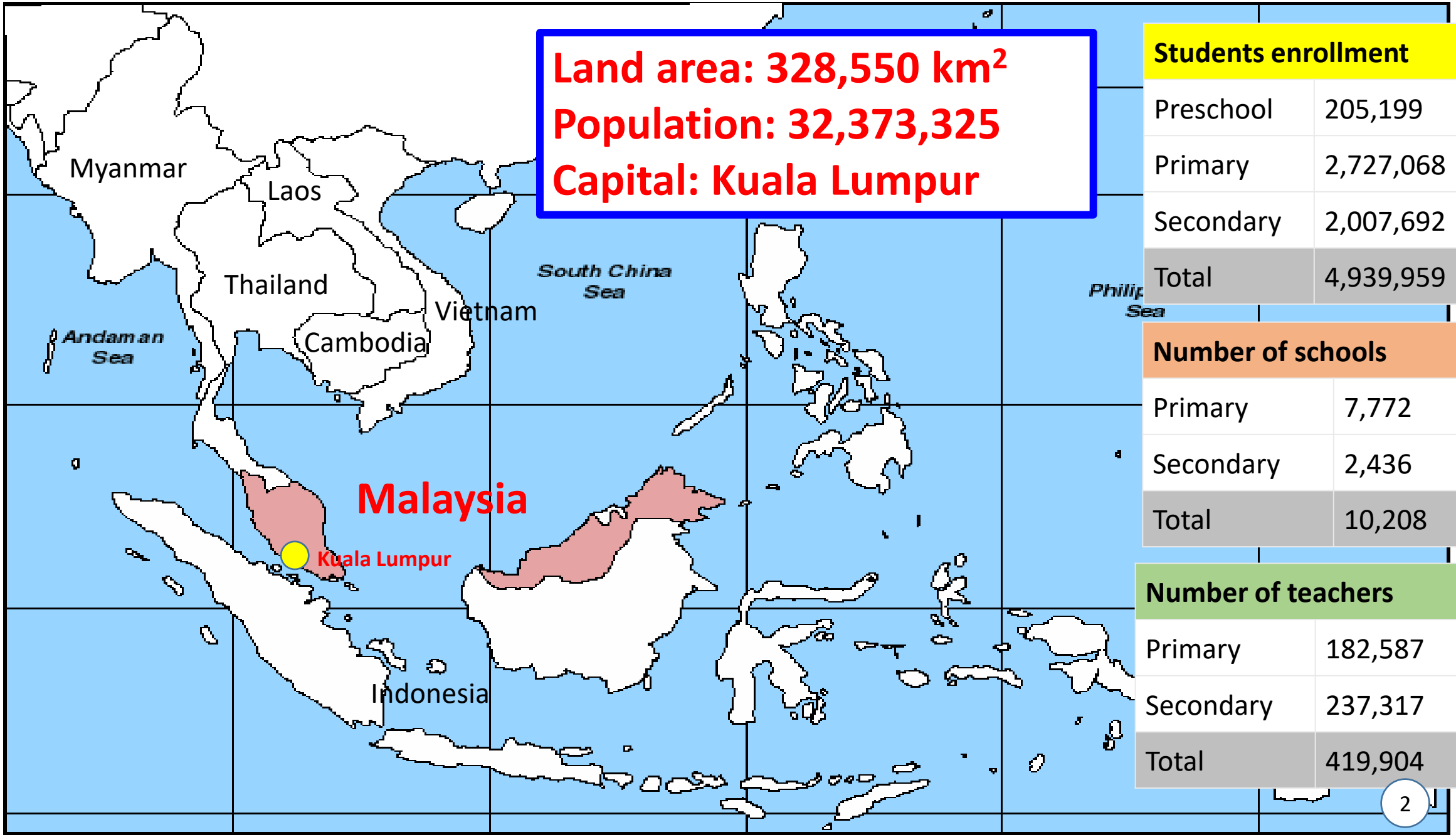
Annex 3. Content of report is following:

I. National Standards Framework
II. Curriculum Sequence from Primary to Secondary on Informatics
III. Newest High School Curriculum on Informatics
IV. Challenges and Next Step/Vision
- Current Challenges
- Next Step/Vision for Reform

Title: Informatics Curriculum in Malaysia

Name of Reporter:
SOFIAN AZMI BIN TAJULARUS
Ministry of Education Malaysia

Southeast Asia

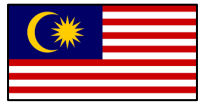


Land area: 328,550 km²
Population: 32,373,325
Capital: Kuala Lumpur

Students enrollment	
Preschool	205,199
Primary	2,727,068
Secondary	2,007,692
Total	4,939,959

Number of schools	
Primary	7,772
Secondary	2,436
Total	10,208

Number of teachers	
Primary	182,587
Secondary	237,317
Total	419,904



I. National Standards Framework
II. Curriculum Sequence from Primary to Secondary on Informatics
III. Newest High School Curriculum on Informatics
IV. Challenges and Next Step/Vision
- Current Challenges
- Next Step/Vision for Reform

I. National Standards Framework

MALAYSIA EDUCATION SYSTEM

Population
29,720,000
(2013, World Bank)

Compulsory Education
6 years

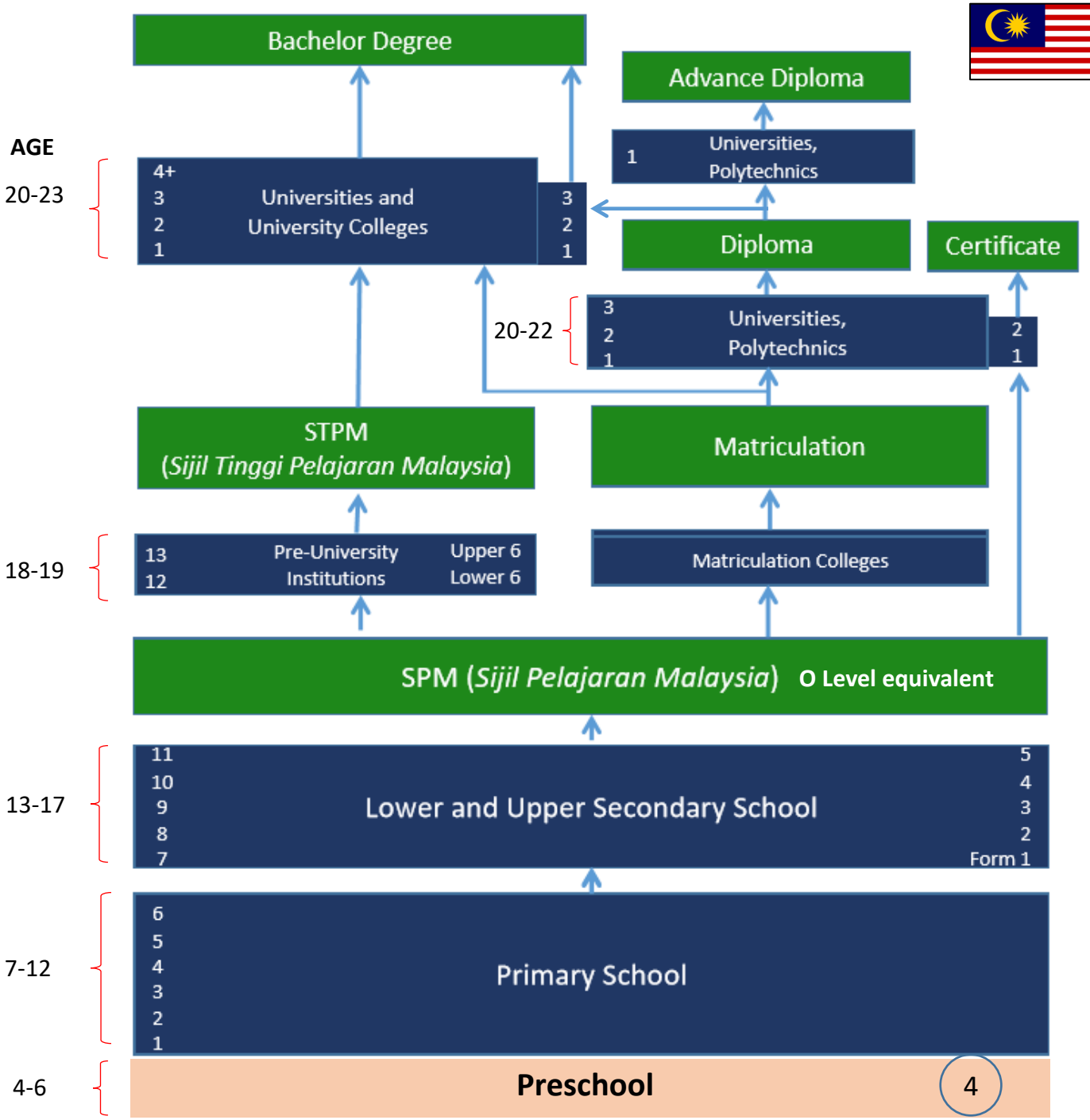
Language of Instruction
Bahasa Melayu, Chinese, Tamil

Academic Year
January - November

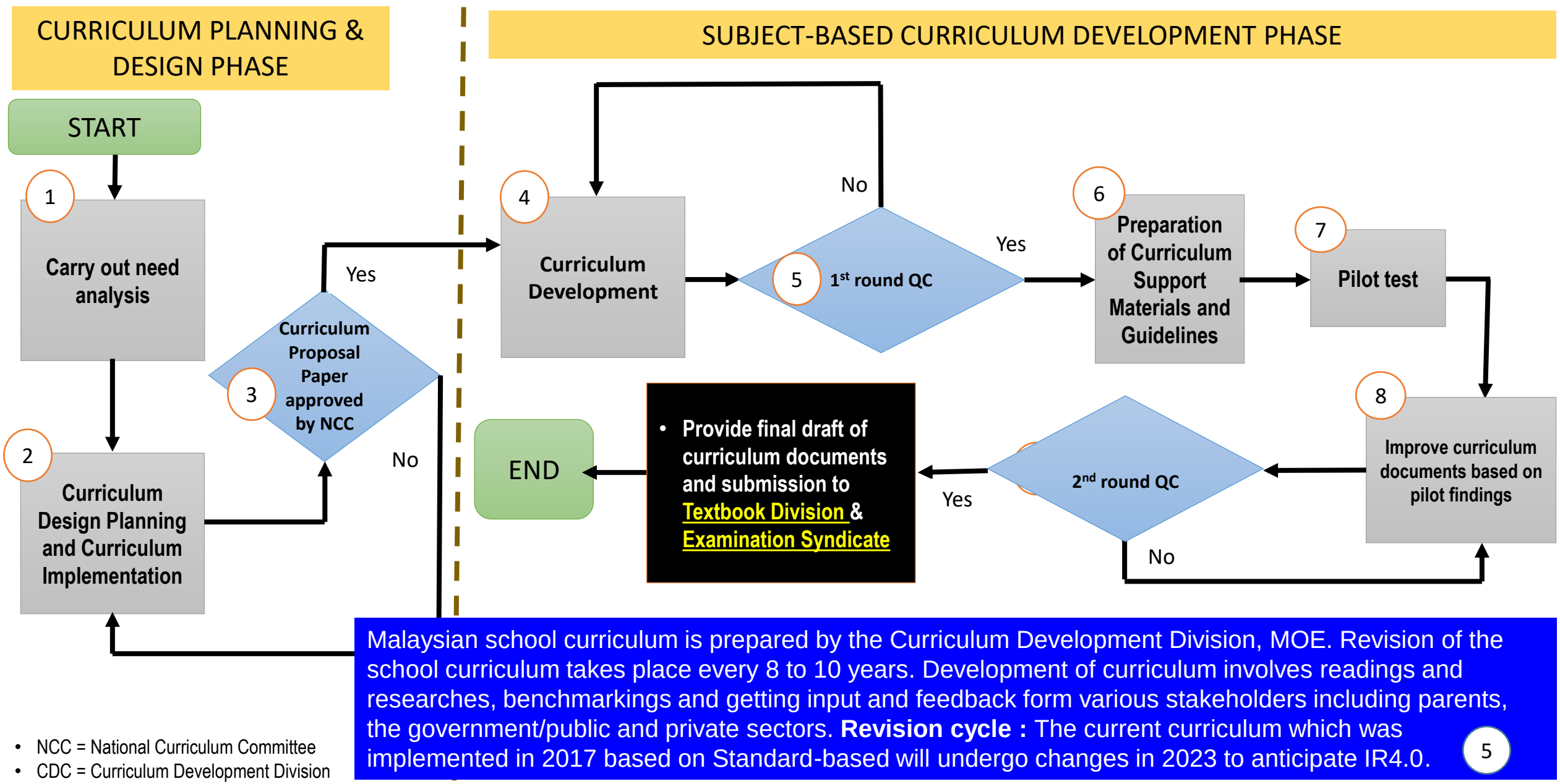
Students enrollment	
Preschool	205,199
Primary	2,727,068
Secondary	2,007,692
Total	4,939,959

Number of teachers	
Primary	182,587
Secondary	237,317
Total	419,904

Number of schools	
Primary	7,772
Secondary	2,436
Total	10,208



PROCESS FLOW IN CURRICULUM DEVELOPMENT IN REALATION TO TEXTBOOK AND ASSESSMENT



Malaysian school curriculum is prepared by the Curriculum Development Division, MOE. Revision of the school curriculum takes place every 8 to 10 years. Development of curriculum involves readings and researches, benchmarkings and getting input and feedback form various stakeholders including parents, the government/public and private sectors. **Revision cycle :** The current curriculum which was implemented in 2017 based on Standard-based will undergo changes in 2023 to anticipate IR4.0.

- NCC = National Curriculum Committee
- CDC = Curriculum Development Division

II. Curriculum Sequence from Primary to Secondary on Informatics

Elementary/Primary

NO	SUBJECT/ PROGRAM	LEVEL	NO OF SCHOOL	REMARK
1	ICT Module	Primary: Grade 1-6	All primary school	• Compulsory across 8 subjects (Grade 1-3) • 3 subjects (Grade 4-6)
2	Design & Technology	Primary: Grade 4-6		• Compulsory

Junior High/Middle:

NO	SUBJECT/ PROGRAM	LEVEL	NO OF SCHOOL	REMARK
1	Basic Computer Science	Lower Secondary : Form 1-3	1,352	Students choose either one
2	Design & Technology		All secondary school	

BASIC COMPUTER SCIENCE (FORM 1-3)

FORM 1	FORM 2	FORM 3
1.1 The Basics of Computational Thinking	**2.1 Algorithm Development**	**3.1 Algorithm Development**
Pupils can: 1.1.1 Describe the techniques of Decomposition, Pattern Recognition, Abstraction and Generalisation in computational thinking to solve the problem. 1.1.2 Complete tasks using the decomposition technique and determine steps in order. 1.1.3 Detect elements of similarities and differences for pattern recognition in any situation. 1.1.4 Make decisions to determine important aspects of a problem. 1.1.5 Determine the characteristics of equalities in a problem.	Pupils can: 2.1.1 Write pseudocodes and draw flow charts using: (i) nested selection control structures in problem solving (ii) repetition control structures (for, while-do) in problem solving 2.1.2 Detect and fix errors from pseudocodes and flow charts in troubleshooting. 2.1.3 Solve problems using pseudocodes and flow charts by combining various control structures.	Pupils can: 3.1.1 Identify search features (linear, binary) and sort (bubble, bucket). 3.1.2 Write pseudocodes and draw flow charts that shows: (i) linear search (ii) binary search 3.1.3 Write pseudocodes and draw flow charts that shows: (i) bubble sort (ii) bucket sort 3.1.4 Detect and fix errors in pseudocodes and draw flow charts for solving problem involving: (i) search (ii) sort 3.1.5 Compare search and sort algorithms through pattern recognition. 3.1.6 Create algorithms involve the combination of search and sort techniques.

II. Curriculum Sequence from Primary to Secondary on Informatics

4.1 Command Code	3.1 Command Code Environment 3.2 Command Code Structure	4.2 Command Code Structure
Pupils can:	Pupils can:	Pupils can:
4.1.1 Use variables and mathematical operators in the program developed.	3.1.1 Use data types (integer, boolean, double, char and string) in the segment code.	4.2.1 Explain the function of the following structure in a program: (i) function (ii) procedure
4.1.2 Create programs that involve the use of multiple selections.	3.1.2 Differentiate between variables and constants in segment code.	4.2.2 Give examples using the function statement: (i) built-in (ii) user-defined
4.1.3 Create programs that involve the use of repetitions.	3.1.3 Generate segment codes using: (i) input and output functions (ii) relational operators (iii) logical operators	4.2.3 Write function and procedure statements.
4.1.4 Develop programs that involve the use of multiple selections, repetitions, variables and mathematical operators.	3.1.4 Detect and fix errors in segment code generated in troubleshooting.	4.2.4 Create a program that involves: (i) function (ii) procedure
4.1.5 Test the program and fix the errors in the generated command code.	3.1.5 Solve problems involving the combination of data types, variables, constants and operators in segment code.	4.2.5 Test pograms and fix errors on the generated programs. 4.2.6 Create programs that involves a combination of code structure to solve problems in everyday life.

	Pupils can: 3.2.1 Create programs that involve: (i) sequence control structure in problem solving (ii) selection control structures in problem solving (iii) nested selection control structures in problem solving (iv) repetition control structures in problem solving 3.2.2 Test the programs and fix the errors in the generated command code. 3.2.3 Create programs that involves a combination of various control structures.	

III. Newest High School Curriculum on Informatics

NO	SUBJECT/ PROGRAM	LEVEL	NO OF SCHOOL	YEAR STARTED	ELEMENTS INFUSED
1	Basic Computer Science	Lower Secondary : Form 1-3	1,352	2017	• CT • PROGRAMMING
2	Design & Technology		All secondary school		CT & CODING
3	Computer Science	Upper Secondary : Form 4-5	635	2017	PROGRAMMING
4	Invention		287		CT & CODING

Note : CT=Computational Thinking

Malaysia is currently taking bold steps to embrace IR4.0 since the launching of Industry4wrd : National Policy on Industry 4.0 last October 2018. Consequently, Ministry of Education Malaysia has formulated IR4.0 Action Plan Framework with the vision of “Quality Education Driven by IR4.0” underpin by 4 strategic thrusts:

- ❑ Strengthening Education Governance System towards IR4.0
- ❑ Enhancing Education 4.0 Ecosystem
- ❑ Developing Highly Skilled and Knowledgeable Talent for IR4.0
- ❑ Enhancing Research and Innovation towards IR4.0

IV. Challenges and Next Step/Vision

Current Challenges

Challenges facing the implementation of the new curriculum started in 2017 are :

1. The new curriculum (2017) is not based on the needs of IR4.0 which is currently dominating the trend of education as a whole.
2. Teacher training – In-Service and pre-service teachers
3. Info and Infrastructure readiness and cost

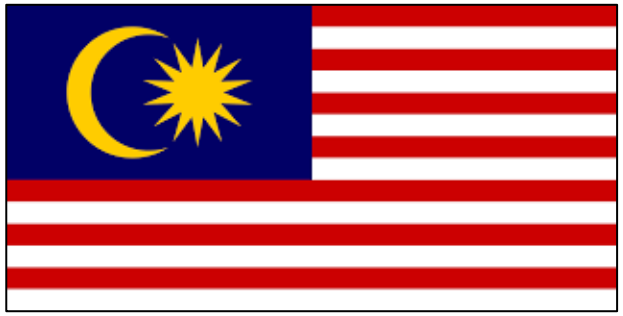
Next Step/Vision for Reform

MOE has to plan the future generations and provide the necessary preparation in education for the establishment of high quality curriculum standards based on IR4.0 and rapid global technological change. The emergence of new technologies is a global phenomenon affecting everyone. Societal impact of digital transformation has influenced human relationships, behaviour, social inclusion and communication in many ways hence changing the landscape of education in future which demand infusion of computational thinking, thinking skills, problem solving, innovation and creativity, collaboration and communication.

New curriculum will be formulated by the coming 2023 to anticipate change for IR4.0 under the following direction :

1. Creating future-ready curriculum
2. Curriculum which is fluid and organic
3. Competency-based
4. New sets of skills and knowledge domain under IR4.0 ie. Data Science, Machine Learning and Coding.

Thank you



http://www.moe.gov.my

Ministry of Education Malaysia,
No. 2, Tower 2, Road P5/6, Presint 5,
Administration Centre of Federal Government,
62200 Putrajaya, Malaysia.
Telephone : +60 38870 6000
Fax : +60 38870 6885
E-mail : kpkkpm@moe.gov.my