

# Ongoing Renewal of the School Curriculum *Focusing, Deepening and Sustaining*

## Technology Education Key Learning Area

# Positioning of TEKLA

## What is Technology?

- Technology is the purposeful application of knowledge, skills and experiences in using resources to create products or systems to meet human needs
- Technology influences and is influenced by the culture of people, is part of our daily life and has impact on the individual, family and society

## What is Technology Education?

- Technology Education is the learning of how human beings solve their daily problems and how to replicate and transfer the process to solve new problems that arise from time to time
- Technology Education is the entitlement of EVERY student

## Technological Literacy

- Technological Understanding
  - Knowledge Contexts in Technology
- Technological Capability
  - Process in Technology
- Technological Awareness
  - Impact of Technology

# Learning Elements under Knowledge Contexts in Technology Education

Information & Communication Technology	Materials & Structures	Operations & Manufacturing	Strategies & Management	Systems & Control	Technology & Living
Computer Systems	Materials & Resources	Tools & Equipment	Business Environments, Operations & Organisations	Concepts of System	Food & Nutrition
Computer Networks	Material Processing	Production Process	Resources Management	Application of Systems	Food Preparation & Processing
Programming Concepts	Structures & Mechanisms	Project Management	Marketing	System Integration	Fabric & Clothing Construction
				Control & Automation	Fashion & Dress Sense
					Family Living
					Home Management & Technology

## Common Topics

Technology & Society

Safety & Health

Information Processing & Presentation

Design & Applications

Consumer Education

# Rationales of Updating the Curriculum

## Focusing, Deepening & Sustaining

### Technology Education KLA

- In response to rapid development in science and technology
- Developing a solid and balanced foundation in technology education among students
- Strengthening vertical continuity and lateral coherence within and across KLAs

### STEM education

- Nurturing diversified talents for enhancing international competitiveness of Hong Kong
- Enhancing students' ability to integrate and apply knowledge and skills

### Ongoing renewal of the school curriculum

- STEM education as a key emphasis of the ongoing curriculum renewal
- Incorporating other updates, e.g. generic skills, values education, information literacy and language across the curriculum

# Technology Education Key Learning Area

## Sustaining

- Six knowledge contexts under TEKLA
- Open & flexible curriculum (core and extensions modules)

## Deepening

- Strengthening the interface between junior and senior secondary education
- Effective use of e-learning
- Creating learning opportunities across KLAs
- Infusing values education across the curriculum and school life

## Focusing

- Information literacy
- Language across the Curriculum
- Nine Generic Skills
- STEM Education

# Renew TEKLA Curriculum

## Update Curriculum Framework (Secondary 1-3)

- Ensure **at least 30% of curriculum time under ICT** to teach programming concepts (including coding)
- Cover **six knowledge contexts**, namely ICT, Materials & Structures, Operations & Manufacturing, Strategies & Management, Systems & Control, and Technology & Living; grouped into **16 core and 10 extension modules**
- **All schools are recommended to offer core modules with 8% of the curriculum time** (4 periods per 6-day cycle). **Some schools** offer extension modules to meet different needs of students (**up to 15% of the curriculum time**)
- Promote **theme-based, design-and-make learning activities** to enhance integration and application of knowledge and skills through project learning among students
- Cultivate students' interest and curiosity through **hands-on and minds-on STEM-related activities**, allowing students to solve problems and create new solutions for the well-being of humankind

## Enriched TEKLA Curriculum

Date	Progress
7 September 2012	The draft enriched curriculum was issued to schools to solicit views from secondary schools
1 August 2013	<ul style="list-style-type: none"> <li>The enriched TEKLA curriculum was issued to schools through EDBCM87/2013</li> <li>Implementation of the enriched TEKLA curriculum in 2014/15 school year starting from S1, full implementation at junior secondary level in 2016/17 school year</li> </ul>
From 2013 onwards	<ul style="list-style-type: none"> <li>Briefing sessions were conducted for the curriculum planning on the enriched TEKLA curriculum</li> <li>Learning and teaching resources were provided to schools for their reference</li> </ul>
2014/15 school year	<ul style="list-style-type: none"> <li>Implementation of the enriched TEKLA curriculum starting from S1</li> </ul>
2016/17 school year	<ul style="list-style-type: none"> <li>Full implementation of the enriched TEKLA curriculum in S1 - 3</li> </ul>

June 2013  
Received by CDC

2013/  
2014 sy S1 (If schools are ready)

2014/  
2015 sy • All Schools  
• S1

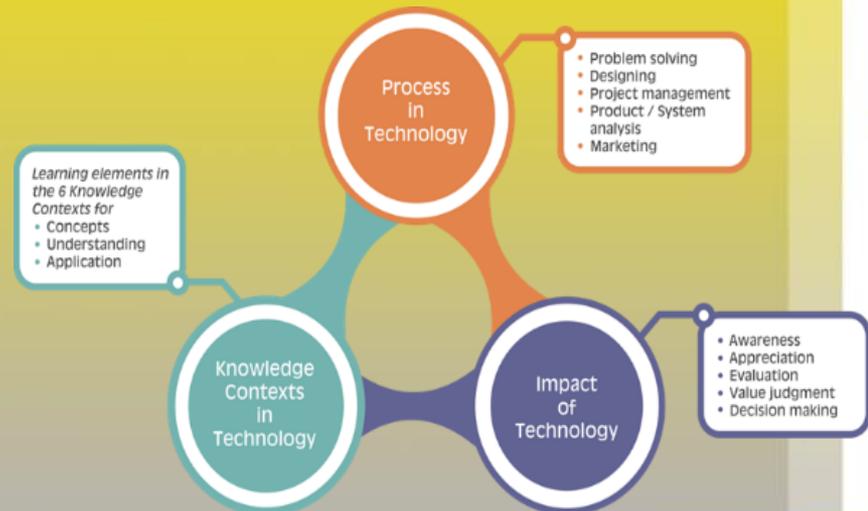
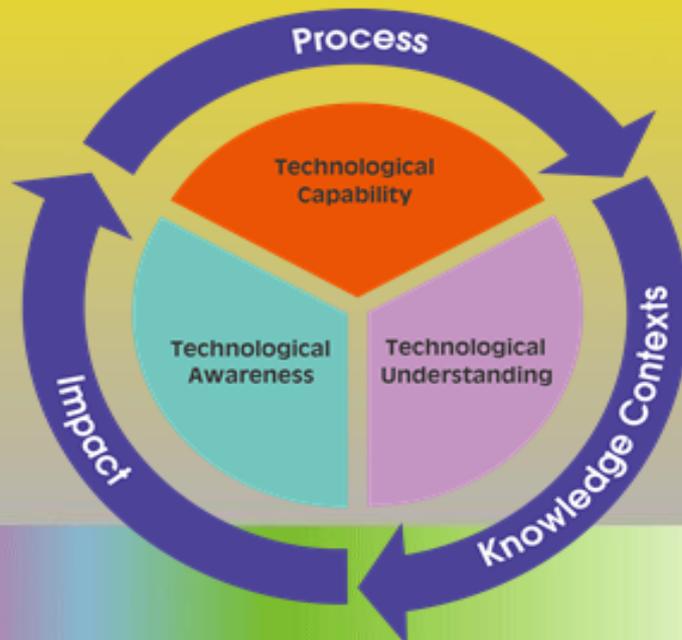
2016/  
2017 sy • All Schools  
• S1-S3

Implementation

# Updating of TEKLA Curriculum Guide

## Curriculum Aims and Framework

- Fine-tuning the curriculum aims
  - Alignment of the TE curriculum aims with the updated 7 learning goals
  - Emphasising the development of *technological literacy* in students through the three TE strands



Connection of the Strands in TE

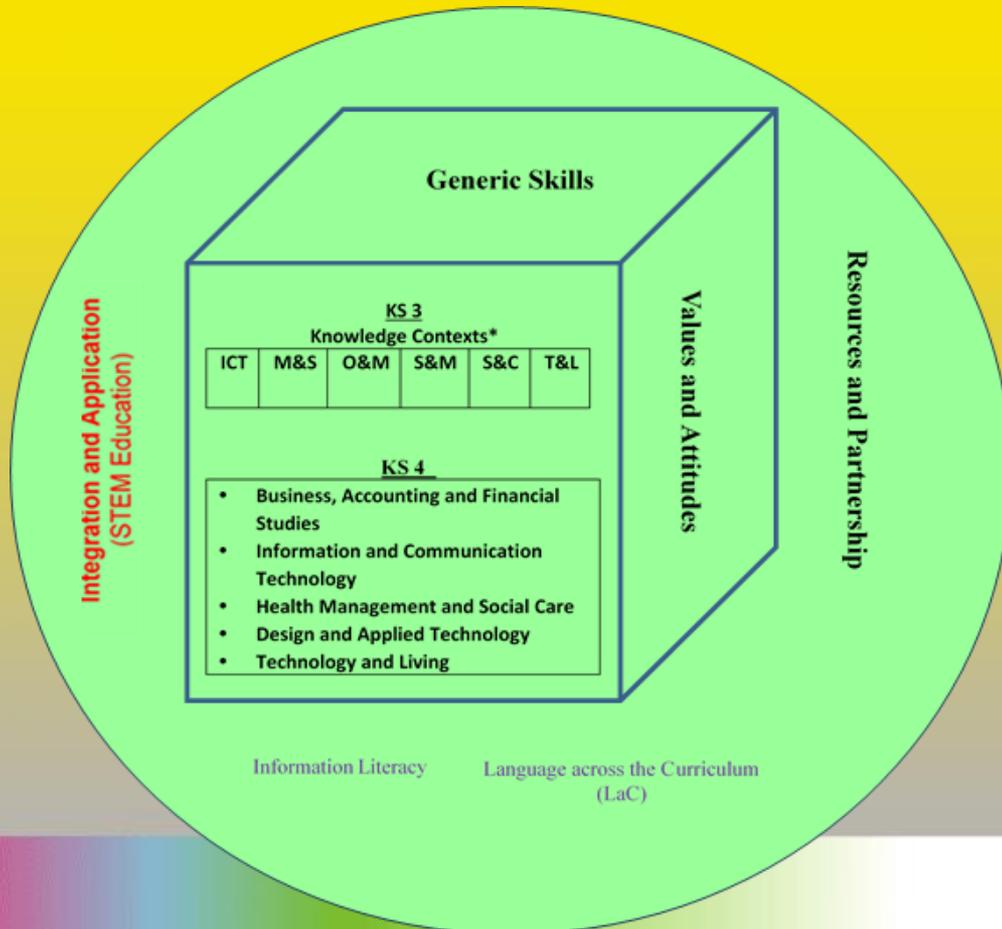
科技教育學習領域  
Technology Education Key Learning Area

Curriculum aims of TE	Updated Learning Goals of school curriculum
<b><i>Technological Understanding</i></b>	
<ul style="list-style-type: none"> <li>• understand the interdisciplinary nature of technological activities</li> <li>• understand the underlying concepts and principles of technological artefacts, systems and environments</li> <li>• understand and apply the knowledge of process and resources used in designing, making and evaluating products, systems and solutions</li> </ul>	<ul style="list-style-type: none"> <li>• to acquire and construct a broad and solid knowledge base, and to be able to understand contemporary issues that may impact on their daily lives at personal, community, national and global levels</li> </ul>
<b><i>Technological Capability</i></b>	
<ul style="list-style-type: none"> <li>• develop their abilities in identifying needs, problems and opportunities, their respective constraints and preferences</li> <li>• develop, communicate, implement and evaluate solutions creatively</li> <li>• develop their abilities in making informed decisions in creating, using and modifying artefacts, systems and environments</li> </ul>	<ul style="list-style-type: none"> <li>• to develop and apply generic skills in an integrative manner, and to become independent and self-directed learner for further study and work</li> <li>• to use information and information technology ethically, flexibly and effectively</li> <li>• to be proficient in biliterate and trilingual communication for better study and life</li> </ul>
<b><i>Technological Awareness</i></b>	
<ul style="list-style-type: none"> <li>• be aware of the cultural and contextual dependence of technological developments</li> <li>• respect cultural differences and the rights of others as well as develop a sense of social responsibility in performing technological activities</li> <li>• be aware that the well-being of oneself, one’s family, society and the natural environment depends upon decisions on how to use technological artefacts and systems appropriately</li> </ul>	<ul style="list-style-type: none"> <li>• to be an informed and responsible citizen with a sense of national and global identity, appreciation of positive values and attitudes as well as Chinese culture, and respect for pluralism in society</li> <li>• to lead a healthy lifestyle with active participation in physical and aesthetic activities, and be able to appreciate sports and the arts</li> <li>• to understand one’s own interests, aptitudes and abilities, and to develop and reflect upon personal goals with aspirations for future studies and future career</li> </ul>

# Updating of TEKLA Curriculum Guide

## Curriculum Aims and Framework

- Updating the curriculum framework



The six knowledge contexts for KS3
Information and Communication Technology (ICT)
Materials and Structures (M&S)
Operations and Manufacture (O&M)
Strategies and Management (S&M)
Systems and Control (S&C)
Technology and Living (T&L)

# TEKLA Curriculum

- The TE curriculum framework comprising six knowledge contexts is maintained
- Modular approach is proposed through 16 core learning element modules and 10 extension learning element modules

Knowledge contexts	Modules*		Learning objectives
<b>Information and Communication Technology (ICT)</b>	K1	Computer Systems	Understand and apply ICT as a prime tool for learning and in our daily life
	K2	Programming Concepts	
	K16	Information Processing and Presentation	
	E1	Computer Networks	
<b>Materials and Structures</b>	K3	Materials and Resources	Understand the importance of materials and resources in the design process
	K4	Structures and Mechanisms	
	E2	Material Processing	
<b>Operations and Manufacturing</b>	K5	Tools and Equipment	Understand how to manage the resources and processes required to realise their design solutions
	K6	Production Process	
	E3	Project Management	
<b>Strategies and Management</b>	K7	Business Environments, Operations and Organisations	Understand the concepts of business and management
	E4	Resources Management	
	E5	Marketing	
<b>Systems and Control</b>	K8	Concepts of System	Understand the concepts, applications and implications of both micro and macro systems
	K9	Application of Systems	
	E6	System Integration	
	E7	Control and Automation	
<b>Technology and Living</b>	K10	Food and Nutrition	Understand how technology affects our lives and enhances the nurturing of quality people and quality homes
	K11	Food Preparation and Processing	
	K12	Fabric and Clothing Construction	
	K13	Fashion and Dress Sense	
	K14	Family Living	
	K15	Home Management and Technology	
	E8	Fabric and Clothing Construction	
	E9	Fashion and Dress Sense	
E10	Home Management and Technology		

# Home Economics/Technology and Living in TEKLA

ICT	M&S	O&M	S&M	S&C	T&L
Apply concepts and skills acquired in Computer Literacy	<ul style="list-style-type: none"> <li>Materials &amp; resources</li> </ul>	<ul style="list-style-type: none"> <li>Tools &amp; equipment</li> <li>Production process</li> <li>Project management</li> </ul>	<ul style="list-style-type: none"> <li>Business environments, operations &amp; organisations</li> <li>Resources management</li> <li>Marketing</li> </ul>	<ul style="list-style-type: none"> <li>Concepts of system</li> </ul>	<ul style="list-style-type: none"> <li>Food &amp; nutrition</li> <li>Food preparation &amp; processing</li> <li>Fabric &amp; clothing</li> <li>Fashion &amp; dress sense</li> <li>Family living</li> <li>Home management &amp; technology</li> </ul>
	<ul style="list-style-type: none"> <li>Materials processing</li> <li>Structures &amp; mechanisms</li> </ul>			<ul style="list-style-type: none"> <li>Application of systems</li> <li>System integration</li> <li>Control &amp; automation</li> </ul>	

# Design and Technology in TEKLA

ICT	M&S	O&M	S&M	S&C	T&L
<p>Apply concepts and skills acquired in Computer Literacy</p> <ul style="list-style-type: none"> <li>• Computer system</li> <li>• Programming concepts</li> </ul>	<ul style="list-style-type: none"> <li>• Materials &amp; resources</li> <li>• Material processing</li> <li>• Structures &amp; mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Tools &amp; equipment</li> <li>• Production process</li> <li>• Project management</li> </ul>	<ul style="list-style-type: none"> <li>• Business environments, operations &amp; organisations</li> <li>• Resources management</li> <li>• Marketing</li> </ul>	<ul style="list-style-type: none"> <li>• Concepts of system</li> <li>• Application of systems</li> <li>• System integration</li> <li>• Control &amp; automation</li> </ul>	<ul style="list-style-type: none"> <li>• Family living</li> <li>• Home management &amp; technology</li> </ul>
<ul style="list-style-type: none"> <li>• Computer network</li> </ul>					<ul style="list-style-type: none"> <li>• Food &amp; nutrition</li> <li>• Food preparation &amp; processing</li> <li>• Fabric &amp; clothing</li> <li>• Fashion &amp; dress sense</li> </ul>

# STEM Education

## What is STEM Education?

- STEM – Science, Technology, Engineering and Mathematics
- Introduced in 1990s by the National Science Foundation, USA, now variously used for initiatives in education, industry, economy, etc.

## Why is STEM Education Promoted?

### *2015 Policy Address*

152. The EDB will renew and enrich the curricula and learning activities of Science, Technology and Mathematics, and enhance the training of teachers, thereby allowing primary and secondary students to fully unleash their potential in innovation.



### Aim of STEM education

To strengthen the Science, Technology and Mathematics Education to **nurture diversified talents** in the science and technology fields for enhancing the **international competitiveness of HK**

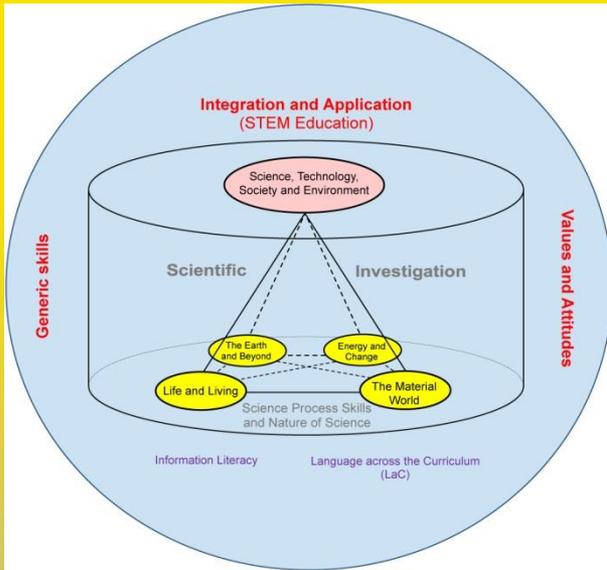
# Objectives of Promoting STEM Education

- To develop among students **a solid knowledge base** and to enhance their interests in **Science, Technology and Mathematics** for further studies and careers in meeting the changes and challenges in the contemporary world
- To strengthen students' **ability to integrate and apply knowledge and skills**, and to nurture students' creativity, collaboration and problem solving skills, as well as to foster their innovation as required in the 21st century
- To strengthen the **professional capacity of** and **collaboration among teachers** in schools and the **partnerships** with community stakeholders
- To nurture talents and develop experts in STEM areas so as to **contribute to the development of Hong Kong and the nation**

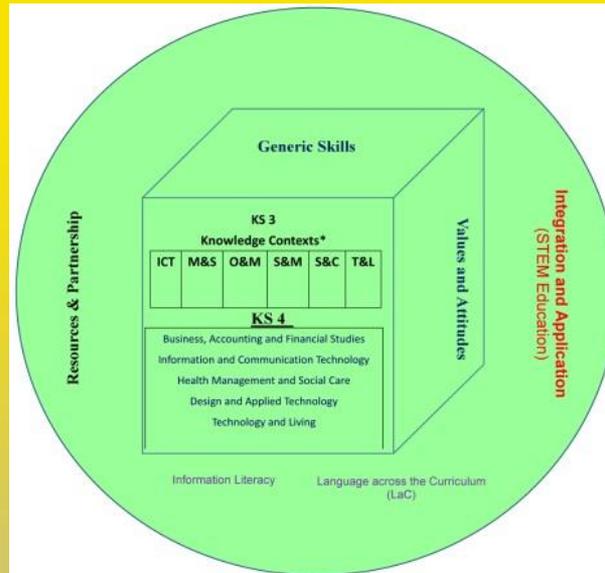


# Recommended Approaches for Organising Learning Activities on STEM Education

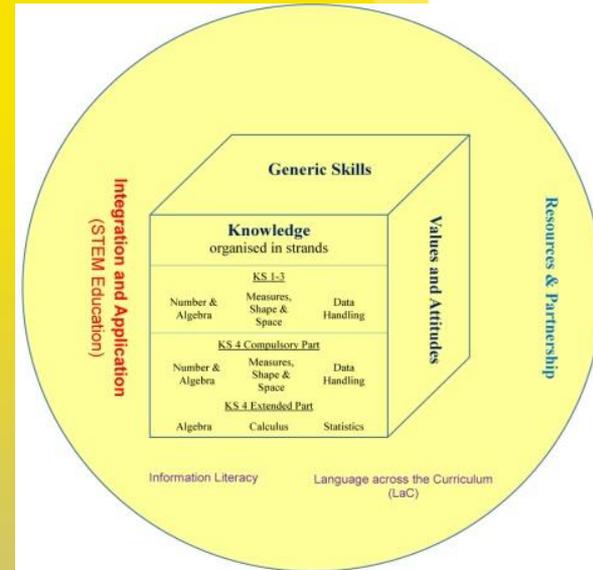
# Recommended Approaches of STEM Learning Activities



SE KLA



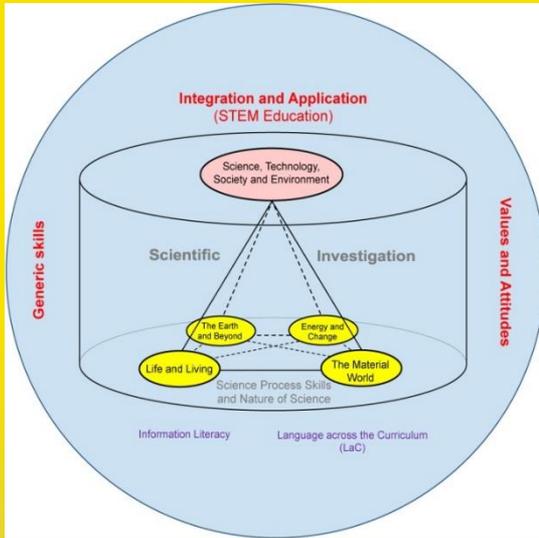
TE KLA



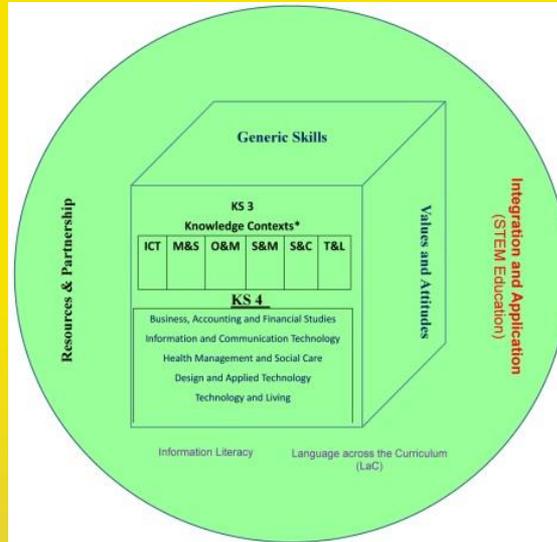
ME KLA

# Approach One

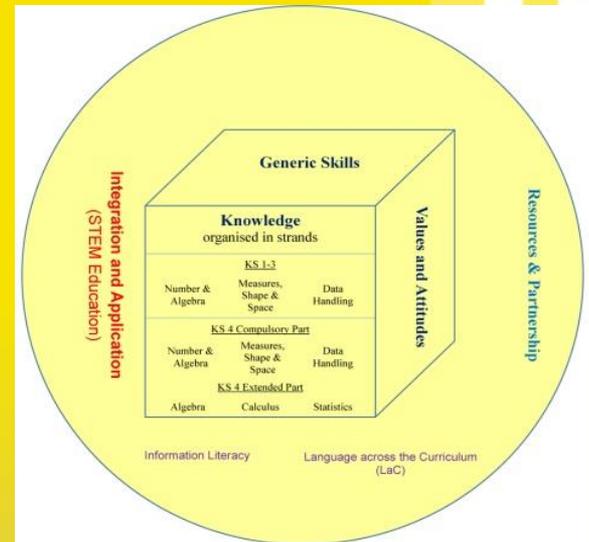
## Learning activities based on topics of TEKLA



SE KLA



TE KLA



ME KLA

**To Integrate & Apply**

Select a topic in  
TEKLA

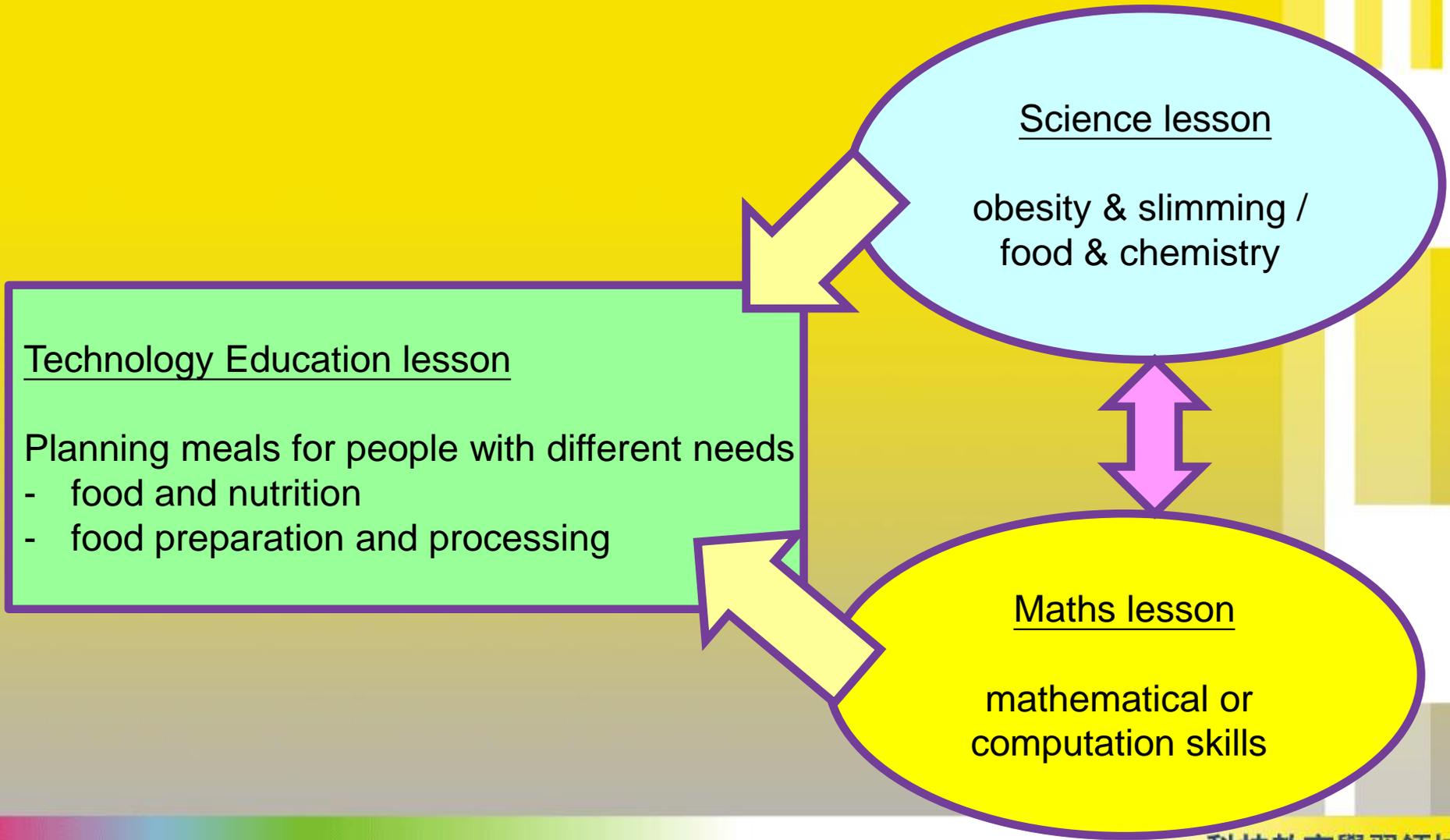
SE  
learning  
elements

ME  
learning  
elements

TE learning  
elements

# Approach One

## Learning activities based on topics of TEKLA



### Technology Education lesson

- Planning meals for people with different needs
- food and nutrition
  - food preparation and processing

### Science lesson

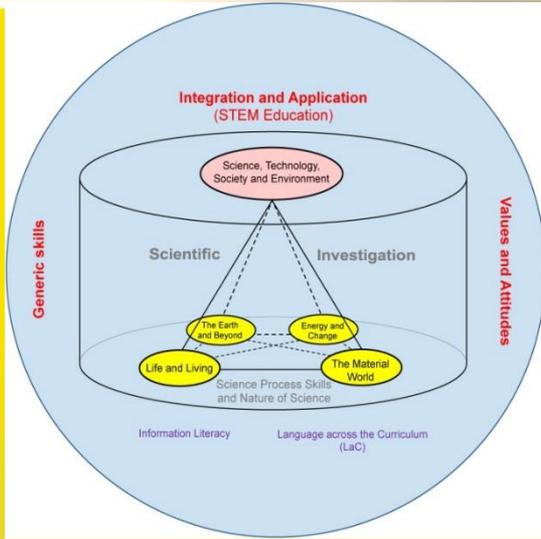
obesity & slimming /  
food & chemistry

### Maths lesson

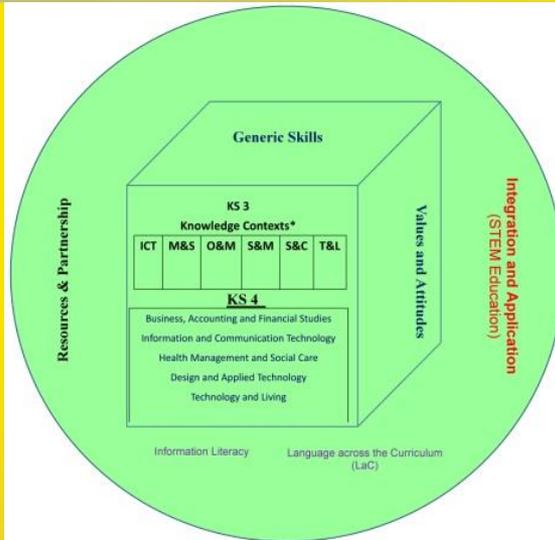
mathematical or  
computation skills

# Approach Two

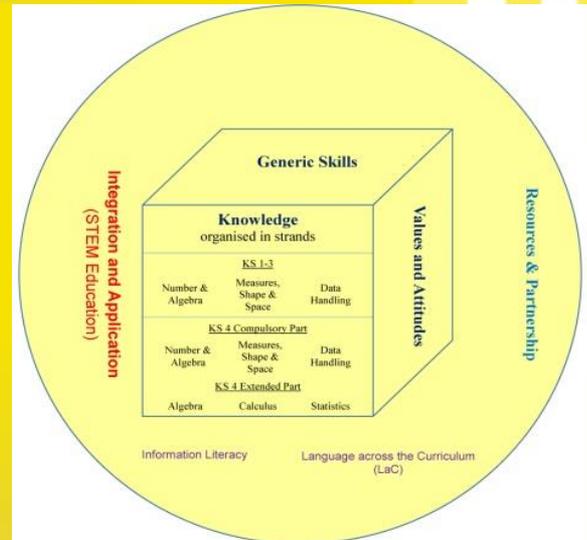
## Projects integrating relevant learning elements of different KLAs



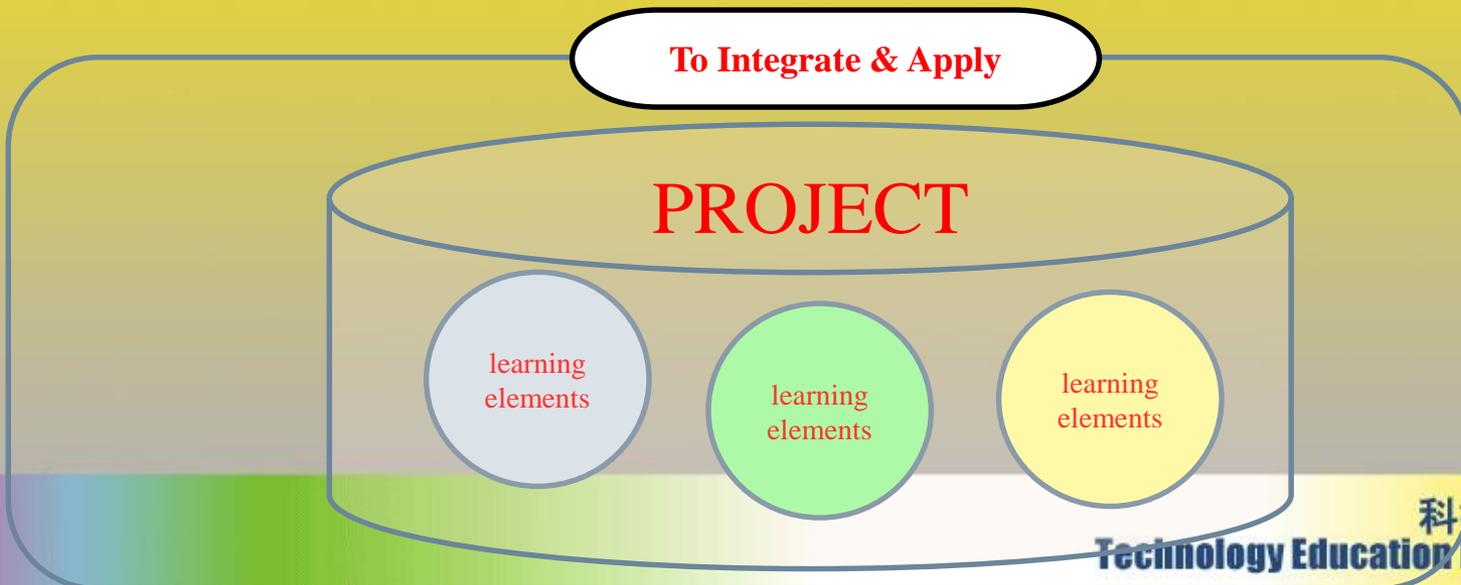
SE KLA



TE KLA

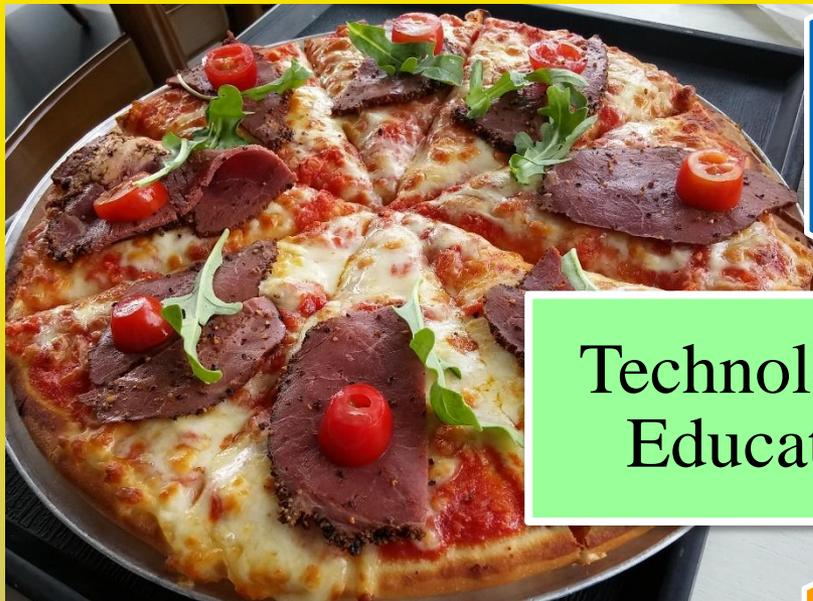


ME KLA



# Design a healthy diet menu for a school lunch box supplier

Junior Secondary



Food  
substance

Food  
pyramid

Science  
Education

Technology  
Education

Food product  
development

Principles in  
food  
preparation  
and hygienic  
practices

Collect and  
organise data

Construction  
and  
interpretation  
of statistical  
graphs

Mathematics  
Education

- Design menu
- Design mobile application for calculating calorie value
- Food research and development

## Approach Two

### *Projects integrating relevant learning elements of different KLAs*

- Design brief

A rehabilitation project to solve the problems of elderly people who live alone in the local community yet suffered from certain physical inabilities

- Students' activities

- To conduct visits to homes of elderly people or surveys to identify the common problems they face and to analyse the results and explore possible actions to improve his/her living conditions

- To decide on the possible solution

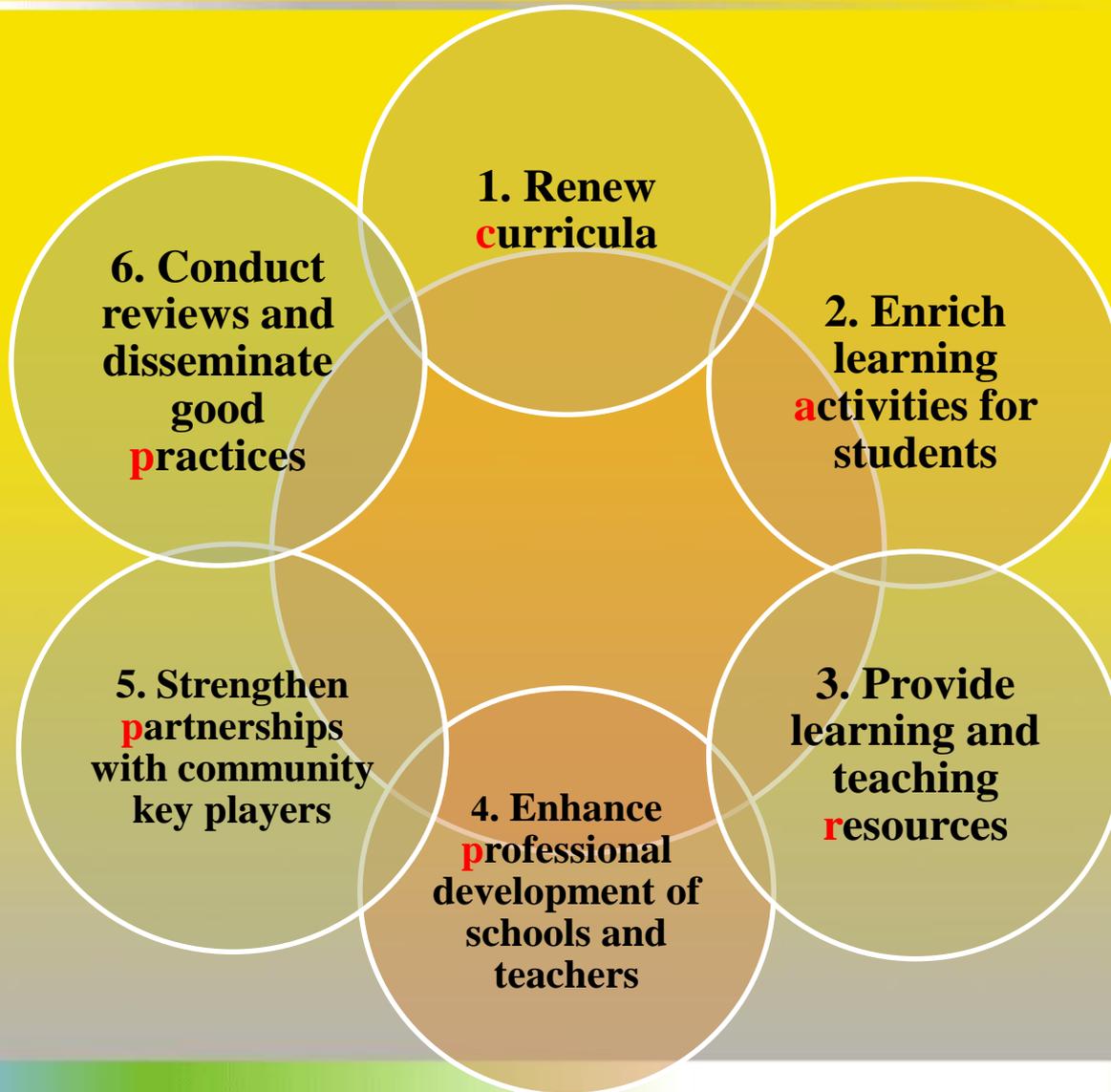
- to design a smart device to help them to control the electrical appliances at home

- to set up an alerting system when they need emergency help

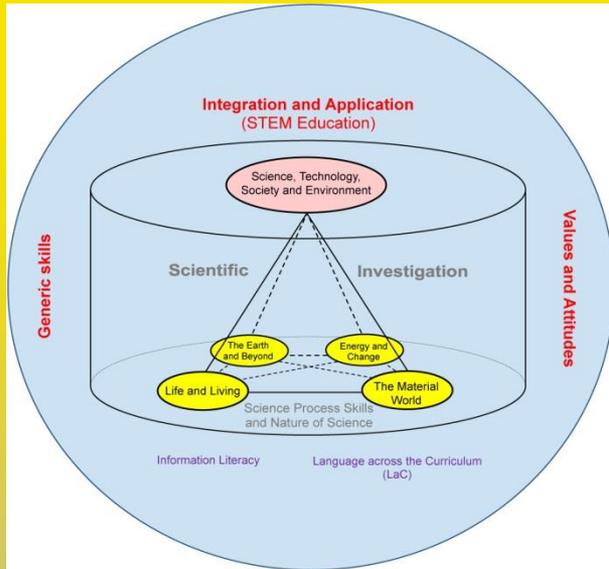
- to design an aid to help their washing up in the toilet

- To realise the proposed solution

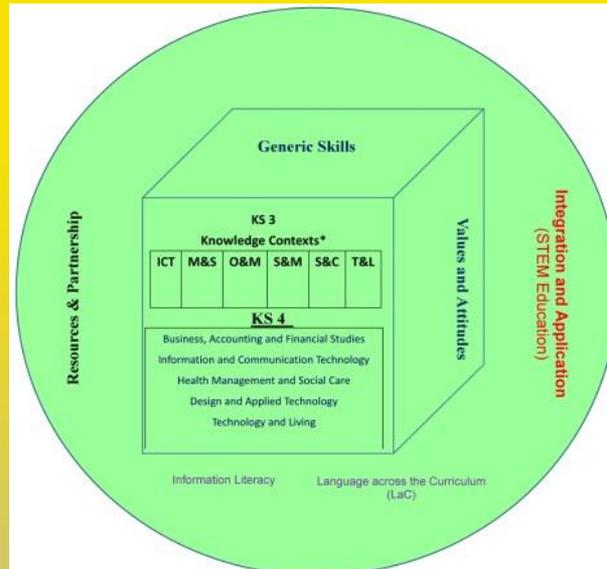
# Six Strategies for Promoting STEM Education



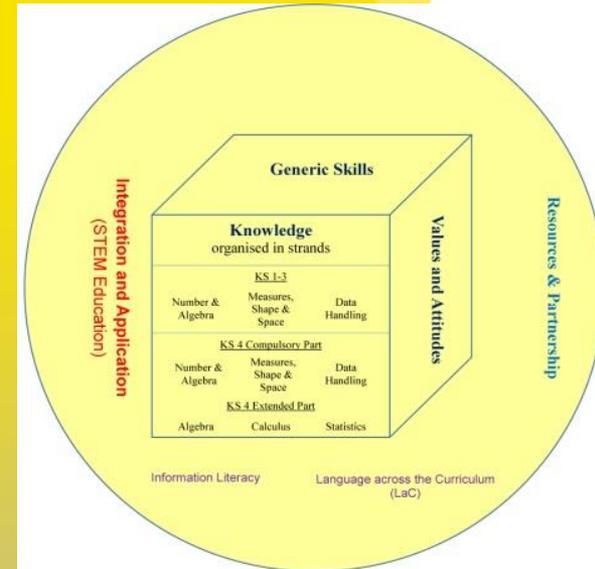
# (1) Renew curricula



SE KLA



TE KLA



ME KLA

## (2) Enrich learning activities for students

- Organise signature event to serve as hub – **Education Fair for students**
- Flexible use of **curriculum time** and effective use of **outside classroom learning** for engaging students in worthwhile learning experiences (e.g. cross-curricular and cross-KLA project learning or competitions)
- Broaden learning opportunities for students through their participation in **local/national/international competitions and projects**
- Nominate **students with special talent** to apply for local and overseas scholarships

### (3) Provide learning and teaching resources

- Develop **resource packages** for teachers' reference, including cross-disciplinary activities, project learning (e.g. **new learning and teaching resource packages for primary General Studies**)
- Recommend **e-resources** (e.g. e-library, online courses, e- textbooks) for effective learning and teaching
- Enrich the learning and teaching resources on “**EDB One-stop Portal for Learning and Teaching Resources**” (OSP) hosted at the Hong Kong Education City Limited
- Promote learning and teaching resources and life-wide learning activities provided by various organisations (e.g. **HK Science Park, HK Science Museum**)

## (4) Enhance professional development of schools and teachers

- Organise signature event to serve as hub - **Symposia for school heads and curriculum leaders**
- Organise **PDPs** for curriculum leaders and teachers of ALL primary and secondary schools in the coming three years
- Build **learning communities** to enhance knowledge exchange e.g.
  - “Professional Development Schools (PDS) Scheme” and “QEF Thematic Network (QTN)”
  - Design and Applied Technology Teacher Network, Health Management & Social Care Learning Community, Technology and Living Learning Community
- Enhance **teachers’ exposure to cutting edge development in science and technology fields** through exchange with academics/partners in the territory and from the Mainland and overseas

# (5) Strengthen partnerships with community key players



## (6) Conduct review and disseminate good practices

- Conduct **research** and **evaluation studies** on the implementation and review the curricula as appropriate
- Identify **good practices** and consolidate experience
- Disseminate **evidence-based practices** through PDPs, Centre of Excellence (CoE) (e.g. QTN of QEF, PDS of Education Development Fund)

# Other Key Emphases of Ongoing Curriculum Renewal

- Refined generic skills
- Promoting values education
- Strengthening language across the curriculum
- Strengthening information literacy

# Other Key Emphases of Ongoing Curriculum Renewal

- Based on past experience of implementing the reform, as well as dynamic changes in society and recent research, the nine generic skills are grouped in **3 clusters** of related skills for better integrative understanding and application:

Basic skills 基礎能力	Thinking skills 思考能力	Personal and Social skills 個人及社交能力
Communication Skills 溝通能力	Critical Thinking Skills 明辨性思考能力	Self-management Skills 自我管理能力
Mathematical Skills* 數學能力	Creativity 創造力	Self-learning Skills* 自學能力
IT Skills 運用資訊科技能力	Problem Solving Skills 解決問題能力	Collaboration Skills 協作能力

\*Numeracy Skills and Study Skills were used in Learning to Learn 2001.

# Other Key Emphases of Ongoing Curriculum Renewal

## Generic skills

- Highlighting problem solving skills, creativity and critical thinking skills which are of particular importance in TE learning and teaching

## Values education

- Highlighting the nurture of technological awareness in developing learners' ability to make judgment and decisions through
  - choice of design to meet specific needs
  - choice of materials for a specific design
  - choice of process, tools, equipment to realise a design

# Other Key Emphases of Ongoing Curriculum Renewal

## Language across the Curriculum (LaC)

- Highlighting the collaboration with English / Chinese teachers to facilitate LaC, e.g.
  - common topics between the TEKLA and English / Chinese
  - text types typical of the TEKLA (e.g. procedure / instructions)
  - TEKLA specific language features and rhetorical functions (e.g. expressing reasons and explanations / cause and effect, comparing and contrasting, giving explanations)

## Information literacy (IL)

- Highlighting IL as the focus of TE where learners learn to capture, manipulate and analyse data into meaningful information when they try to solve computational problems in IT.

# Holistic School-based TE Curriculum Planning

- Emphasising the building of knowledge foundation in TEKLA
  - Central curriculum and school-based TE curriculum
  - Development of technological literacy through the three strands of TE – knowledge contexts in technology, process in technology and impact of technology
  - Time allocation
    - » Primary level: 12 – 15% of the total curriculum time allocated to General Studies
    - » Junior secondary level: 8 – 15% of the total curriculum time allocated for TE
    - » Senior secondary level: 10 – 15% of the total curriculum time allocated to each of the TE elective subjects

# Enriched Technology Education Key Learning Area Curriculum (Secondary 1 to 3)

## Examples of Implementation

8% of the School's Total Curriculum Time (220 hours)

Level	Information and Communication Technology	Materials and Structures	Operations and Manufacturing	Strategies and Management	Systems and Control	Technology and Living
<b>Secondary 1 (minutes)</b>	<ul style="list-style-type: none"> <li>• K1 Computer Systems (310)</li> <li>• K16 Information Processing and Presentation (730)</li> </ul>	<ul style="list-style-type: none"> <li>• K4 Structures &amp; Mechanisms (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K5 Tools and Equipment (160)</li> <li>• K6 Production Process (920)</li> </ul>		<ul style="list-style-type: none"> <li>• K8 Concepts of System (80)</li> <li>• K9 Application of Systems (80)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (300)</li> <li>• K11 Food Preparation and Processing (410)</li> <li>• K12 Fabric and Clothing Construction (410 )</li> <li>• K13 Fashion and Dress Sense (120)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (200 )</li> </ul>
<b>Secondary 2 (minutes)</b>	<ul style="list-style-type: none"> <li>• K2 Programming Concepts (310)</li> <li>• K16 Information Processing and Presentation (730)</li> </ul>	<ul style="list-style-type: none"> <li>• K4 Structures and Mechanisms (600)</li> </ul>	<ul style="list-style-type: none"> <li>• K6 Production Process (600)</li> </ul>		<ul style="list-style-type: none"> <li>• K8 Concepts of System (40)</li> <li>• K9 Application of Systems (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (340)</li> <li>• K11 Food Preparation and Processing (310)</li> <li>• K12 Fabric and Clothing Construction (350 )</li> <li>• K13 Fashion and Dress Sense (140)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (300)</li> </ul>
<b>Secondary 3 (minutes)</b>	<ul style="list-style-type: none"> <li>• K2 Programming Concepts (620)</li> <li>• K16 Information Processing and Presentation (420)</li> </ul>	<ul style="list-style-type: none"> <li>• K4 Structures and Mechanisms (200)</li> </ul>	<ul style="list-style-type: none"> <li>• K6 Production Process (1080)</li> </ul>	<ul style="list-style-type: none"> <li>• K7 Business Environments, Operations and Organisations (720)</li> </ul>	<ul style="list-style-type: none"> <li>• K8 Concepts of System (40)</li> <li>• K9 Application of Systems (240)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (300)</li> <li>• K11 Food Preparation and Processing (340)</li> <li>• K12 Fabric and Clothing Construction (360 )</li> <li>• K13 Fashion and Dress Sense (140)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (300)</li> </ul>
<b>Total time for Secondary 1-3: 220 hrs. (13200)</b>						

# Enriched Technology Education Key Learning Area Curriculum

## (Secondary 1 to 3)

### Examples of Implementation

15% of the School's Total Curriculum Time (413 hours)

Level	Information and Communication Technology	Materials and Structures	Operations and Manufacturing	Strategies and Management	Systems and Control	Technology and Living
<b>Secondary 1 (minutes)</b>	<ul style="list-style-type: none"> <li>• K1 Computer Systems (600)</li> <li>• K16 Information Processing and Presentation (1380)</li> </ul>	<ul style="list-style-type: none"> <li>• K3 Materials and Resources (320)</li> <li>• K4 Structures and Mechanism (320)</li> <li>• E2 Material Processing (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K5 Tools and Equipment (320)</li> <li>• K6 Production Process (1520)</li> </ul>		<ul style="list-style-type: none"> <li>• K8 Concepts of System (80)</li> <li>• K9 Application of Systems (80)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (500)</li> <li>• K11 Food Preparation and Processing (660)</li> <li>• K12 Fabric and Clothing Construction (620)</li> <li>• K13 Fashion and Dress Sense (260)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (560)</li> <li>• E8 Fabric and Clothing Construction II (80)</li> <li>• E9 Fashion and Dress Sense II (80)</li> <li>• E10 Home Management and Technology II (80)</li> </ul>
<b>Secondary 2 (minutes)</b>	<ul style="list-style-type: none"> <li>• K2 Programming Concepts (480)</li> <li>• K16 Information Processing and Presentation (1200)</li> <li>• E1 Computer Networks (300)</li> </ul>	<ul style="list-style-type: none"> <li>• K3 Materials and Resources (200)</li> <li>• K4 Structures and Mechanism (600)</li> <li>• E2 Material Processing (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K5 Tools and Equipment (280)</li> <li>• K6 Production Process (1200)</li> </ul>		<ul style="list-style-type: none"> <li>• K8 Concepts of System (40)</li> <li>• K9 Application of Systems (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (500)</li> <li>• K11 Food Preparation and Processing (660)</li> <li>• K12 Fabric and Clothing Construction (600)</li> <li>• K13 Fashion and Dress Sense (260)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (580)</li> <li>• E8 Fabric and Clothing Construction II (80)</li> <li>• E9 Fashion and Dress Sense II (80)</li> <li>• E10 Home Management and Technology II (80)</li> </ul>
<b>Secondary 3 (minutes)</b>	<ul style="list-style-type: none"> <li>• K2 Programming Concepts (1000)</li> <li>• K16 Information Processing and Presentation (680)</li> <li>• E1 Computer Networks (300)</li> </ul>	<ul style="list-style-type: none"> <li>• K3 Materials and Resources (120)</li> <li>• K4 Structures and Mechanism (200)</li> </ul>	<ul style="list-style-type: none"> <li>• K5 Tools and Equipment (320)</li> <li>• K6 Production Process (1720)</li> <li>• E3 Project Management (320)</li> </ul>	<ul style="list-style-type: none"> <li>• K7 Business Environments, Operations and Organisations (720)</li> <li>• E4 Resources Management (210)</li> <li>• E5 Marketing (150)</li> </ul>	<ul style="list-style-type: none"> <li>• K8 Concepts of System (40)</li> <li>• K9 Application of Systems (240)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (500)</li> <li>• K11 Food Preparation and Processing (660)</li> <li>• K12 Fabric and Clothing Construction (600)</li> <li>• K13 Fashion and Dress Sense (260)</li> <li>• K14 Family Living (120)</li> <li>• K15 Home Management and Technology (580)</li> <li>• E8 Fabric and Clothing Construction II (80)</li> <li>• E9 Fashion and Dress Sense II (80)</li> <li>• E10 Home Management and Technology II (80)</li> </ul>

**Total Time for Secondary 1-3: 413 hrs. (24780)**

## Enriched Technology Education Key Learning Area Curriculum (Secondary 1 to 3)

### Examples of modular selection under Computer Literacy with different curriculum time allocation

Level	1 period per week/cycle (about 2.5% of the total curriculum time) (assumes 100 units of lesson time per year)	2 periods per week/cycle (about 5% of the total curriculum time) (assumes 200 units of lesson time per year)
Secondary 1	K1*: Computer Systems (30 units) K16: Information Processing and Presentation (70 units)	K1*: Computer Systems (30 units) K16: Information Processing and Presentation (170 units)
Secondary 2	K2: Programming Concepts (30 units) K16: Information Processing and Presentation (70 units)	K2: Programming Concepts (50 units) K16: Information Processing and Presentation (120 units) E1#: Computer Networks (30 units)
Secondary 3	K2: Programming Concepts (60 units) K16*: Information Processing and Presentation (40 units)	K2: Programming Concepts (130 units) K16*: Information Processing and Presentation (40 units) E1#: Computer Networks (30 units)

#### Notes:

- Contents marked with \* such as properties and functions of usual components in K1 or concepts of database in K16 are rarely taught at primary levels. Students' prior knowledge in these modules is presumed to be very similar.
- Content marked with # is extension learning element module which focuses on computer networks for schools that wish to provide additional learning elements in their CL lessons.
- Other contents such as ideas of a stored program in K2, and office applications in K16 are often taught in some primary schools with computer lessons. Hence students' abilities may vary a lot. Teachers may need to spend more time on (i) catching up with the fundamentals for those who have less learning experience, or (ii) providing more challenging tasks to stretch the talented students' potential.

## Enriched Technology Education Key Learning Area Curriculum (Secondary 1 to 3)

### Examples of modular selection under Design and Technology with different curriculum time allocation

Level	1 period per week / cycle (about 2.5% of the total curriculum time) (assumes 100 units of lesson time per year)		2 periods per week / cycle (about 5% of the total curriculum time) (assumes 200 units of lesson time per year)	3 periods per week / cycle (about 7.5% of the total curriculum time) (assumes 300 units of lesson time per year)
<b>Secondary 1</b>	Choose one of the combinations			
	Combination A (Materials and Production)	Combination B (Structures and Systems)		
	K3 Materials and Resources (23.5 units) K5 Tools and Equipment (11.8 units) K6 Production Process (64.7 units)	K4 Structures and Mechanisms (25 units) K5 Tools and Equipment (12.5 units) K6 Production Process (50 units) K8 Concepts of System (6.25 units) K9 Application of Systems (6.25 units)		
<b>Secondary 2</b>	Choose one of the combinations		K3 Materials and Resources (15.2 units) K4 Structures and Mechanisms (45.4 units) K5 Tools and Equipment (21.2 units)  K6 Production Process (91.0 units) K8 Concepts of system (3 units) K9 Application of Systems (24.2 units)	K3 Materials and Resources (15.3 units) K4 Structures and Mechanisms (45.9 units) K5 Tools and Equipment (21.3 units)  K6 Production Process (91.8 units) K8 Concepts of system (3 units) K9 Application of Systems (24.6 units)
	Combination A (Materials and Production)	Combination B (Structures and Systems)		
	K3 Materials and Resources (14.8 units) K5 Tools and Equipment (20.5 units) K6 Production Process (64.7 units)	K4 Structures and Mechanisms (46.9 units) K6 Production Process (25 units) K8 Concepts of system (3.1 units) K9 Application of Systems (25 units)		
		Plus one of the following combinations:		
		Combination A (Materials and Production)	Combination B (Structures and Systems)	
		E2 Material Processing (24.6 units) E3 Project Management (18.3 units) E6 System Integration (55.2 units)	E7 Control and Automation (98.1 units)	
<b>Secondary 3</b>	Choose one of the combinations		K3 Materials and Resources (9 units) K4 Structures and Mechanisms (15.2 units) K5 Tools and Equipment (24.2 units)  K6 Production Process (130.4 units) K8 Concepts of system (3 units) K9 Application of Systems (18.2 units)	K3 Materials and Resources (10.5/9/9.3 units)) K4 Structures and Mechanisms (17.1/15/15.3 units) K5 Tools and Equipment (27.6/24/24.6 units)  K6 Production Process (148.2/129/131.4 units) K8 Concepts of system (3.6/3/3 units) K9 Application of Systems (20.7/18/18.3 units)
	Combination A (Materials and Production)	Combination B (Structures and Systems)		
	K3 Materials and Resources (8.9 units) K5 Tools and Equipment (23.5 units) K6 Production Process (67.6 units)	K4 Structures and Mechanisms (15.6 units) K6 Production Process (62.5 units) K8 Concepts of system (3.1 units) K9 Application of Systems (18.8 units)		
		Plus one of the following combinations:		
		E2 Material Processing (44.7 units) E3 Project Management (27.6 units)	E6 System Integration (102 units)	E7 Control and Automation (98.1 units)

**Enriched Technology Education Key Learning Area Curriculum  
(Secondary 1 to 3)  
Examples of Implementation under Home Economics /  
Technology and Living  
with different curriculum time allocation**

Level	Half Year Implementation Mode	Whole Year Implementation Mode	
	2 periods per week / cycle (about 2.5% of the total curriculum time) (assumes 100 units of lesson time per year)	2 periods per week / cycle (about 5% of the total curriculum time) (assumes 200 units of lesson time per year)	3 periods per week / cycle (about 7.5% of the total curriculum time) (assumes 300 units of lesson time per year)
<b>Secondary 1</b>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (20 units)</li> <li>• K11 Food Preparation and Processing (21 units)</li> <li>• K12 Fabric and Clothing Construction (21 units)</li> <li>• K13 Fashion and Dress Sense (10 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (19 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (40 units)</li> <li>• K11 Food Preparation and Processing (45 units)</li> <li>• K12 Fabric and Clothing Construction (45 units)</li> <li>• K13 Fashion and Dress Sense (21 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (40 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (46 units)</li> <li>• K11 Food Preparation and Processing (76 units)</li> <li>• K12 Fabric and Clothing Construction (73 units)</li> <li>• K13 Fashion and Dress Sense (30 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (48 units)</li> <li>• E8 Fabric and Clothing Construction II (6 units)</li> <li>• E9 Fashion and Dress Sense II (6 units)</li> <li>• E10 Home Management and Technology II (6 units)</li> </ul>
<b>Secondary 2</b>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (21 units)</li> <li>• K11 Food Preparation and Processing (21 units)</li> <li>• K12 Fabric and Clothing Construction (22 units)</li> <li>• K13 Fashion and Dress Sense (9 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (18 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (38 units)</li> <li>• K11 Food Preparation and Processing (44 units)</li> <li>• K12 Fabric and Clothing Construction (46 units)</li> <li>• K13 Fashion and Dress Sense (21 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (42 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (46 units)</li> <li>• K11 Food Preparation and Processing (76 units)</li> <li>• K12 Fabric and Clothing Construction (72 units)</li> <li>• K13 Fashion and Dress Sense (30 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (49 units)</li> <li>• E8 Fabric and Clothing Construction II (6 units)</li> <li>• E9 Fashion and Dress Sense II (6 units)</li> <li>• E10 Home Management and Technology II (6 units)</li> </ul>
<b>Secondary 3</b>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (22 units)</li> <li>• K11 Food Preparation and Processing (19 units)</li> <li>• K12 Fabric and Clothing Construction (22 units)</li> <li>• K13 Fashion and Dress Sense (9 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (19 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (38 units)</li> <li>• K11 Food Preparation and Processing (44 units)</li> <li>• K12 Fabric and Clothing Construction (46 units)</li> <li>• K13 Fashion and Dress Sense (21 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (42 units)</li> </ul>	<ul style="list-style-type: none"> <li>• K10 Food and Nutrition (46 units)</li> <li>• K11 Food Preparation and Processing (76 units)</li> <li>• K12 Fabric and Clothing Construction (72 units)</li> <li>• K13 Fashion and Dress Sense (30 units)</li> <li>• K14 Family Living (9 units)</li> <li>• K15 Home Management and Technology (49 units)</li> <li>• E8 Fabric and Clothing Construction II (6 units)</li> <li>• E9 Fashion and Dress Sense II (6 units)</li> <li>• E10 Home Management and Technology II (6 units)</li> </ul>

# Holistic School-based TE Curriculum Planning

- Encouraging cross-curricular learning
  - Project learning and task-based activities to collaborate within TEKLA and with other KLAs
- Strengthening integrative learning and application skills with disciplines of Science and Mathematics Education KLAs

# Other Updating - Pedagogies

- Approaches to learning and teaching
  - TE learning
    - purposeful with a problem as the context of study
    - has a deliverable such as an artefact, a system and is usually involving the use of hands and the mind
  - TE learning activities
    - Classroom teaching, reading and information collection, designing and processing, out-of-school activities
    - Integration of different dimensions of technology with the emphases of ongoing curriculum renewal
- Effective learning and teaching strategies:
  - Project learning
  - Information technology for interactive learning
  - e-Learning

# Other Updating – e-Learning

- Promoting the use of e-learning in the context of TE, e.g.
  - using simulation / modelling tools in Design and Applied Technology
  - using mind mapping tools in Health Management and Social Care

## Use of spreadsheet in teaching the accounting cycle

- ✓ It allows students to leverage their understanding of the impact of transactions in terms of *'increasing' or 'decreasing' the balance sheet account values.*
- ✓ It provides a very visual tool for understanding the impact of transactions on account values.
- ✓ It can be used to track account values throughout the accounting cycle.
- ✓ It simplifies the process for constructing financial statement.
- ✓ It integrates all aspects of the accounting cycle in one tool.

# Other Updating - Assessment

## Assessment in TEKLA

- Assessment *for* learning
  - Teachers collect a wide range of data so that they can modify the learning work for their students
  - Highlights students' strengths and weaknesses
  - Provides students with feedback that will further improve their learning
- Assessment *of* learning
  - Provides students, teachers, parents, etc. with information about student learning progress so that they can plan appropriately for the future
- Assessment *as* learning
  - Students looking at their learning and reflecting on their own abilities
  - Student, not only as a contributor to the assessment and learning process, but also as the critical connector between them
  - Students monitor what they are learning and use the feedback to make adjustments and adaptation
  - Provides feedback to teachers to help identify students' learning problems as well as to improve their own teaching

## Assessment strategies for TE, e.g.

- Project work assessment
- Task-based assessment
- Assessing essential manipulative skills
- Assessing knowledge and concepts
- e-Assessment

# Catering for Learner Diversity

- Stressing continuous support to learner diversity through
  - Selecting and grouping of the 16 core learning element modules and 10 extension learning element modules
  - Providing a wider variety of technologies
  - Allowing different modes of assessment
  - Encouraging the accumulation of learning evidences and providing authentic hands-on learning experiences
  - Encouraging group work and collaboration

# Supporting Strategies to Schools

- Enrich learning activities for students – education fair
- Provide learning and teaching resources – EDB One-stop Portal for Learning and Teaching Resources, e-resources, community resources, etc.
- Strengthen partnerships with community key stakeholders and maintain professional communities
- Enhance professional development of schools and teachers – symposia, professional development programmes (PDPs), Professional Development Schools of Education Development Fund, QEF Thematic Network

# Frequently Asked Questions

## Q1. What are the implications of curriculum updating in school-based curriculum development?

- A1.
- Promoting **holistic curriculum planning** for **vertical continuity** and **lateral coherence** within and across KLAs, and collaboration among teachers
  - Enriching learning and teaching activities, such as **scientific investigations**, **design-and-make activities**

## Q2. How can schools allocate time for promotion of STEM education?

- A2
- Effective **use of lesson time** with infusion of STEM-related learning and teaching activities
  - Flexible use of **curriculum time**/appropriate use of **outside classroom learning** for STEM-related projects and competitions

## Q3. What are the resources available for schools?

- A3.
- Resources from EDB, e.g. PDPs, resources at One-stop Portal, E-blogs
  - Community resources provided by other government /non-government organisations
  - Other resources, e.g. QEF project, Professional Development Schools of Education Development Fund

# Summary of Key Updates

- Updating the **curriculum framework**
- Emphasising **holistic curriculum planning**
- Promoting **STEM education** with solid foundation
- Strengthening the **ability to integrate and apply knowledge and skills** within and across KLAs
- Key emphases of ongoing curriculum renewal
  - STEM education, generic skills, values education, LaC, information literacy, e-learning



~Thank you~