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Lesson Plan

Supervisor	Dr LAM Bick Har		
Venue	Computer Room	**Duration**	1 hour × 2
Class	Form 4 ICT	**Students**	12
Module	Basic Machine Organisation	**Topic**	System Unit of Computer

A. Students' Prior Knowledge

Before the lesson, students are expected to be able to…

1. recognise desktop computer and monitor; and
2. use screwdrivers to tighten logic board and other components.

B. Learning Objectives (LOs)

By completing the lesson, students will be able to…

1. describe the usage of computer system units;
2. explain the advantages and disadvantages of system units;
3. evaluate the choice for computer hardware; and
4. build a personal computer on their own.

C. Teaching Procedures

Time	Activities
15	**Introduction**
	Students will have to complete the Pre-lesson Worksheet, appended in *Lesson Material – (1)*, before the lesson. Students will have to complete a part of individual work, which serve as a pre-test tool for the teacher understanding of students' background in computer hardware. The second part of the worksheet requires students to work in groups to study a particular hardware. As the lesson aims to give a fundamental understanding to all students. Students are required to search for the usage and latest development of a component, and to search three available products on the market. Then, they will have to prepare a poster-like presentation material in any format (without anything larger than a piece of A3-sized paper).
	Students will have their mini presentations (not longer than 2 minutes) in class. By preparing the presentation material and having the presentation, students' knowledge on the particular hardware could be deepened. The poster may help students to organise the ideas graphically, which suggested for better understanding cognitively.
	After each presentation, students will be invited to share their comments and suggestions for the other groups' presentation. This may help students to be more engaged in class and create a positive classroom atmosphere. Besides, peer evaluation may help students to learn how to improve his/her learning.

	Then, the class will move forward by asking students whether they know why a computer will 'beep' when it fails to turn on. This question will bring them to the Direct Instruction, which introduces them the components.
15	**Direct Instructions** The students will be informed the schedule in this lesson, and students will be calmed for the excitement by saying 'I know you all are excited for building a computer today but let me talk a little bit more about the hardware so that we know more about it before doing it. Several major hardware components will be introduced to students, including CPU, RAM, Cooling Fans, Motherboard, HDD, SSD and Display Card. It is expected students may recognise the appearance of the hardware modules and describe it basic usage in simple language (for example, 'RAM is just like working memory as our brain'). Then, a tutorial video of building a computer will be shown to the students as that may give a visual impression for what is coming in the next part. At the same time, students may clear up their cognitive load for receiving the information of the hardware introduced. That might prevent cognitive overloading students and ensure that graphical learners may have better idea. Before starting the Activity, students will be guided with the safety instructions. Students will be invited to explain why the instruction is given. Therefore, students will have better understanding of the danger. That may prevent students from controllable dangers. Simple questions will be asked to check students' understanding with the hardware.

5	**Activity – Computer Building** *(i) Preparation* Students will be grouped into 3 or 4 based on the mini-presentation groupings, which contain students with different abilities. Students will then be invited to take the hardware and tools they will need; no power cord will be given until checking if the computer hardware are properly connected in the (iii) Boot and Troubleshooting part.
65	*(ii) Hands-on* Students will be guided to install the components step by step. The process of installing a module will be demonstrated with the aid of visualiser. Then the students will follow the particular step demonstrated and the teacher will show them the next step after confirming all groups may follow.
10	*(iii) Boot and Troubleshooting* The computer students built will be checked to see if the hardware modules are connected properly. If not, students will be encouraged to find out 'something wrong' here by giving hints to foster high order thinking and develop their troubleshooting skills. Students will be invited to share what they found that it may cause the issue. Students will be invited to turn on the computer with the power cord given.
10	**Conclusion** Students will be asked to share and explain if they would like to try to build their own computer or purchase one form the computer manufacturers. After that, students will be invited to explain the usage of different components for checking their understanding for the lesson materials. To conclude the lesson, students will be given interesting questions for discussion. For example, why we still need HDD (traditional hard drives) when SSD (newer and with many benefits by comparing to HDD) is introduced; what is the purpose of a graphic card; what if we do not have a graphic card; if without a graphic card, the computer cannot display, then why there are monitor connector port (VGA) on the motherboard? These questions may be solved in the class by knowledgeable students, which is not expected. If the questions are not solved, students will be invited to search online after the lesson and share with their classmates in the next lesson. Students will be asked to complete the Exit Ticket online, appended in *Lesson Material – (3)*. After completing the Exit Ticket, students will be briefed with the Worksheet, appended in *Lesson Material – (4)*, which consolidate their knowledge and apply their knowledge recommending a hardware specification for their friend. The Worksheet may serve as an effective tool for assessing their learning outcomes for evaluating choices for computer components.

D. Lesson Materials
(1) Pre-lesson Worksheet
(2) Presentation Slides
(3) Exit Ticket
(4) Lesson Worksheet