TEACHERS' CONFERENCE

PROGRAMME BOOK

Annexe Hotel and Spa, Kuala Lumpur

13&14
October 2018
Sat & Sun

TEACHERS' CONFERENCE

Teachers' Conferences 2018 on Mathematics is a sharing platform for all academics around Malaysia to discuss the best methods for teaching and learning of Mathematics in schools. This conference is an extension of Kangaroo Math Competition which has received endorsement from the Curricular and Arts Division, Ministry of Education Malaysia and aims to encourage the budding of Mathematics culture among school students in Malaysia.

THEME: TOWARDS EXCELLENCE IN MATHEMATICS EDUCATION

Mathematics Education is an endeavor as old as Mathematics itself; most ancient civilizations (Greek, Roman and Egyptian, for example) have mathematics as part of the formal education system. Its importance in our education system can be seen from the fact that mathematics is the subject with the most number of teachers in Malaysia.

In this conference, we focus on the core question on the minds of mathematics educators in Malaysia: How to excel in our teaching? Every teacher who have ever stood in front of a classroom would understand that teaching mathematics is not easy. There are many variables that can affect the quality of the mathematical teaching process. As our education system gradually adapts the needs of a 21st Century education, the demands on educators are increasing.

To excel as an educator is a long and hard road, but at the end, it is one of the most rewarding attainments in one's lifetime. The conference brings together experienced researchers and educators to present their take on the best practices in mathematical education, which we hope will pave a way towards your journey to become an excellent educator.

TARGET AUDIENCE

The principal target audience of the conference are:

- Mathematics teachers/instructors from primary and secondary schools
- University students who are pursuing studies in Mathematics education or related fields
- Parents of KMC participants
- Education officers

Others are welcome to participate. However, we regret that we cannot accommodate school students in this event. We will organize other events for students in the near future.

TeCoF
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DR. IHSAN ISMAIL

Ketua Unit Pusat STEM Negara

Topic: KEPENTINGAN MATEMATIK DALAM PENDIDIKAN STEM

Minat murid terhadap matematik semakin berkurangan kerana mereka tidak dapat mengaitkan apa yang dipelajari dengan kegunaan dalam kehidupan harian. Matematik Tambahan dianggap mata pelajaran pembunuh (killer subject) dan bilangan murid yang mengambil mata pelajaran ini dalam peperiksaan SPM semakin berkurangan. Sesuatu perlu dilakukan untuk mengatasi masalah ini. Pendidikan STEM memberi penekanan kepada penggunaan ilmu sains dan matematik dalam kehidupan harian. Matematik perlu dikaitkan dengan semua bidang dalam STEM dan tidak diajar secara "silo". Penekanan kepada ilmu matematik dalam pendidikan STEM akan membantu meningkatkan kefahaman dan minat murid kepada mata pelajaran Matematik dan seterusnya akan meningkatkan penguasaan murid dalam bidang STEM.

PROF. DATO' DR. NORAINI IDRIS

Chairwoman, National STEM Movement

Topic: REASONING AND COMMUNICATIONS IN MATHEMATICS: AN ENGINE FOR GROWTH

Mathematical reasoning and communication offer powerful ways of developing and expressing insights about a wide range of phenomena. Being able to reason and communicate are essential to understand mathematics. It is important to help children understand that assertions should always have reasons. Questions such as ": Why do you think it is true? And "Does anyone think the answer is different, and why do you think so? " help children see that statements need to be supported by evidence. Doing mathematics involves discovery. When children are challenged to think and reason about mathematics and to communicate the results of their thinking to others orally or in writing, they learn to be clear and convincing. Listening to others' explanations gives children opportunities to develop their own understandings. In this presentation, presenter will share how reasoning and communication as fundamental aspects of mathematics, select and use various types of reasoning and methods of proof. Presenter will also share how to organize and consolidate their mathematical thinking through communication.

PROF. DR. PARMJIT SINGH

Universiti Teknologi Mara (UITM), Shah Alam

Topic: REPLICATE – REFLECT MODEL TOWARDS THE DEVELOPMENT OF MATHEMATICAL THINKING

This presentation/workshop describes a model which has been found to be effective in delivering the Mathematics content towards the development of mathematical thinking. The Replicate-Reflect model is guided by four basic requirements.

(i) Participating must engage in similar activities within the conditions in which they learn how to use the mathematics they will be teaching in their mathematics classroom.

(ii) Participant must actively construct their own knowledge through active involvement

(iii) The content of the presentation must be within the ZPC of participants.

(iv) The pedagogy offered should incorporate practices that participants could weave into their existing practice.

The Replicate-Reflect phases of the model can help participants deepen both their mathematics content and pedagogical knowledge.

DR. SUZIELEEZ SYRENE ABDUL RAHIM

Universiti Malaya (UM)

Topic: TEACHING MATHEMATICS IN THE ERA OF INDUSTRIAL REVOLUTION 4.0

The Fourth Industrial Revolution or IR 4.0 has brought about change in the way we live our lives. Data and digital technologies are some main elements in IR4.0. Wide use of smart devices and technology provide access to large data which can be obtained rather quickly. This scenario effects the way students are learning. Hence, we need to revisit the way we educate the younger generation to manage and cope with this change, especially in the teaching and learning of mathematics. The two questions we need to ask ourselves are:

1. What is mathematics in the IR4.0 era? and
2. How do we teach mathematics in the IR4.0 era?

DR. FARIDAH SALLEH

Bahagian Pendidikan Menengah,
Majlis Amanah Rakyat (MARA)

Topic: KREATIVITI MENYELESAIKAN MASALAH MATEMATIK VS KREATIVITI MENJANA MASALAH MATEMATIK

Melalui proses penyelesaian masalah, terdapat pelajar yang berpotensi menyelesaikan masalah dengan pelbagai kaedah. Ini bersesuaian dengan kurikulum KSSM yang mementingkan seseorang pelajar itu mampu dan dapat menguasai proses penyelesaian masalah dengan baik. Kemahiran pelajar menyelesaikan masalah bergantung kepada masalah yang diberikan kepada mereka. Sesuatu masalah yang baik seharusnya dapat meningkatkan kemahiran berfikir pelajar pada aras tinggi. Masalah itu juga seharusnya lebih berbentuk bukan rutin. Oleh yang demikian, guru perlulah mempunyai kemahiran menyediakan soalan/masalah bukan rutin. Adakah guru mampu menyediakan masalah secara kreatif?

DR. LEONG KWAN EU

Universiti Malaya (UM)

Topic: MATHEMATICAL MODELLING: A NEW TEACHING APPROACH IN THE MATHEMATICS CLASSROOM?

In this presentation, the author would discuss how mathematical modelling is taught in the mathematics classroom. The importance of mathematical modelling process is given prominence as it is placed in the school mathematics curriculum of Singapore, Australia, Germany and the USA. This session would not only cover the mathematical modelling process but would also provide hands on experience in dealing with modelling tasks. By going through the modelling process, a person gains insight into how modelling looks like, role of teachers and finally how to assess the modelling processes. The modelling examples provided can be linked to the current Malaysian KSSR and KSSM mathematics curriculum. The benefits of modelling are enormous in the mathematics classroom. One not only understands how mathematics is used in the real-world but also construct a model that is used to solve the problem.

DR. MOHAMAD NIZAM ARSHAD

SM Sains Sultan Haji Ahmad Shah, Pahang

DR. AZLINA A. RAHMAN

SBP Integrasi Selandar, Melaka

Topic: STRATEGI PEMBELAJARAN PENAAKULAN BERFOKUSKAN METAKOGNITIF BAGI TOPIK PEMBEZAAN

Kemahiran penaakulan matematik adalah merupakan salah satu elemen utama dalam kemahiran berfikir aras tinggi (KBAT) yang diberi penekanan khusus dalam pembelajaran matematik di Malaysia. Terdapat banyak bukti berasaskan kajian yang mendapati bahawa pelajar Malaysia cekap dalam mengaplikasi prosedur matematik standard (misalnya aritmetik) tetapi lemah dalam membuat penaakulan matematik. Kelemahan penguasaan kemahiran penaakulan matematik dalam kalangan pelajar di peringkat rendah dijangka memberi kesan signifikan terhadap kejayaan atau kesukaran pembelajaran matematik di peringkat yang lebih tinggi. Kelemahan penaakulan matematik ini sering dikaitkan dengan kesukaran pelajar dalam mempelajari Matematik Tambahan yang bersifat analitik. Teori kognitif dalam pembelajaran matematik mencadangkan bahawa terdapat perkaitan tertentu antara kemahiran penaakulan matematik ini dengan kemahiran metakognitif individu semasa mempelajari dan membina sesesuatu konsep matematik. Justeru satu strategi dan kaedah pembelajaran yang dinamakan sebagai Strategi Pembelajaran Penaakulan Berfokuskan Metakognitif (SPPBM) dibangunkan.

DR. ROHANI ABD WAHAB

SM Sains Kota Tinggi, Johor

PN. NOR DELYLIANA ADMON

SMK Kangkar Pulai, Johor

Topic: PDPC PELAN DAN DONGAKAN MENERUSI PERISIAN SKECTHUP MAKE

Kesukaran dalam tajuk Pelan dan Dongakan telah dikaitkan dengan kelemahan pelajar dalam Kemahiran Visual Spatial (KVS) dan Tahap Pemikiran Geometri (TPG) yang rendah. Kajian ini berfokus kepada membangunkan strategi pembelajaran Pelan dan Dongakan melalui SketchUp Make (SPPD-SUM), dan mengkaji kesan SPPD-SUM dalam membantu pelajar untuk meningkatkan KVS dan TPG mereka. Reka bentuk dan pembangunan SPPD-SUM berpandukan model reka bentuk pengajaran ADDIE yang terdiri daripada kitaran lima fasa (Analysis, Design, Development, Implement, Evaluation). Fasa Analisis mengkaji maklumat asas yang berkaitan dengan KVS dan TPG pelajar. Di samping itu, kesesuaian dan pemilihan kandungan Geometri juga dikaji. Fasa Reka Bentuk menetapkan struktur, susunan dan reka bentuk aktiviti menerusi penggabung jalinan dan penerapan komponen KVS ke dalam TPG mengikut Model Pemikiran Geometri van Hiele. Fasa Pembangunan pula membina aktiviti pembelajaran mengikut model Tahap Pemikiran Geometri dan Fasa Pembelajaran van Hiele serta komponen KVS. Fasa Pelaksanaan telah dijalankan dalam dua siri kajian rintis yang melibatkan 12 pelajar dalam tempoh tiga minggu.

EN. M. SUHAIMI RAMLY

Kangaroo Math Malaysia

Topic: PRACTICAL APPLICATION OF POLYA PROBLEM SOLVING TECHNIQUES

Polya Problem Solving Techniques is the most widely used schema of problem solving in mathematics. It is used and quoted in many national curricula, including those of Malaysia. Although the steps outlined by Polya are simple – understand, plan, execute and reflect, – the actual practice in classroom is difficult to implement. This is due to several factors; one factor is the sheer variety of problem solving strategies to choose from (Polya came up with no less than 12 strategies in his book "How to Solve It"). In this talk, we introduce some of these techniques, and present how the problem solving process using these techniques can be carried out in a classroom. This is a practical, hands-on presentation requiring no theory whatsoever.

EN. M. IZNAN SHAMSUDDIN

Kangaroo Math Malaysia

Topic: INTERNATIONAL COMPETITION IN MATHEMATICS AND SCIENCES

Introducing competitions and Olympiads that are education-based: Mathematics, Computational Thinking, Science, Earth Science, Linguistics, Junior Science and Astronomy. The advantages to participating in such competitions and Olympiads are that students are being exposed to the exploration of their talent and interest at a much earlier age. They get to discover their strengths and weaknesses and therefore able to enforce encouragements into themselves to be better and accomplish greater achievements which also acts as support to their ambition.

EN. LEE EMING

Academy TeamMathics

Topic: EFFECTIVE HOTS DEVELOPMENT VIA NON-VERBAL REASONING (NVR)

Mathematical Problem Solving nowadays is no longer just rely on numbers-related type of questions. In many western countries, school teachers are also teaching NVR and many top schools/ universities/employers are using NVR to assess their applicants as entry test. In order to develop HOTS effectively for our Malaysian kids, we should refer to certain new elements that are tested and proven 'good'. Most importantly, many school teachers have difficulty in teaching NVR. We can help them. I have interesting ways to share with TECOF participants how to master NVR teaching, hence you can gain a better idea how to deliver the knowledge to your students easily. In KMC and many contests, there are questions under spatial reasoning where it is part of NVR.

EN. NORJOHARUDDEEN MOHD NOR

Universiti Malaya (UM)

Topic: USING MATHEMATICAL INVESTIGATION APPROACH TO DEVELOP STUDENTS' MATHEMATICAL REASONING ABILITY

In this presentation, participants will be exposed to one of the mathematical thinking process which is mathematical reasoning and its importance in mathematics. Then, the participation will be presented with a teaching and learning approach known as the mathematical investigation approach with the help with some examples in the teaching and learning of algebra and geometry. The participants will get to see how this approach could help provide students with opportunities to develop their mathematical reasoning ability while learning algebra and geometry.

PN. GAN FEI TING

SMK Seri Bintang Selatan, Kuala Lumpur

Topic: KEBOLEHSEDIAAN GURU DALAM MENANGANI CABARAN PEMBELAJARAN ABAD KE-21

This presentation aims to empower the curriculum content. It encourages the understanding of pedagogy. The participants will be able to master the learning psychology. Futhermore, it enforces the skills in communication and usage of latest technology. It also benefit teachers in getting to know students and self-reflection based on emotions, IQ and EQ.

PN. SARIPAH AHMAD

SM Sains Muzaffar Syah (MOZAC), Melaka

Topic: PENGGUNAAN TELEFON PINTAR DAN APPS UNTUK DIGITAL CLASSROOM DI DALAM PENGAJARAN DAN PEMUDAHCARAAN (PdPc) KELAS MATEMATIK PAK 21

Pengajaran dan pemudahcaraan (PdPc) abad ke 21, mempunyai matlamat yang unggul iaitu dapat melahirkan murid yang berketerampilan dalam zamannya. Sebagai pendidik hari ini, kita dihasratkan dapat melahirkan modal insan yang mempunyai kemahiran 4C1V. Cara yang berkesan dalam PdP abad ke 21 ini adalah penggunaan Multimedia. Pendidik hari ini mestilah mahir menggunakan bahan multimedia semasa melaksanakan pengajaran dan pembelajaran. Multimedia dalam pendidikan adalah alat, kaedah dan pendekatan yang digunakan untuk merangsang komunikasi di antara guru dengan murid semasa proses PdP. Murid yang terlibat dalam pembelajaran melalui pakej multimedia boleh mempelajari ilmu yang ada di dalamnya sesuai dengan minat, kesukaan, bakat, keperluan, pengetahuan dan emosinya. Multimedia digunakan sebagai perantara dalam sesebuah penyampaian atau persembahan maklumat kepada murid. Ia digunakan oleh guru yang mahukan impak yang berkesan dalam PdPc.

PN. TEH KIM HONG

SEAMEO RECSAM, Pulau Pinang

Topic: A SHIFT TO TEACHING THROUGH PROBLEM SOLVING

Problem solving has been a major focus in the teaching and learning of mathematics for both the primary and secondary classes. Polya's (1945) model of problem solving is employed as an approach for students to develop problem solving skills and strategies. In doing this, teachers sometimes focus solely on the strategies of solving the problem and the lesson often ended with a solution to the problem. However, teaching through problem solving will go beyond the acquisition of problem solving skills and strategies. Most importantly this powerful approach enable the development of mathematical concepts, skills and procedure which can align closely with the learning of mathematics content. This session will engage the participants on how to teach through problem solving.

Programme Tentative

TIME	13th OCTOBER 2018 (SATURDAY)	
08:30 – 10:00	REGISTRATION / BREAKFAST	
10:00 – 10:30	OPENING SPEECH KEPENTINGAN MATEMATIK DALAM PENDIDIKAN STEM Dr. Ihsan Ismail Ketua Unit Pusat STEM Negara, Bahagian Perancangan dan Penyelidikan Dasar Pendidikan, Kementerian Pendidikan Malaysia	
10:30 – 12:30	SESSION 1 KREATIVITI MENYELESAIKAN MASALAH MATEMATIK VS KREATIVITI MENJANA MASALAH MATEMATIK Dr. Faridah Salleh Bahagian Pendidikan Menengah, Majlis Amanah Rakyat (MARA)	SESSION 1 MATHEMATICAL MODELLING: A NEW TEACHING APPROACH IN THE MATHEMATICS CLASSROOM? Dr. Leong Kwan Eu Universiti Malaya (UM)
12:30 – 14:00	LUNCH / CHECK-IN	
14:00 – 16:00	SESSION 2 PRACTICAL APPLICATION OF POLYA PROBLEM SOLVING TECHNIQUES En. M. Suhaimi Ramly Kangaroo Math Malaysia	SESSION 2 EFFECTIVE HOTS DEVELOPMENT VIA NON-VERBAL REASONING (NVR) En. Lee Eming Academy TeamMathics
14:00 – 18:00	SESSION 3 PENGGUNAAN TELEFON PINTAR DAN APPS UNTUK DIGITAL CLASSROOM DI DALAM PENDAJARAN DAN PEMUDAHCARAAN (PDPC) KELAS MATEMATIK PAK 21 Pn. Saripah Ahmad SM Sains Muzaffar Syah (MOZAC), Melaka	SESSION 5 (PART 1) STRATEGI PEMBELAJARAN PENAAKULAN BERFOKUSKAN METAKOGNITIF BAB: TOPIK PEMBEZAAN Dr. Muhamad Nizam Ariffaid SM Sains Sultan Haji Ahmad Shah, Pahang Dr. Azlina A. Rahman SBP Integrasi Selandar, Melaka SESSION 3 (PART 2) PDPC PELAN DAN DINAIKAN MELALUI PERISIAN SKETCHUP MAKE Dr. Rohani Abd Wahab SM Sains Kota Tinggi, Johor Pn. Nor Salyliana Adenan SMK Kangkar Pulai, Johor
18:00 – 20:00	BREAK / DINNER	
20:00 – 22:00	SESSION 4 REPLICATE – REFLECT MODEL TOWARDS THE DEVELOPMENT OFMATHEMATICAL THINKING Prof. Dr. Parmjit Singh Universiti Teknologi Mara (UiTM), Shah Alam	SESSION 4 (PART 1) TEACHING MATHEMATICS IN THE ERA OF INDUSTRIAL REVOLUTION 4.0 Dr. Suzaleez Syrene Abdul Rahim Universiti Malaya (UM) SESSION 4 (PART 2) USING MATHEMATICAL INVESTIGATION APPROACH TO DEVELOP STUDENTS' MATHEMATICAL REASONING ABILITY En. Nanjaharuddeen Mohd Nor Universiti Malaya (UM)

TIME	14th OCTOBER 2018 (SUNDAY)	
07:00 – 09:00	BREAKFAST	
09:00 – 10:00	SESSION 5 INTERNATIONAL COMPETITION IN MATHEMATICS AND SCIENCES En. M. Izwan Shamsuddin Kangaroo Math Malaysia	
10:00 – 12:30	SESSION 6 A SHIFT TO TEACHING THROUGH PROBLEM SOLVING Pn. Teh Kim Hong SEAMEO RECSAM, Pulau Pinang	SESSION 6 KEBOLEHSEDIAAN GURU DALAM MENANGANI CABARAN PEMBELAJARAN ABAD KE-21 Pn. Bee Fai Ting SMK Seri Bintang Selatan, Kuala Lumpur
12:30 – 12:30	CLOSING SPEECH REASONING AND COMMUNICATIONS IN MATHEMATICS : AN ENGINE FOR GROWTH Prof. Datya Dr. Noraznimie Chairwoman, National STEM Movement	
12:30	CLOSING CEREMONY / LUNCH / CHECK-OUT	

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