using questions, supported by visual images or tools such as graphic organisers.

*“We believe that successful problem solvers can, and do, learn to use both their creative and critical thinking abilities in harmony, generate options and focus their thinking.”*

*Treffinger, Isaksen and Dorval, 2005*

Critical and creative thinking can generally be exemplified by the ability to:

- perceive gaps, challenges, or concerns;
- think of varied or unusual options;
- elaborate and extend alternatives; and
- analyse, evaluate and develop options.

- Deepen students’ comprehension and understanding by highlighting important concepts such as causes and effects, facts and opinions, problems and solutions, as well as procedures.
- Highlight the use of thinking words such as identify, analyse and summarise.
- Use examples to help students discern differences in given approaches to problem solving.
- Design activities that provide students with opportunities to practise metacognitive skills such as asking students to perform self- and/or peer assessment of how and how well a given task was completed.
- Make use of problem solving or decision-making scenarios for students to generate and evaluate a range of options through identification of biases and analysis from multiple perspectives.

### **Promoting reflective learning**

- Reflection is essential for students to develop a better understanding of what and how they learn. With an awareness of the learning objectives and process, students are more likely to look back on the learning experiences, evaluate and reflect on their own learning process so as to find ways to improve their performance.
- How do teachers help students review and reflect on their own learning?
  - Help students set achievable goals and formulate work plans for their learning.
  - Promote and use a variety of strategies to help students manage their time and review their learning progress. For example, teachers ask students to use learning logs or reflective journals to keep track of their learning plans and progress.
  - Help students evaluate their work and learning process to identify their strengths and weaknesses. For example, teachers ask students to use a self-assessment form and annotate their work.
  - Give timely and quality feedback to help students improve their performance and to inform their future learning.

## Feedback

Feedback is ranked one of the 10 most influential factors (out of 150) that impact student learning outcomes according to the effect size.

Salient points about feedback:

- Feedback on the task, process and self-regulation levels is more effective for students than that on the self-level.
- Quality feedback enables students to progress towards challenging learning goals.
- Teachers receiving feedback are able to see learning through the eyes of their students. It makes learning visible and facilitates the planning of next steps.

Hattie, 2012

## Myth 2: Does practice make perfect? *It depends on what it is for.*

- Practice takes different forms, each of which has a different impact on student learning. In fact, the mere repetition of tasks does not necessarily promote understanding or improve students' performance in the long run. For example, when students are asked to work out a number of equations using a particular formula repeatedly, they may just get used to solving the same kind of equations without a thorough understanding of the mathematical concepts.
- Effective learning takes place when students have opportunities to make connections, develop their thinking skills and apply knowledge in new contexts. To turn practice into meaningful learning, teachers need to provide varied learning contexts for students to deepen their understanding of a topic and give students timely feedback on their performance and progress. In short, practice should not be viewed as mindless repetitive drills but should occur as various learning opportunities for students to reinforce, apply and transfer knowledge and skills in a progressive manner. Given the fact that students' performance is directly related to learning time, learning strategies and learning capacity, meaningful practice can certainly increase learning time and exposure to a topic or skill, thereby contributing to improving students' performance. Teachers can also help students identify effective learning strategies and improve their learning capacity through the appropriate use of pedagogical approaches.

### **Reflective Questions**

- ✧ Which of the above learning and teaching strategies can help you improve your own practice?
- ✧ How do you develop a learning culture that promotes meaningful and collaborative learning in your subject area?
- ✧ How do you help students demonstrate and apply what they have learnt? What kinds of cross-curricular activities can you think of to help students make connections between subject knowledge and daily-life applications?
- ✧ What learning and teaching strategies do you consider more or less effective in your classroom teaching? What are the reasons?

### **3.5 Harnessing Information Technology to Facilitate Learning and Teaching**

- Technology can be leveraged in various ways to make learning and teaching more interactive, collaborative and engaging. It can as well support lifelong and self-directed learning in and beyond the classroom. Teachers can use Information Technology (IT) tools, coupled with sound pedagogy, to improve the overall effectiveness of lesson delivery, to promote collaborative and reflective learning, and to facilitate knowledge building, transfer and sharing.
- At a more basic level, IT enhances content delivery by providing multiple access points that engage students of diverse abilities and interests. The use of multimedia and web-based applications (apps) can facilitate teachers' presentation of difficult concepts and complicated phenomena in a given content area. For example, a Science teacher can help students visualise gravitational force and learn about related concepts using software applications.
- IT can also be used to promote a more student-centred pedagogy. Digital tools and resources enable students to share prior knowledge, explore alternative viewpoints and learn from one another. With reference to different sources of information on the Internet such as images and videos about real-world issues, students can analyse a given issue from multiple perspectives and apply what they have learnt in new contexts. Before the lesson, students can generate questions and share their ideas on an e-learning platform. Through the use of this common learning space, both teachers and students can share their knowledge, experience and questions related to the issue.
- During the lesson, teachers can make use of apps that motivate students to participate and engage in learning. For example, Plickers is an app that

increases class participation and promotes formative assessment. After printing off a set of numbered cards, the teacher gives every student a card on which there is a number and a code. When the teacher asks a multiple choice or a true/false question, students hold up the cards to indicate their answer choice. By scanning the room with the Plickers app, the teacher can record each student's response immediately. Based on the responses collected, the teacher can easily monitor students' learning progress and give timely feedback.

- At a more advanced level, technology fosters deep and meaningful learning and helps students become more motivated and self-directed learners. Students are highly engaged when participating in meaningful and authentic learning activities. For example, with the use of electronic devices, students can record and share ideas and comments on a given topic with a real audience online. Students learn more actively and effectively when they take ownership of the ideas and information shared. Another crucial aspect of self-directed learning is the ability to evaluate and reflect on the learning process. To this end, using an online system for collecting feedback can help teachers and students review the learning process and its effectiveness.

### **3.6 Promoting Values Education for Effective Learning and Teaching**

- The development of positive values and attitudes has always been at the heart of Hong Kong's education system. As prevalent values and beliefs are becoming increasingly pluralistic, our students are facing a world much more complex than ever before. Schools have to give more attention to students' character building, guide them to discern right from wrong, enable them to make responsible decisions and understand their roles in the future of society, the country and the world at large.

#### **3.6.1 *Goal of Values Education***

- The goal of values education is to help students become informed and responsible citizens committed to the well-being of others and provide the affective basis for students to learn more effectively.

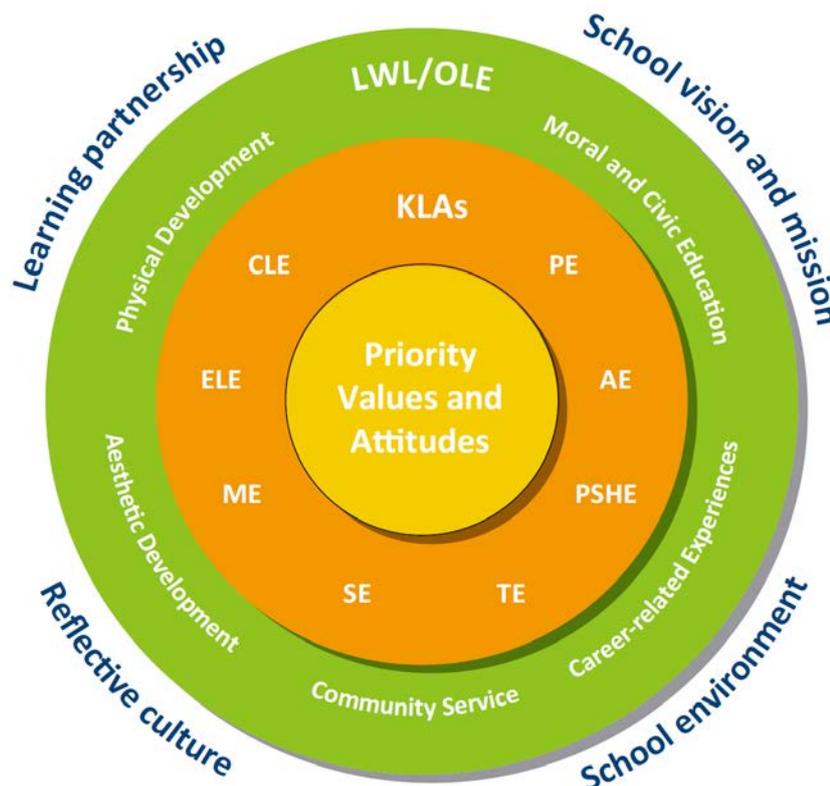
- Through values education, students develop the capacity to:
  - clarify and reflect on the values embedded in personal and social issues;
  - exercise judgement and responsibility in matters of morality, ethics and social justice;
  - make rational and informed decisions about their own lives;
  - enrich their intellectual, physical, social, moral and aesthetic development; and
  - respond constructively and positively to a range of challenges in the 21st century.

### 3.6.2 A Whole-school Approach to Promoting Values Education

- Schools are advised to promote values education in the three domains of:
  - KLAs;
  - Life-wide Learning (LWL) and Other Learning Experiences (OLE); and
  - School Ethos.

**Figure 3.5 A Whole-school Approach to Promoting Values Education**

**A Whole-school Approach to Promoting Values Education**



- **Values Education through KLAs**
  - Different KLAs are important vehicles for nurturing values across the curriculum. In particular, the language subjects, humanities subjects and Liberal Studies in the secondary curriculum offer a wealth of value-laden issues facilitating student understanding of values.
  - Working within the context of knowledge acquisition and integrating learning with authentic experiences such as role plays, on-site visits and work placements, students are encouraged to listen to and accommodate diverse views, identify biases and re-prioritise choices. In doing so, they are helped to form their own values and beliefs.
  - Key approaches to promoting values education through KLAs may include: (i) incorporating the school’s core values and/or the seven priority values and attitudes into school policies and practices; (ii) developing values education as an integral part of the school curriculum; and (iii) encouraging teachers to work in clusters to foster effective professional development and promote values education.

**Example 5: A Cross-curricular Approach to Promoting Values Education**

- In line with the school’s mission and vision, School A adopts a cross-curricular approach to promoting “Etiquette Education” with a view to fostering students’ Chinese virtues and whole-person development.
- Led by the Principal, different subject panels and committees set specific learning objectives and expected outcomes for students of each level and implement their teaching plans in accordance with the core values and goals of the school-based Etiquette Education curriculum.
- Formal and informal lesson preparation meetings are held among teachers to design the curriculum and implement their plans. Different school self-evaluation instruments such as questionnaires, observations, focus group interviews and peer evaluation are also introduced for regular reviews of the effectiveness of the curriculum.

## Values Education through LWL and OLE

- Experiential learning (sometimes known as “learning-by-doing”) is essential to students’ personal development. Secondary students should be provided with sufficient opportunities for LWL and OLE which organise experiential learning to cultivate their positive values and attitudes (*please refer to Booklet 7 for details*).
- Key approaches to promoting values education through LWL and OLE may include: (i) making connections with “real world learning” which involves deep personal learning and provides both structured and non-structured learning opportunities; (ii) developing students’ reflective habit of mind and enhancing deep learning through quality reflection and feedback on their learning experiences; and (iii) increasing student engagement and ownership to empower students to take a more active role in organising and conducting their own learning activities.

### “Student-LED” Approach

Schools are encouraged to empower students to play more active roles during the learning process. In this connection, a “**Student as Learning Experience Designers** (Student-LED)” approach is introduced. It aims to enhance students’ engagement, sense of ownership and reflective habit of mind through providing opportunities for them to take the lead to design their own learning experiences.

For details, please refer to Booklet 7 and the website of the “Student-LED” Project available at:

[http://cd1.edb.hkedcity.net/cd/lwl/ole/student\\_LED/eng/introduction.html](http://cd1.edb.hkedcity.net/cd/lwl/ole/student_LED/eng/introduction.html)

### **Example 6: Nurturing Students' Positive Values and Attitudes through Authentic Learning**

- School B highly recognises the importance of providing authentic learning to their students and joined the “Student-LED” project for three years so that students could take a more active role as learning designers to plan and run their own OLE activities.
- During the process, students were given opportunities to take up different roles to realise their potential. Teachers also provided enough space for students to reflect on their learning experiences and strengthen their reflective habit of mind as self-directed learners.
- Through participating in the project, students' self-confidence and reflective skills were greatly enhanced. Moreover, students developed better communication and problem solving skills, and a stronger sense of responsibility and belonging to their school.

- **Values Education through School Ethos**

- Nurturing students' positive values and attitudes is an ongoing and dynamic process that involves different learning contexts inside and outside the school environment.
- Actions speak louder than words. The development of positive values (e.g. caring and showing respect for others) hinges on the role-modelling of teachers and students, as well as the development of a positive school ethos where the core values of the school are honoured, practised and celebrated.
- Key approaches to promoting values education through school ethos may include: (i) articulating the values of the school and applying them consistently in various areas of school life; (ii) nurturing school leadership to develop and promote values education as a core part of the school's mission and vision; and (iii) building a safe and supportive learning environment and encouraging a reflective and self-improvement culture.

### **Example 7: Developing a Positive School Culture to Foster Students' Whole-person Development**

- School C has strong and shared vision and mission to foster students' whole-person development and a well-established tradition of providing students with different learning experiences to nurture their positive values and attitudes.
- With this aim in mind, the school has placed emphasis on sharing and developing a common understanding of their school-based core values among teachers and students. A variety of programmes has been provided to develop the school into a “caring school”, including programmes promoting peer support for junior secondary students, environmental protection, life education and media education. Teachers have also served as role models to help students understand the importance of the school's core values.
- After a few years, good progress has been made in the development of positive values and attitudes among students. The number of cases regarding students' discipline and guidance has been greatly reduced and students' performance in public examinations has also improved. Students have attained a stronger sense of responsibility and belonging to their school and demonstrated a positive attitude towards their daily lives.

#### **Reflective Questions**

- ◇ How is whole-school planning undertaken in your school to promote values education across the curriculum?
- ◇ What measures have you adopted to enhance teachers' skills in promoting values education in your school?
- ◇ How does your school review and evaluate the effectiveness of values education in the three domains to improve the curriculum design, enrich the related learning experiences and enhance the learning outcomes?

## **Bibliography**

### **Publications**

Alexander, R. J. (2006). *Education as dialogue: Moral and pedagogical choices for a runaway world*. Hong Kong: The Hong Kong Institute of Education in conjunction with Dialogos UK.

Assessment Reform Group. (1999). *Assessment for learning: Beyond the black box*. Cambridge, UK: University of Cambridge, Faculty of Education.

Assessment Reform Group. (2002). *Assessment for learning: 10 principles*. Cambridge, UK: University of Cambridge, Faculty of Education.

Bellanca, J., & Brandt, R. (Eds.). (2010). *21st century skills: Rethinking how students learn*. Bloomington, IN: Solution Tree Press.

Biggs, J. (1987). *Student approaches to learning and studying*. Melbourne: Australian Council for Educational Research.

Bolhuis, S. (1996, April). *Towards active and self-directed learning. Preparing for lifelong learning, with reference to Dutch secondary education*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.

Education Bureau. (2013, October). *Progress report on the New Academic Structure review (Extended version)*. Hong Kong: Author. Retrieved from [http://334.edb.hkedcity.net/doc/eng/ReviewProgress/Report\\_Extended\\_e.pdf](http://334.edb.hkedcity.net/doc/eng/ReviewProgress/Report_Extended_e.pdf)

Education Commission. (2001). *Learning to learn: The way forward in curriculum development*. Hong Kong: Author. Retrieved from <http://www.edb.gov.hk/en/curriculum-development/cs-curriculum-doc-report/wf-in-cur/index.html>

Faure, E., Herrera, F., Kaddoura, A-R., Lopes, H., Petrovsky, A. V., Rahnama, M., & Ward, F. C. (1972). *Learning to be: The world of education today and tomorrow*. Paris: UNESCO. Retrieved from [http://www.unesco.org/education/pdf/15\\_60.pdf](http://www.unesco.org/education/pdf/15_60.pdf)

Fullan, M., & Langworthy, M. (2014). *A rich seam: How new pedagogies find deep learning*. London, UK: Pearson. Retrieved from [http://www.michaelfullan.ca/wp-content/uploads/2014/01/3897.Rich\\_Seam\\_web.pdf](http://www.michaelfullan.ca/wp-content/uploads/2014/01/3897.Rich_Seam_web.pdf)

Hattie, J. (2012). *Visible Learning for teachers: Maximizing impact on learning*. London, UK: Routledge.

James, M., McCormick, R., Black, P., Carmichael, P., Drummond, M-J., Fox, A., ...William, D. (2007). *Improving learning how to learn: Classrooms, schools and networks*. London, UK: Routledge.

Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Englewood Cliffs: Prentice Hall/Cambridge.

Lyman, C., & Hunt, Jr. (1997). The effect of self-selection, interest and motivation upon independent, instructional, and frustrational levels. *Reading Teacher*, 50(4), 278-82.

Marzano, R., & Heflebower, T. (2012). *Teaching & assessing 21st century skills*. Bloomington, IN: Marzano Research Laboratory.

Sawyer, R. K. (Ed.). (2014). *Cambridge handbook of the learning sciences* (2nd ed.). New York, NY: Cambridge University Press.

Terrell, J. (2015, April). *Enterprise learning advances achievement: Combining PD, project-based learning and real world experience propels student success*. Retrieved from <http://www.districtadministration.com/article/enterprise-learning-advances-achievement>

Treffinger, D., Isaksen, S., & Stead-Dorval, B. (2005). *Creative problem solving: An introduction* (4th ed.). Waco, TX: Prufrock Press.

Watkins, C. (2003). *Learning: A sense-maker's guide*. London, UK: Association of Teachers and Lecturers (ATL).

Watkins, C. (2005). *Classrooms as learning communities: What's in it for schools?* New York, NY: Routledge.

Waktins, C., Carnell, E., Lodge, C., Wagner, P., & Whalley, C. (2002). *Effective learning*. NSIN, Institute of Education, University of London. Retrieved from <http://discovery.ucl.ac.uk/10002819/1/Watkins2002Effective.pdf>

### **Website**

ORBIT: The Open Resource Bank for Interactive Teaching (Faculty of Education, the University of Cambridge)  
<http://oer.educ.cam.ac.uk/wiki/ORBIT>

