

## Curricular Trends in Malaysian Medical Schools: Innovations Within

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### Abstract

**Introduction:** Various curricular innovations were adopted by medical schools worldwide in an attempt to produce medical graduates that could meet future healthcare needs of society locally and globally. This paper presents findings on curricular approaches implemented in Malaysian medical schools, in trying to meet those needs. **Methods:** Information was obtained from published records, responses from various questionnaires, personal communication and involvement with curricular development. **Results:** Curricular innovations tended to be implemented in new medical schools upon their establishment. Established medical schools seemed to implement these innovations much later. Curricular trends appear to move towards integration, student-centred and problem-based learning as well as community-oriented medical education, with the Student-centred learning, Problem-based learning, Integrated teaching, Community-based education, Electives and Systematic programme (SPICES) model used as a reference. The focus is based on the premise that although the short-term aim of undergraduate medical education in Malaysia is to prepare graduates for the pre-registration house officer year, they must be able to practise and make decisions independently and be sensitive to the needs of the country's multiracial, multi-religious, and often remote communities. **Conclusion:** In most cases, curricular planning starts with a prescriptive model where planners focus on several intended outcomes. However, as the plan is implemented and evaluated it becomes descriptive as the planners reassess the internal and external factors that affect outcomes. A common trend in community-oriented educational activities is evident, with the introduction of interesting variations, to ensure that the curriculum can be implemented, sustained and the intended outcomes achieved.

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**Key words:** Community-oriented medical education, Problem-based learning, Pre-registration house-officer

### Introduction

Medical educators continue to evaluate and introduce innovations into their curriculum with the objective of achieving appropriate outcomes for their graduates so that they can meet the healthcare needs of the society locally and globally. They sought to develop approaches to teaching and learning that would address the goals required for the medical profession. These include (1) adapting to and participating in change, (2) dealing with complex, ill-defined problems and making reasoned decisions in unfamiliar situations, (3) reasoning critically and creatively, (4) adopting a more universal or holistic outlook, (5) practising empathy, appreciating others' points of view, (6) collaborating productively in groups or teams, and last but not least (7) identifying one's own strengths and weaknesses

and undertaking appropriate remediation. In addition, educational research carried out provided strong evidence that medical students retain little of what they learned in the basic disciplines during their clinical years<sup>1</sup> and they often do not use the knowledge they have learned appropriately.<sup>2</sup> Thus, it was suggested that conditions which optimise retrieval and appropriate use of the knowledge in future professional practice should be created during learning. Since problem-based learning (PBL) is a student-centred, constructivist learning method and tends to create conditions which information theory links to subsequent retrieval and appropriate use of new information,<sup>2</sup> its introduction into various curriculum had spread globally<sup>3,4</sup> including in Malaysia.<sup>5</sup> However one must consider not only the learning environment before graduation but also the environment in

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which the fresh graduates will be exposed to immediately upon graduation.<sup>6,7</sup> Studies have shown that there are stressors or perceived problems faced by graduating medical students going into the community.<sup>8,9</sup>

### Perspective on Fresh Medical Graduates in Malaysia

Malaysia is a rapidly developing nation with a multiracial and multi-religious society and a wide range of healthcare provision available for the urban, rural and remote population. The doctor-to-population ratio in Malaysia is about 70 per 100,000 population.<sup>10</sup> Upon graduation, the fresh graduates are posted to general hospitals throughout Malaysia and trained as a pre-registration house officer (PRHO) for 12 months. The PRHOs serve a multiracial society under supervision of a consultant or senior registrar. On successful completion of the PRHO period, the new medical officers receive their full registration with the Malaysian Medical Council and are subsequently posted to either a district hospital or health clinic throughout the country for a period of 3 years as compulsory service with the Ministry of Health. Although the short-term aim of undergraduate medical education in Malaysia is to prepare graduates for internship, the graduates that we produce must be able to practise and make decisions independently and be sensitive to the needs of Malaysia's multiracial and multi-religious, and often remote communities.

In the past, the core curriculum of most of the medical schools in Malaysia was derived from traditional British medical education and tended to focus on 3 main themes that dictated teaching and learning: (1) diagnosis and treatment, (2) procedural and communication skills, and (3) key advances in biomedical knowledge and technology. However, over the last 20 years, especially in the last decade, the curricula of these medical schools had evolved and had become more integrated, interactive and community-oriented and included elements of research and evidence-based medicine.<sup>5,11</sup>

### Methods

Information was obtained from published literature,<sup>12-20</sup> responses from various questionnaires (a sample is attached in Appendix 1), curricular guidebooks, personal communication with academic staff and students as well as personal involvement with curricular developments and reviews. It is not possible to get the most up-to-date data on actual implementation as there have been constant gradual changes and adjustments made as each school tries to improve and modify its curricular implementation based on feedback requirements and availability of resources.

### Results

Information gathered using the approaches mentioned in methods showed that there is a healthy trend towards the

evolution of curricula that strive to meet the needs of the local community and at the same time cater for the ever demanding globalisation of healthcare. Curricular innovations tended to be implemented in new medical schools upon their establishment. Established medical schools seemed to implement these innovations much later. The SPICES model or elements of it seemed to be used as the educational approach in many of the schools, with a focus on PBL<sup>5,12,13,15</sup> and community orientation.<sup>14,20-23</sup> The SPICES model relates to 6 educational strategies identified by Harden,<sup>21</sup> which can be used and in which each represents a continuum from (1) teacher-centred to student-centred learning, (2) information gathering to problem-based learning, (3) disciplined-based to integrated learning, (4) hospital-based to community-based/oriented learning, (5) uniform to having electives in addition to a core curriculum, and (6) apprenticeship-based to a systematic approach in curriculum planning and delivery. A brief summary of the curricular trends in the 16 Malaysian schools, from the perspective of the SPICES<sup>21</sup> model, is shown in Table 1. Curricular trends appear to move towards integration, PBL and community-oriented medical education (COME). In some schools, PBL is introduced in year 1 with a gradual increase in later years while others run a full PBL approach starting from year 1 or year 2 onwards. However, the most obvious trend seen is the increasing utilisation and involvement of the community in medical education.

### Community-Oriented Medical Education (COME) in Malaysian Medical Schools

A review of the curricula in the various established schools (Table 2) showed multiple curricular models created to include community-oriented programme ranging from community and family case studies (CFCS)<sup>14,17,19,22,24</sup> to the development of professional attitudes through early clinical exposure in primary care. Many schools make use of general practitioners' (GP) practice to provide early clinical experience in primary care while others utilise parallel community-based clinical programme at rural and urban sites.<sup>23</sup>

The general approach used in most Malaysian schools includes (1) a 4-week Rural Health Postings (RHS) which is usually done in the second and/or third year of the programme, (2) 1 to 4 weeks District Health Posting (DHS) which is done in year 4 or year 5, and (3) GP postings at Primary Care Centres which is usually done in year 5, although some schools include an early exposure in year 1 or year 2. During the RHS posting, the students undertake a survey of rural health community such as issues related to demography, income, environment and sanitation, with thematic research projects and visits to various sites related to public health, such as health services, and water and

Table 1. Curriculum Trends in Malaysian Medical Schools from the Perspective of the SPICES Model

Curriculum	1980s	1990s	2000	2005
Student centred	Implemented in one school in 1981	Some attempts in other medical schools	Widespread attempts	
“Problem-based” (mixed, hybrid)	Implemented in one school and introduced in another	Widespread introduction	Usage in most schools but the extent varies greatly	
Integrated	Introduced in 1 school	Gaining popularity	Widespread attempts	
Community-oriented	Established in 1 school	Introduced in more schools	Introduced in all schools but most rigorous in 1 school	
Elective	Established in 1 school	Introduced in more schools	Widespread introduction	
Systematic	Utilised in 1 school	Utilised in more schools	Widespread attempts	
No. of schools existing within the period	3	10	13	16

Table 2. Summary of the Undergraduate Medical Curricular Trends in Malaysian Medical Schools Over 40 Years

Initial curriculum, predominant approach	Period in which the schools were established	No. of schools	Present predominant curricular approach following refinement over the (SPICES, includes PBL and Community orientation)
Traditional British curriculum	1962-1972	2	<ul style="list-style-type: none"> <li>• Synchronised organ system-based approach with elements of PBL used</li> <li>• Lectures still feature strongly as a tool of instruction with some integration</li> </ul>
	1995-2001	5	<ul style="list-style-type: none"> <li>• Increasing use of community setting for learning</li> <li>• Gradually moving towards incremental use of the PBL approach</li> </ul>
SPICES curriculum with PBL	1981	1	<ul style="list-style-type: none"> <li>• PBL as main approach from year 2 with strengthened community-oriented medical education and contract learning</li> </ul>
“Hybrid” PBL	1993-2004	3	<ul style="list-style-type: none"> <li>• PBL said to be the main philosophy for teaching-learning but lectures still feature strongly as a tool of instruction</li> <li>• One had digressed to didactic teaching due to lack of teachers affecting the teacher/student ratio</li> <li>• Increasing use of community setting for learning</li> </ul>
“Integrated” modular	1997-2004	2	<ul style="list-style-type: none"> <li>• Integrated modular approach</li> <li>• Lectures still the main tool of instruction, with infrequent small group activities</li> </ul>
Not available	2005-2006	3	Too early to note actual implementation of overall curriculum

sewage treatment. During the DHS posting, students undergo rotational postings in basic clinical disciplines at primary and secondary-care levels including home nursing, rehabilitation and social work at affiliated Ministry of Health district hospitals. The community-oriented programmes run within the semi-integrated curriculum at the University of Malaya (UM) is described, as a comparison, to highlight the more comprehensive student-centred programme run within the problem-based curriculum at the School of Medical Sciences, Universiti Sains Malaysia (USM).

### Community-Oriented Programme at the UM

Within the New Integrated Curriculum (NIC), the community-oriented programme runs from year 1 to year 5 involving various approaches. These include (i) a vertical strand named the *Doctor, Patient, Health and Society*

(*DPHS*) module that runs throughout the 5-year course (ii) a *Community Residency Programme (CRP)* carried out in year 3, (iii) the *Organisation and Management of Health Services (OMHS)* module carried out in year 4, and (iv) the *Primary Care Medicine* postings in year 4 and 5.

1. *The DPHS module*: The objective of this module is to help students develop appropriate attitudes towards healthcare, viewing patients as whole persons and not merely as clinical entities. Students experience and develop the art of effective communication with patients, peers and other members of the healthcare team. Within this module, a *Community Family Case Study (CFCS)* component provides opportunities for students to interact with patients, their family and the community, with regular home visits, starting from year 1. Patients, living within 20 km of the faculty, are selected from 8 clinical disciplines (medicine, surgery, paediatrics, obstetrics and gynaecology,

psychological medicine, otorhinolaryngology, ophthalmology and primary care medicine). They are allocated to a pair of students, of mix gender and race, to follow-up until year 3. In year 1, the overall main focus is the development of communication and taking social history skills. These skills are first taught by the primary-care physicians and practised at the faculty before the students are given contact details of their patients so that they can arrange for a suitable time for a home visit. Other details such as patient's age, diagnosis and first language are not given. At each visit, students gather information on their patients and families. The information is reported at debriefing sessions within their original group of 18 to 20 members, in the presence of the clinical consultant who cared for the patient. This process provided an avenue for verification of information given by the students, about the patient and his/her family, and evaluation of the students' communication skills and their ability to take social history. As a group, the students discuss:

- how to *overcome communication problems*, e.g., requiring an interpreter if the patient does not communicate in the national language;
- how to *overcome cultural barriers* by understanding the cultural norm within the particular community;
- how time consuming and difficult it is for patients to travel to hospitals using the public transport. The situation is made worst if the patient is old, with amputation or on wheel chairs. This helps *develop empathy* among the students;
- about the *responsibilities of care givers* and the importance of having appropriately equipped health-care centres close by; and
- about *factors that affect health-seeking behaviour* and the importance of *promoting health education* to the community.

2. *The CRP*: This programme, which consists of a 4-week rural posting, complements the DPHS module. It involves team assignment to various villages to carry out:

1. *Community health assessment*, such as (a) undertaking a survey (using questionnaires and interviews developed by the students groups,) of *community knowledge* on health per se, nutrition, common diseases such as diabetes and cardiovascular problems and (b) running a *screening programme*, for which they can discover, e.g., the *frequency of occurrence* of diabetes, the predominant type and distribution among the different age group.
2. "*Intervention*" programme on health/lifestyle and nutrition education. These include (a) educating caregivers in the family and community on nutrition requirements for infant, children, adults and the older population; (b) producing pamphlets on common health

conditions to educate the public; and (c) implementing projects to improve infrastructure related to health, such as sanitation.

Through this programme, students learn to improve (a) communication skills, teamwork, and interaction with the public, (b) skills in community diagnosis and dealing with community leaders (village chief and district officers) and agencies, and (c) knowledge of public health and coordination of developmental programme for the community. They could revisit the village after a year to evaluate progress in the community, follow-up on progress of the various patients or individuals, may detect new patients and look at trends.

3. *The OMHS module*: This 3-week posting exposes senior medical students to the organisation of the curative and preventive health services in Malaysia at the district level as well as introduce them to the primary healthcare team and future work environment. They learn the structure and function of healthcare facilities. During this posting the students learn, by examining and experiencing on site, how district hospitals and health centres are organised and linked functionally to the general hospital within the states. They also experience, by observation and guided involvement, how care-centres are managed, and learn how to provide technical and professional advice in public health, and how to use tools and methods for research and management.

4. *The Primary Care Posting*: During this posting, the students are attached to a government health clinic for 4 weeks in year 3 where they learn to clerk cases and are posted to the treatment rooms, laboratories, pharmacies and maternal child health clinics. They also spend 1 week at a private GP's clinic. In year 4, they spend 3 weeks in the Primary Care Medicine clinic at the teaching hospital and 3 weeks in a district hospital for public health attachments where they interact with a remote community, look into school health and food inspection including giving talks on health to the community.

### **The Comprehensive PBL and COME Programme at USM**

The community-oriented programme in USM, named the Community and Family Case Study (CFCS), was introduced since the establishment of the medical school in 1981. It is a 5-year comprehensive and more student-centred programme compared to those run by other medical schools in Malaysia. The programme includes (i) an in-house theoretical *course on Public Health* in year 1 (Phase 1) which addresses principles of biostatistics, epidemiology, family, school, occupational and environmental health, and health education to prepare students for their gradual placement with families and communities in the subsequent

years and (ii) *experiential and community field training* in year 2 and 3 (Phase 2), where learning occurs in and involves the community and local governmental and non-governmental organisations (NGOs) with defined objectives, shared strategies/contributions and mutual benefits. The approach includes the *adoption of a family and its community* where a student stays with the family for an extended period and (iii) a *continuing care patient programme utilising concepts of contract learning* in year 4 and year 5 (Phase 3).

1. *The Phase 2 CFCS Programme*: Several communities are adopted for this programme, where groups of students are placed for a total duration of 5 weeks over 2 years. Each CFCS group undertakes a number of studies onsite. These studies may focus on (a) health issues related to the family and environment, infectious diseases, occupational or dental health, (b) social issues related to drugs, smoking or delinquency and (c) educational issues related to dropout or poor performance in school for vital subjects such as science, mathematics or English. During the stay with their respective adopted families (family attachment) the year 2 students start with getting to know their adopted families and the community (*family and community profiling*) and subsequently undertake a *community diagnosis* where they identify with the families their priority health needs and/or health-related issues in the community they live in. Data or information gathered during this “family attachment” with regard to the abovementioned social and health aspects/issues including health beliefs and practices are presented to faculty members and intervention strategies are proposed. In year 3, the students return to the same family and community and, under the supervision of faculty members, implement intervention measures with the communities and related organisations. They undertake health screening, health education, educational motivation and social projects. One of the highlights of the CFCS programme in Phase 2 is the continued forging of meaningful partnerships between the USM medical school with communities, government and non-government agencies to improve not only the health status but also the general quality of life of local communities.

2. *The Contract-Learning CFCS Programme in Phase 3*: Students in the clinical years (year 4 and 5) are required to adopt 2 patients from the Hospital Universiti Sains Malaysia (HUSM), participate actively in their hospital management and subsequently follow their development and progress from the hospital to their homes after discharge, for a total period of 1.5 years. The patients selected are those with chronic and multifaceted health conditions and living within a 10-km radius of HUSM. These 2 patients are to be selected by the students from any 2 of their clinical postings (Medicine, Surgery, Obstetrics & Gynaecology, Paediatrics,

Orthopaedics and/or Psychiatry) in year 4. Students visit the patients 1 to 2 afternoons per week based on requirements. Prior to these visits, the student negotiates a learning contract with his/her assigned lecturer (group supervisor) after discussing the case with the clinical consultant in charge of the patient (clinical supervisor). Steps in the learning contract include (a) identifying issues or problems related to the patient and translating them into their own learning objectives, (b) submitting their plan and strategies for intervention after discussion with their patients as well as group and clinical supervisors, (c) demonstrating evidence of accomplishment of learning objectives and (d) proposing when and how assessment should be done.<sup>21,22</sup>

The major goals of contract learning in the CFCS programme are to:

- equip students with fundamental *skills of self-directed and lifelong learning*.
- prepare students to be *versatile* for the challenges of medical training and practice in any part of the Malaysian healthcare delivery system,
- get students to *understand and compare* patient’s health seeking behaviour and practices in the hospital as well as home environments,
- allow students to study the *factors that facilitate or inhibit patient’s compliance* to follow-ups and medication, and
- encourage students to be *responsible for their own professional development* through critical self-appraisal and commitment to a *learning portfolio*.

Satisfactory performance in the CFCS programme in Phase 3 is a prerequisite for a place in the final professional examination.

3. *The District Hospital (DH) Posting and Community Health Clinic Rotation*: The DH posting and the community paediatrics and obstetrics attachment programmes are done in selected Ministry of Health district hospitals and community health clinics closer to the campus, respectively. The scope of students’ learning objectives and activities is similar to those offered by UM.<sup>23</sup>

4. *Bioethics and Communication Skills Training Track*: A parallel bioethics and communication skills training programme introduced in 2000 runs from year 1 to year 5 of the undergraduate medical programme. It starts with general principles of ethics and professional communications in Phase 1 and follows through, with small group and integrated PBL sessions, in the general block as well as another 11 blocks in phase 2. In phase 3, bioethics is taught by the bedside during clinical ward rounds, during attachment at outpatient clinics as well as interdisciplinary activities. It re-emphasises the importance of ethical and

professional behaviour as well as effective communication skills when dealing with patients, families and communities as well as government agencies and NGOs.

### Discussion

In summary, the USM community-oriented medical education, in particular the CFCS programme and its community partnership projects consciously and deliberately involve the community, local government and NGOs as part of a teaching-learning team. The students learn from the community and are exposed to the reality of the Malaysian healthcare delivery system at the primary level (especially in resource-deprived conditions) that mirror the first 4 years of their medical career upon graduation. As a result of the forged partnership, the community obtains a variety of benefits such as free access to healthcare at HUSM and better access to services of other related government and non-governmental agencies. In addition, the community receives recognition from faculty by providing input on student evaluation especially on students' interpersonal skills, attitude and competencies.<sup>14</sup> The impact seen in the communities includes improvement in health practices, health-seeking behaviour, quality of life in general, and enhanced school's achievement in national examinations. In recognition of its innovative community medical education programme, USM was awarded a second re-accreditation from an international NGO, the Network:Community Partnerships for Health through Innovative Education, Service and Research as a full member in 1999. Experiential learning within a community-oriented approach sensitises students to various aspects of the daily life practices of the various individuals, families and communities<sup>14,22-24</sup> which may affect the way these communities (a) view health issues and health-seeking behaviour, (b) determine nutritional needs and inclination, and (c) influence compliance to treatment and medication. Habbick and Leeder<sup>25</sup> suggested that community-oriented programmes offer a broader range of learning opportunities and can (1) help acquire more appropriate knowledge, skills and attitude, (2) deepen understanding of a whole range of health, illness and workings of health and social services, including the contribution of social and environmental factors to the causation and prevention of illness, (3) promote a more patient-oriented perspective, (4) enhance multi-disciplinary working (teamwork), and (5) make better use of expertise and availability of staff and patients who are in primary-care settings.

### Conclusion

Currently, all the medical schools in Malaysia appear to use SPICES<sup>19</sup> as a reference for refinement of the curriculum, with elements of PBL incorporated and community-orientation as an additional focus. The introduction of

community-based learning components help students understand related issues, which will promote their ability to improve the community health status by instituting educational and preventive measures instead of addressing curative regimes only. The process by which community health professionals engage problems is nearly identical to the process used by students in PBL. However, it is more difficult to understand community health problems via paper cases in a classroom PBL tutorial without first-hand experience in the field. Learning about health, wellness, and disease in communities requires students to listen and observe critically, and self-directed learning is a necessity. Thus, the curricular approach adopted by USM, utilising the self-directed active involvement of students with continuing care of patients in the community upon discharge from the hospital, seems to be well suited to immerse the students in learning about the community and at the same time provide healthcare requirements to a certain extent.<sup>14,22</sup> Engaging students in the community will make students realise how much they need to learn. The need to know can motivate learning in the manner that is fully integrated with behaviour and population issues of the community. Psychosocial issues, economic, environmental, and behavioural determinants of health and disease can be experienced first-hand. In community learning programmes, students are required to provide a community service or conduct projects in the community. At the end of the day, society ultimately gains when medical schools build bridges and forge relevant and meaningful learning partnerships in the real world of the local population.

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Appendix 1

**Questionnaire on curriculum approaches and innovations in Medical Schools in Malaysia**

**Respondent's detail:**  
 Name: (optional) \_\_\_\_\_ Title/Designation: \_\_\_\_\_  
 Administrative Position: \_\_\_\_\_  
 Institution: \_\_\_\_\_

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**General information on the undergraduate medical curriculum/programme:**  
*(please ✓ or specify where appropriate)*

No. of class/intake per year: 1 \_\_\_\_ 2 \_\_\_\_  
 No. of students per class/intake: < 51 \_\_\_\_ 51-100 \_\_\_\_ 101-150 \_\_\_\_ 151-200 \_\_\_\_ >200 \_\_\_\_

Type of curriculum: British-based \_\_\_\_ American-based \_\_\_\_ Others \_\_\_\_\_  
*predominantly*

Teaching approach: Traditional \_\_\_\_ SPICES \_\_\_\_\_ Integrated \_\_\_\_\_  
*predominantly* PBL \_\_\_\_\_ Community-based \_\_\_\_ Others \_\_\_\_\_

Degree offered at the end of this programme: MBBS \_\_\_\_ MD \_\_\_\_ Others \_\_\_\_\_  
 Minimum qualification of students on entry: High school graduate \_\_\_\_ University graduate \_\_\_\_  
 Length of this medical programme: \_\_\_\_\_ years (*excluding houseman or internship training*)

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**Specific information on delivery or utilization of the innovative approach in the medical programme:**  
*(please ✓ or specify where appropriate)*

*Please rank according to the relative use of the teaching/learning approach in the medical undergraduate programme*  
 1=not used, 2=occasionally used, 3=sometimes used, 4=frequently used, 5=most often used

		1	2	3	4	5
Mode of delivery:	Lectures / Seminars (teacher-led)					
	Seminars (student-led)					
	Tutorials (subject-based)					
	Tutorials (PBL)					
	Wet practicals / Life demonstration					
	Dry / Simulated practicals					
	Computed-aided learning (CAL)					
	Others (please specify)					
Teaching strategy:	Subject-based					
	Horizontally integrated					
	Vertically integrated					
	Community-based					
Assessment mode:	Subject-based questions					
	Integrated questions					
	Skills-based					
	Tasks-based					

Total number of hours scheduled for the innovative learning approach in the whole medical programme:  
 in year 1 = \_\_\_\_\_ hours                      in year 4 = \_\_\_\_\_ hours  
 in year 2 = \_\_\_\_\_ hours                      in year 5 = \_\_\_\_\_ hours  
 in year 3 = \_\_\_\_\_ hours

The innovation was introduced into the curriculum:  
 as one of the teaching approaches            Yes \_\_\_\_\_ No \_\_\_\_\_  
 as the whole curricular philosophy        Yes \_\_\_\_\_ No \_\_\_\_\_  
 in the year:                                            19 \_\_\_\_\_ 200 \_\_\_\_\_

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Additional comments

*Thank you for your contribution  
 Please return to [azilanma@um.edu.my](mailto:azilanma@um.edu.my)*