

# MALAYSIAN SCHOOL SYSTEM & *Informatics / Statistics* in CURRICULUM

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Arctic Ocean

Atlantic Ocean

Pacific Ocean

Malaysia

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Indian Ocean

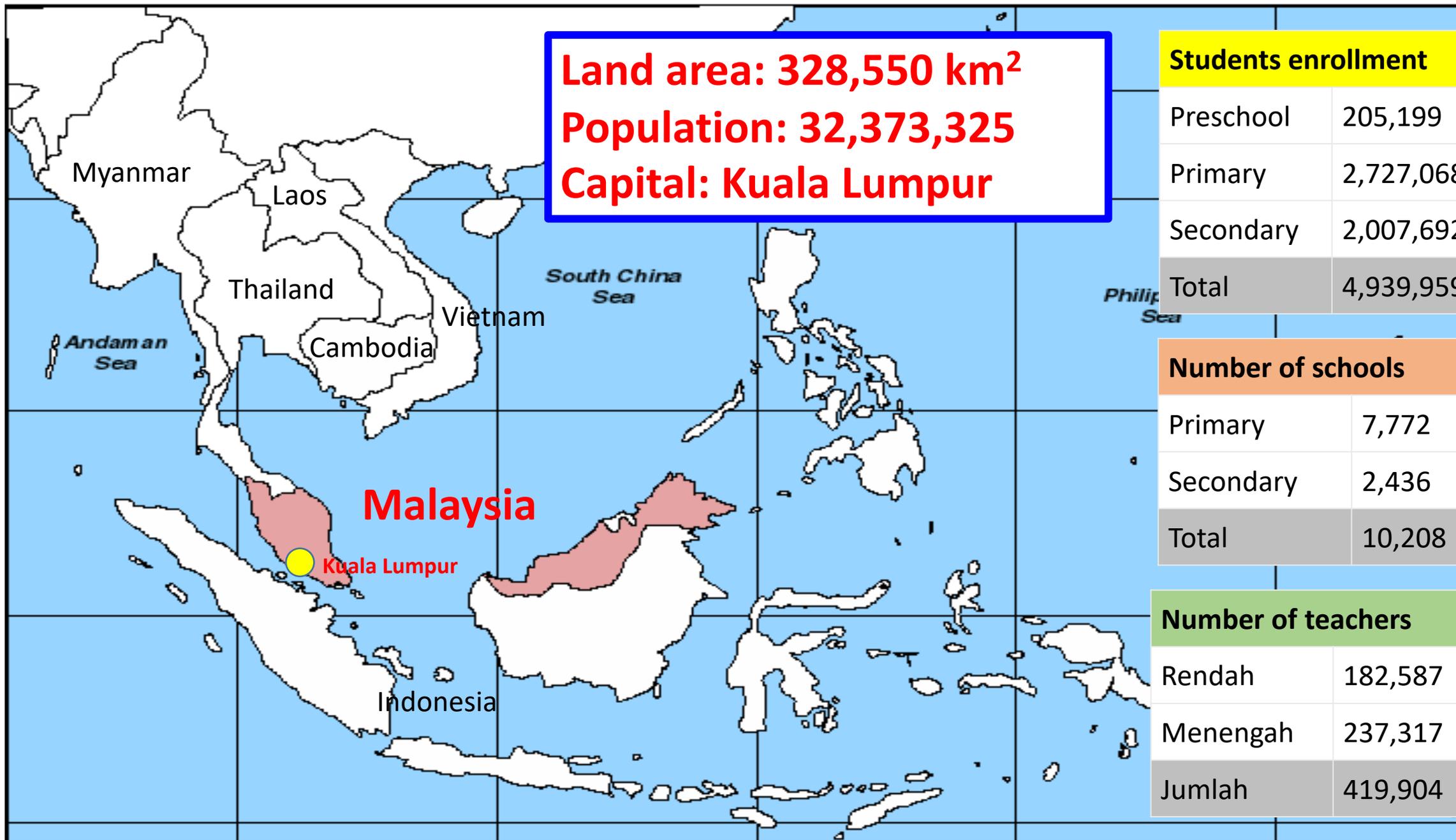
Pacific Ocean

Atlantic Ocean

Santiago

Southern Ocean

# Southeast Asia



## Students enrollment

Preschool	205,199
Primary	2,727,068
Secondary	2,007,692
<b>Total</b>	<b>4,939,959</b>

## Number of schools

Primary	7,772
Secondary	2,436
<b>Total</b>	<b>10,208</b>

## Number of teachers

Rendah	182,587
Menengah	237,317
<b>Jumlah</b>	<b>419,904</b>



**TASK 0:** What are the main features of the school system?

**TASK 1:** What are the reform issues of Informatics Curriculum?

**TASK 2:** Is Computational Thinking specified? If yes, how?

**TASK 3:** What are the teaching materials (exemplar) used to teach Computational thinking?

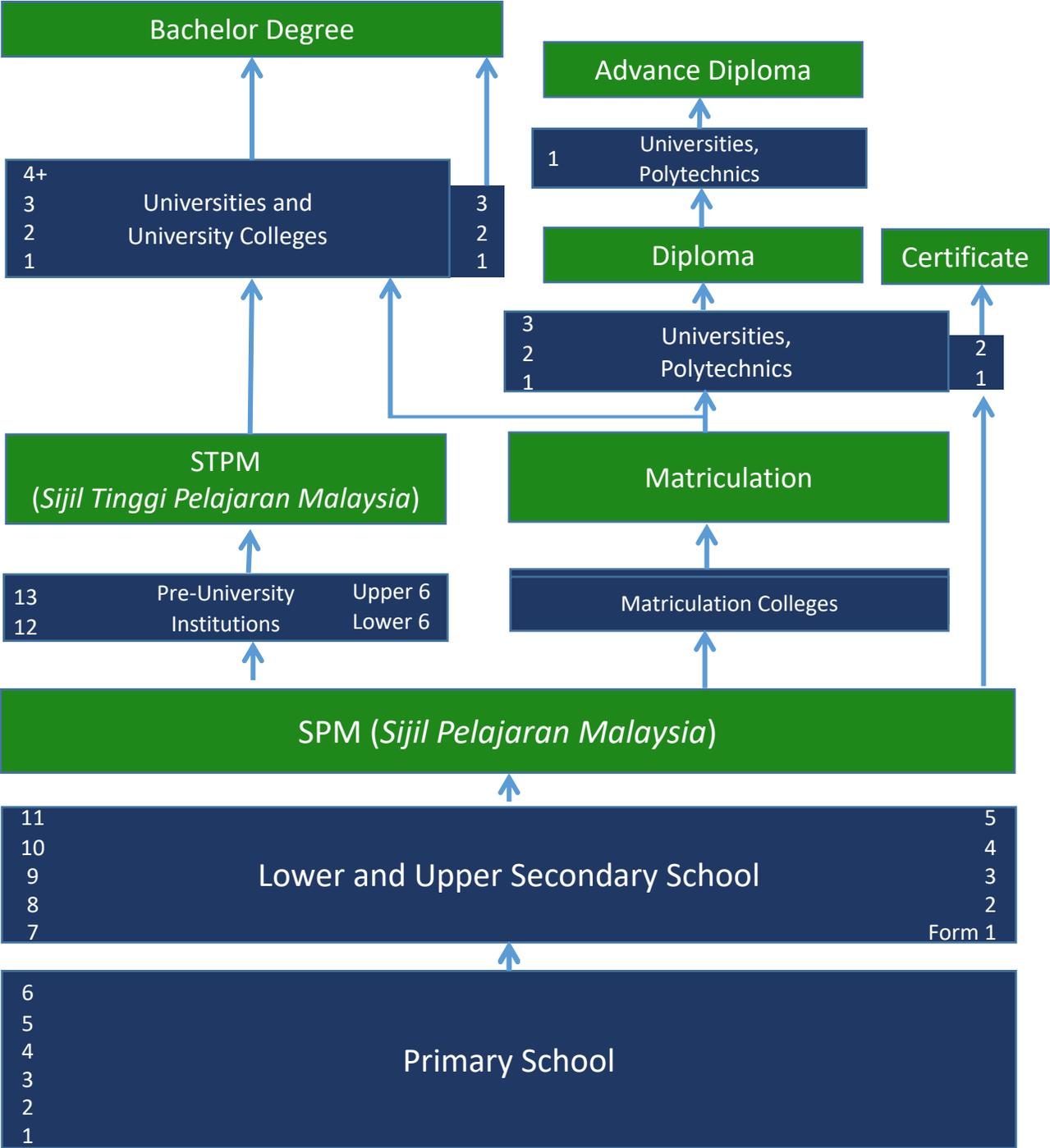
**TASK 4:** What are the challenges for reform?

**TASK 0**

# EDUCATION IN MALAYSIA

## QUICK FACTS

- Population**  
29,720,000  
(2013, World Bank)
- Compulsory Education**  
6 years
- Language of Instruction**  
Bahasa Melayu, Chinese, Tamil
- Academic Year**  
January - November



**TASK 1**

# Computer Science Curriculum



# Curriculum (Malaysia) : **VISION**

**To produce quality curriculum towards world-class national education by 2020**



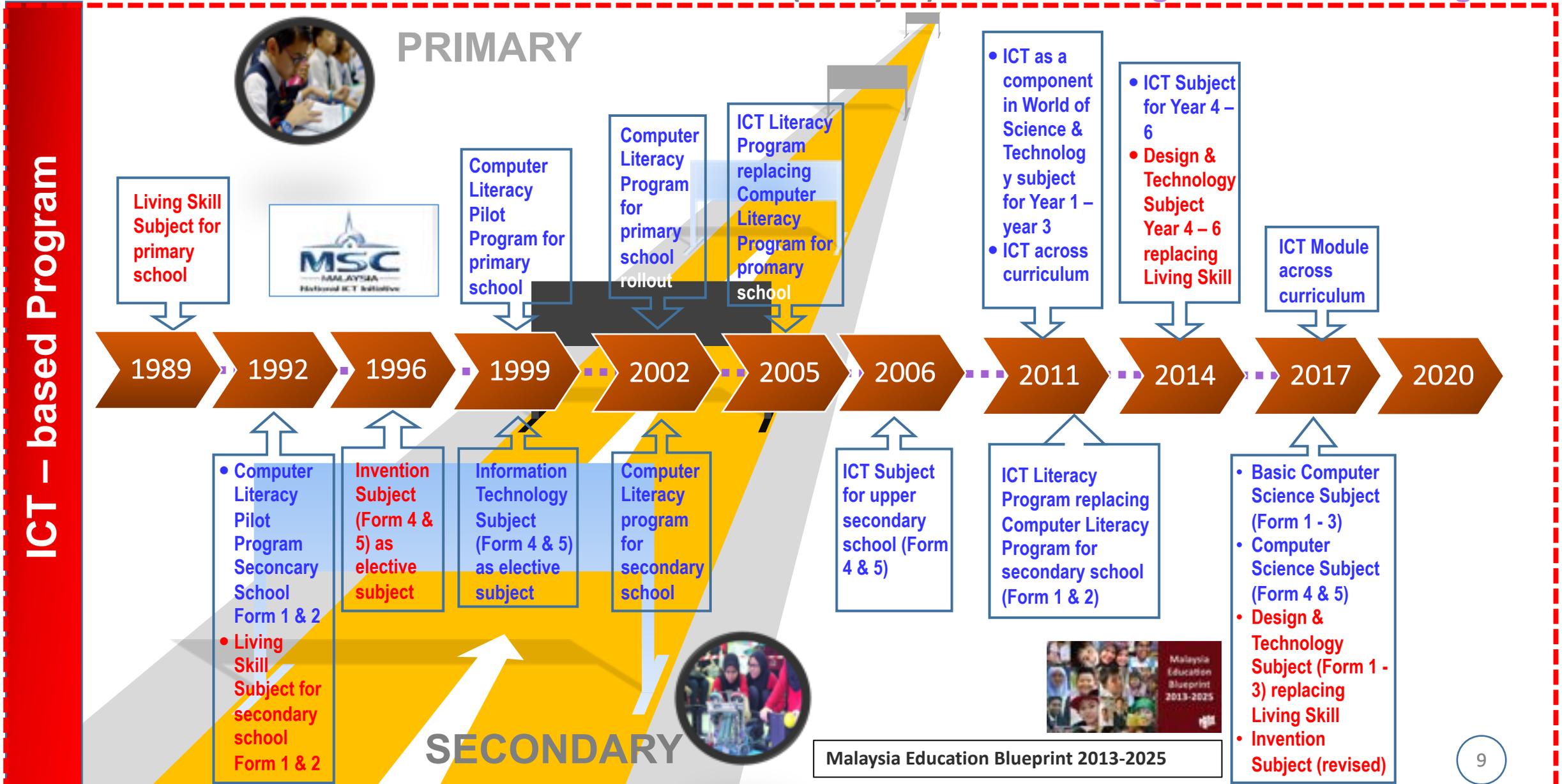
# Curriculum (Malaysia) : ICT-based Program

Since 2014, MoE Malaysia has taken a great step to introduce ICT-based subject in preparation for the 4<sup>th</sup> Industrial Revolution namely :

- **Basic Computer Science/Computer Science** subjects are introduced to prepare students with the principle of computer science based on **computational thinking skills** which focusses on **algorithm** and **programming** in creating computer systems.
- **Design & Technology/Invention Subject** focus on **designing product** based on **technology**. Students will be able to create simple and meaningful product creatively and innovative.



## Curriculum (Malaysia) : ICT-based Program - Historical Background



## Curriculum (Malaysia) : **COMPUTER SCIENCE SYLLABUS**

### TASK 2

	BASIC COMPUTER SCIENCE SUBJECT LOWER SECONDARY : <b>FORM 1-3</b>	COMPUTER SCIENCE SUBJECT UPPER SECONDARY : <b>FORM 4 AND 5 (ELECTIVE)</b>
<b>AIMS</b>	<p>Basic Computer Science subject aims to provide pupils with knowledge and <b>computational thinking skills</b> as well as practice the value and culture of Information and Communication Technology. It focusses on basic computer science skills including algorithm and programming skills to produce pupils with creativity, innovative, dynamic and ethics.</p>	<p>Computer Science subject for upper secondary aims to provide and reinforce pupils with the knowledge, skills and values of Computer Science as well as <b>computational thinking</b>. This is to produce individuals who can contribute to the development of digital technology as new technology creator who can solve today's and future problems as well as practice positive behaviours and noble values.</p>
<b>Learning Area</b>	<p><b>Basic Computational Thinking Concepts</b></p> <p>Data Representation</p> <p>Algorithm</p> <p>Coding</p>	<p>Programming</p> <p>Database</p> <p>Human and Computer Interactions</p> <p>Computing</p> <p>Advanced Database</p> <p>Web-Based Programming</p>
		

## Curriculum (Malaysia) : *Coding*

SUBJECT	LEVEL	%	REMARK
ICT	YEAR 4 YEAR 5 YEAR 6	33 %	YEAR 4 – Module: Computer World & Exploring Multimedia YEAR 5 – Module: Network and Internet & Introduction to Database YEAR 6 – <b>Module : SCRATCH Programming</b> <ul style="list-style-type: none"> <li>• Understanding programming</li> <li>• Use Algorithm through Psedo Code and Flowchart</li> <li>• Coding and Debugging</li> <li>• Project work</li> </ul>
Basic Computer Science (64 h)	Form 1 Form 2 Form 3	63 %	Form1 – 1.1 Fundamental of Computational Thinking <ul style="list-style-type: none"> <li>2.1 Binary System</li> <li>2.2 Data Measurement</li> <li>3.1 Sequential Control Structure Algorithm</li> <li>4.1 Coding : SCRATCH</li> <li>4.2 Coding : HTML</li> </ul> Form 2 – 1.1 Octal Number System <ul style="list-style-type: none"> <li>1.2 Hexadecimal Number System</li> <li>2.1 Selection and Repetition Control Structure Algorithm</li> <li>3.1 Coding Environment - PHYTON</li> <li>3.2 Selection and Repetition Control Structure Coding</li> </ul> Form 3 – 1.1 Programming <ul style="list-style-type: none"> <li>2.1 Criptography and Data Security</li> <li>3.1 Search &amp; Sort Algorithm</li> <li>4.1 Database &amp; SQL</li> <li>4.2 Search &amp; Sort Coding</li> </ul>
Computer Science (96h)	Form 4 Form 5	83 %	Form 4 – 1.0 <b>Programming</b> (57 h) 2.0 <b>Database</b> (30 h) 3.0 HCI (9 h) Form 5 – 1.0 Computing (23 h) 2.0 <b>Advanced Database</b> (18 h) 3.0 <b>Web-based Programming</b> (55 h)



## Curriculum (Malaysia) : Subject Mapping

### TASK 3

	LEVEL	YEAR/FORM	SUBJECT/PROGRAM	DESCRIPTION	CT				
					ABS	DEC	PR	ALG	
PRIMARY	STAGE 1	Y1	ICT Module Across all subjects	<ul style="list-style-type: none"> <li>ICT Literacy Skills (Basic Skills Modules)</li> <li>CT elements embedded across all subjects (Application Modules)</li> </ul>	✓	✓	✓	✓	
		Y2			✗	✓	✓	✓	
		Y3			✗	✓	✓	✓	
	STAGE 2	Y4	<ul style="list-style-type: none"> <li>Design &amp; Technology (DT) Subject</li> </ul>	<ul style="list-style-type: none"> <li>Component of Programming in DT</li> </ul>	✓	✓	✓	✓	
		Y5	<ul style="list-style-type: none"> <li>English</li> <li>Mathematics</li> </ul>	<ul style="list-style-type: none"> <li>ICT Literacy Skills (Basic Skills Modules)</li> <li>CT elements embedded in all subjects (Application Modules)</li> </ul>	✓	✓	✓	✓	
		Y6	<ul style="list-style-type: none"> <li>Science</li> </ul>		✓	✓	✓	✓	
SECONDARY	LOWER Std Enrolmnt: F1-69,246 F2-61,722 F3-54,198 No of Sch: 1,330	F1	<ul style="list-style-type: none"> <li>Basic Computer Science (BCS) Subject</li> </ul>	<ul style="list-style-type: none"> <li>Students have to choose either one of the subjects</li> <li>Readiness of the school based on teachers and infrastructure</li> </ul>	✓	✓	✓	✓	
		F2	<ul style="list-style-type: none"> <li>Design &amp; Technology (DT) Subject</li> </ul>		✓	✓	✓	✓	
		F3			<div style="border: 1px solid red; padding: 2px; display: inline-block;"> <u>T&amp;L Modules</u>  <b>F1 = 31 F2 = 20 F3 = 31</b> </div>	✓	✓	✓	✓
	UPPER Std Enrolmnt: F4-20,500 F5-19,419 No of Sch: 702	F4	<ul style="list-style-type: none"> <li>Computer Science (CS) Subject</li> </ul>	Focus on programming and Database	✓	✓	✓	✓	
		F5	<ul style="list-style-type: none"> <li>Invention Subject</li> </ul>	Focus on product design and innovation + AutoCad	✓	✓	✓	✓	
					<div style="border: 1px solid red; padding: 2px; display: inline-block;"> <u>T&amp;L Modules</u>  <b>F4 = 36 F5 = 30</b> </div>				

## TASK 4

# What are the challenges for reform?

Upskilling of existing CS teachers

Support from other external agencies. Ie. currently MoE has been collaborating with Malaysia Digital Economy Corporation (MDeC) and CyberSecurity

Malaysia 

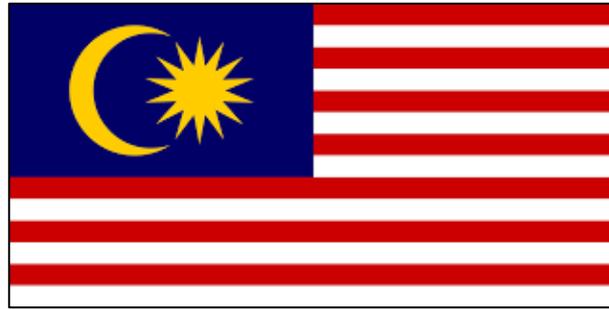
ICT facilities

Motivation to teachers

Increase the number of teachers teaching CS (currently 3,000 teachers to double)...hence increase the number of students (currently 17%) and schools offering CS (currently 55%)



# Thank you..Gracias



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