

SEAMEO RECSAM

Highlights of the Annual Report for F.Y. 2016/2017

1. INTRODUCTION

The highlights of the annual report for F.Y. 2016/2017 will be presented according to three Key Result Areas (KRAs), namely, (i) Regional Leadership, (ii) Regional Visibility and (iii) Solid Resource Base. The sub-areas under each KRA are as follows:

- I. KRA1: Regional Leadership
 - 1) Research and Development (R&D)
 - 2) Capacity Building
 - 3) Recognition and Benchmarking

- II. KRA2: Regional Visibility
 - 1) Strengthening Linkages with Inter-Centre, National, Regional, and International Institutions
 - 2) Increase Means for Stakeholders to Access SEAMEO Programmes

- III. KRA3: Solid Resource Base
 - 1) Financial Viability
 - 2) Management Efficiency
 - 3) Human Resource Management
 - 4) Facilities

KEY RESULT AREAS (KRAs)

2.1 KRA 1: REGIONAL LEADERSHIP

a) Research and Development (R&D)

During F.Y. 2016/2017, research and development (R&D) efforts focused on the main strategic issues of regional importance as planned in the 10th Five-Year Development Plan of the Centre. Regional projects aimed to improve the quality of science and mathematics education in the SEAMEO region include: (i) SEAMEO Basic Education Standards (SEA-BES) and (ii) SEAMEO 'Learning Science and Mathematics Together' in a borderless world. The Centre is also involved in various research projects in collaboration with other educational institutions such as (i) Southeast Asian Regional Standards for Science Teachers (SEARS-ST) and Malaysian Science Teachers Quality Standards (MSTQS) with Ministry of Education in the SEAMEO region especially in Malaysia and universities in Malaysia such as Universiti Malaysia Sabah, (ii) Assessment on Transversal Competencies: A Case Study in Malaysia hosted and funded by Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP), UNESCO Bangkok, (iii) ESD Mainstreaming (Sustainability Science), an education project to develop the resource manual on rice and vegetable for primary and secondary with a curriculum guide with Department of Education (DepEd)-Davao del Norte Division, Region XI, Philippines and Iloilo Science and Technology University (ISAT-U), Philippines. National level initiatives include assessment project for the (i) Higher Order Thinking Skills (HOTS) Programme participants who have participated in the programme conducted by RECSAM in 2013 and (ii) a research project on the Application of HOTS and Real-life Experience in the Classrooms for primary students at Year 4 and Year 5 in a rural primary schools in Kedah with Universiti Utara Malaysia.

(i) *SEAMEO Education Standards and Student Networking*

The goal of regional integration in the development of an 'ASEAN Community' provides the opportunity for the development of an educational policy framework for all SEAMEO Member countries in order to enhance access to educational opportunities, to support the development of quality basic education and to encourage regional mobility. Such a framework will support all Governments as the main providers of basic education to meet the learning needs of all students, hence the project 'SEAMEO Education Standards and Student Networking' was initiated by SEAMEO. This initiative consists of two separate but complementary projects namely; (a) SEAMEO Basic Education Standards and (b) SEAMEO Borderless School [now renamed as SEAMEO 'Learning Science and Mathematics Together' (LeSMaT) in the Borderless World]. RECSAM is spearheading these projects in collaboration with SEAMEO QITEP in Science, SEAMEO QITEP in Mathematics and SEAMOLEC. These projects are implemented concurrently under the 10th Five-Year Development Plan of RECSAM.

(a) *SEAMEO Basic Education Standards (SEA-BES) Common Core Regional Learning Standards (CCRLS) in Science and Mathematics*

SEAMEO Basic Education Standards (SEA-BES) was initiated before the establishment of the SEAMEO 7 Priority Areas for 2015-2035. SEAMEO Education Agenda Priority #7 “Adopting a 21st Century Curriculum” states to pursue a radical reform through systematic analysis of knowledge, skills, and values needed to effectively respond to changing global contexts, particularly to the ever-increasing complexity of the Southeast Asian economic, socio-cultural, and political environment, developing teacher imbued with ASEAN ideals in building ASEAN community within 20 years . This serves as the foundation in which SEA-BES is conceptualised as a regional curriculum project aimed to develop a common, shared, and agreed standards for what every learner should know, understand, be able to do and value in science and mathematics in the SEAMEO Member Countries. The document is known as the Common Core Regional Learning Standards (CCRLS) in Science and Mathematics. The CCRLS in Science and Mathematics can be used to benchmark the quality of SEAMEO Member Countries’ national curriculum. This will help to create quality, efficiency and equity in curriculum provisions across countries and learning expectations for all students and learning outcomes that will enable students to contribute productively to their individual country and the region.

The SEAMEO Basic Education Standards initiative would support SEAMEO Member Countries in the following respects:

- (i) To use it as an analytical tool to support future development of regional integrated curriculum necessary for ASEAN integration with emphasis on 21st century skills;
- (ii) To strengthen ASEAN collaboration on curriculum standards and learning assessment across different educational systems to effectively respond to the changing global context and complexity of ASEAN;
- (iii) To promote in every member country the establishment of best practices to overcome difference in curriculum;
- (iv) To produce systematic discussion process for the establishment of the regional integrated curriculum and assessment;
- (v) To use it as a platform for curriculum development and professional development for all stakeholders developing teachers imbued with ASEAN ideals in building ASEAN community; and
- (vi) To serve as a platform for the Southeast Asia Primary Learning Metrics.

On these purposes of the SEA-BES project, CCRLS defines the standards in science and mathematics for the following principles:

- (i) The standards are the common ground to develop the fullest potential and capabilities to acquire competency in the 21st century.
- (ii) The standards are presumed for competitiveness in this globalization era and understanding others in creating a harmonious ASEAN society under global citizenship.
- (iii) The standards serve as tools for analyzing curriculum for the purpose of the project as stated in (i) to (vi) mentioned above.

Those principles are elaborated for a well-functioning ASEAN societies taking into account the cultural differences and development disparity.

The 39th High Officials (HOM) Meeting and 49th SEAMEO Council Conference took note of the progress of the development and the finalisation of the SEAMEO Basic Education Standards (SEA-BES) Common Core Regional Learning Standards in Science and Mathematics held on 16-17 November 2016 (Bangkok, Thailand) and 24-27 July 2017 (Jakarta, Indonesia) respectively. Likewise, the SEAMEO Centre Directors' Meeting (CDM) took note of the progress of the development and the finalisation of SEA-BES CCLRS held on 27-29 July 2016 (Bangkok, Thailand) and 26-28 July 2017 (Jakarta, Indonesia) respectively.

The last series of workshop for Phase I was conducted in 28-30 March 2017 at RECSAM. This was a regional meeting and workshop aimed to finalise the CCRLS in Science and Mathematics. Specifically, the objectives of the workshop were to (a) discuss the comments, suggestions and recommendations on the working papers given by science and mathematics experts from SEAMEO Member Countries, Malaysian and Japanese universities, SEAMEO sister centres, and other education institutions and organisations, (b) agree on the framework, aims, strands, topics/sub-topics across key three stages (i.e. Key Stage 1 – Grades 1, 2 and 3; Key Stage 2 – Grades 4, 5 and 6; and Key Stage 3 – Grades 7, 8 and 9), and (c) gather suggestions and recommendations on the Way Forward for SEA-BES CCRLS in Science and Mathematics.

The 55 delegates to this workshop were comprised of the following; 2 consultants, namely; Prof. Masami Isoda, CRICED, University of Tsukuba, Japan, consultant for Mathematics Standards and Dr. Mark Windale, Centre for Science Education, Sheffield Hallam University, United Kingdom, consultant for Science Standards; 19 experts from the 10 Ministries of Education of SEAMEO, namely; Hj. Shamsulbahri bin Hj Muhammad, Ms Rasidah binti Junaidi and Mrs. Lili Mariam binti Ismail, (Brunei Darussalam); Mr. Socheat Suon and Mr. Prum Nguon (Cambodia); Mariati Purba and Dr. Lambas (Indonesia); Mr. Songka Keochansy (Lao PDR); Mr. Azmi Harun and Ms Susilawati binti Ehsan (Malaysia); Dr. Htay Htay Win and Prof. Daw Moe Moe (Myanmar); Ms. Bernadeth C. Daran and Mr. Joseph V. Gutierrez (Philippines); Dr. Wong Jon Sien Darren and Ms Gayatri Balakrishnan (Singapore); Dr. Wantita Talasi (Thailand); Mr. Antoninho da Silva Pinto and Mr. Luis Nivio de Fatima Soares (Timor Leste); 3 Japanese professors and one researcher, namely; Prof. Yoshisuke Kumano (Shizuoka University), Prof. Takeshi Fujita and Asst. Prof. Ryugo Oshima (Chiba University), and Dr. Kenjie Matsubara from the National Institute for Educational Policy Research, MEXT, Japan; 11 Malaysian professors and lecturers, namely; Prof. Dr. Ong Eng Tek (Universiti Pendidikan Sultan Idris); Prof. Dr. Munirah Ghazali, Prof. Lim Chap Sam and Assoc. Prof. Dr. Mageswary Karpudewan (Universiti Sains Malaysia); Dr. Devadason Robert Peter (Institute Pendidikan Guro Kampus Ipoh); Dr. Parvinder Singh, Ms Azizan Bte Yeop Zaharie and Dr. Leong Chee Kin (Institute Pendidikan Guru Kampus Pulau Pinang); Ms. Kalaivani Shanmugam, Mr. Ismail bin Salleh Abdullah and Mr. Puspurajan Perumal (Institute Pendidikan Guru Kampus Tuanku Bainun); 4 specialists from SEAMEO sister centres and national science and mathematics centres, namely; Dr. Wahyudi (SEAMEO QITEP in Mathematics); Dr. Indarjani

(SEAMEO QITEP in Science); Ms Thanapun Charlee (IPST Thailand); and Dr. Soledad A. Ulep (UPNISMED –Philippines); 14 specialists from SEAMEO RECSAM including Dr. Hj Mohd Johan Bin Zakaria, Dr. Nur Jahan Ahmad, Ms Khor Sim Suan, Mr. Shamsul Azha bin Md Yusuf, Mr. Dominador D. Mangao, Mr. Pedro Montecillo Jr., Ms Teh Kim Hong, Dr. Ng Khar Thoe, Mr. Julito C. Aligaen, Dr. Miranda Yeoh Poh Khoo, Mr. Lee Shok Mee, Dr. Fazzlijan Mohamed Adnan, Dr. Warabhorn Preechaporn, and Mr. Yuji Otsuka (JICA Senior Volunteer); and Mr. Ismariwan Shamsudin, Programme Support Officer, SEAMEO Secretariat representing Dr. Gatot Hari Priowirjanto, Director, SEAMES.

The foreign delegates bore the cost of their airfares while food, accommodation and local transport of Malaysian delegates were shouldered by SEAMEO RECSAM.

The future use and the Way Forward of the CCRLS in Science and Mathematics include the following:

- As referenced against when reviewing and developing curricula across SEAMEO
- Curricula will be developed from the standards.
- New structures will be developed to reflect philosophies, principles and practices.
- Learning experiences will be developed from the curricula.
- Guide book or exemplars will be developed to support the use for classroom practitioner.
- Developing SEA-BES experts who can become consultants
- Developing an assessment framework
- Setting up a committee comprising of policy makers in the respective countries to ensure the aims and objectives of SEA-BES CCRLS are achieved.
- CCRLS is a dynamic document that can be further developed every one or two years.

The final contents of the Common Core Regional Learning Standards (CCRLS) in Science and Mathematics are as follows:

i. Science Standards

Strand 1: Scientific Inquiry

Strand 2: Life and the Living World

Strand 3: Material World

Strand 4: Energy and Change

Strand 5: Earth and Space

Strand 6: Science, Engineering, and Technology for a Sustainable Society

ii. Mathematics Standards

- Key Stage 1
 - Numbers and Operations
 - Quantity and Measurements
 - Shapes, Figures and Solids

- Pattern and Data Representations
- Mathematical Process-Humanity Strand
- Key Stage 2
 - Extension of Numbers and Operations
 - Measurement and Relations
 - Plane Figures and Space Solids
 - Data Handling and Graphs
 - Mathematical Process-Humanity Strand
- Key Stage 3
 - Numbers and Algebra
 - Relations and Functions
 - Space and Geometry
 - Statistics and Probability
 - Mathematical Process-Humanity Strand

Phase 2 – Piloting will be implemented in the later part of 2017 to 2019. Ministries of Education (MOEs) of SEAMEO will be encouraged to pilot or make use of the CCRLS to address felt-need and for other purposes such as curriculum benchmarking, student assessment in mathematical and scientific literacy, continuing professional development of teachers, lesson exemplar development, Lesson Study, and SEAMEO ‘Learning Science and Mathematics Together’ (LeSMaT) in the Borderless World project to name a few. RECSAM with the guidance of SEAMEO Secretariat will source out funds from donor-agencies and international organisations to carry out this phase. Once fund is available, a regional meeting and workshop will be conducted to gather proposals of curriculum specialists of SEAMEO Member Countries on how to go about the piloting phase. Likewise collaborations with SEAMEO sister centres such as SEAMEO QITEP in Science, SEAMEO QITEP in Mathematics, and SEAMOLEC will be explored.

(b) SEAMEO LeSMaT (Borderless)

SEAMEO LeSMaT in a borderless world initiative will support SEAMEO Member Countries to fulfil priority areas No. 3, No. 5 and No. 7 in the following ways:

- promotion of student networking with the strengthening of SEAMEO collaboration through teaching, learning and assessment across educational systems;
- enhancement of thinking, technology, life (work/ entrepreneurial/ survival) skills;
- development of enriched cross-cultural/interdisciplinary curricula with emphasis on values education, global citizenship as well as Education for Sustainable Development (ESD) and Education for Sustainable Living (ESL); and
- gathering of critical mass or pool of educators who are trained through structured LeSMaT curriculum that will be prepared in the form of d-book or blended-mode ODL module to be the expert and/or advocate for the promotion of ESD and ESL.

SEAMEO LeSMaT in the Borderless World was renamed since ‘Critical Success Factor’ (CSF) workshop in November 2015 from Borderless School

project, an area identified under the vision of Golden SEAMEO in the next decade and was endorsed by High Official Meeting (HOM) in 2012. The aim of the LeSMaT in a Borderless World project is to prepare students to become global players with moral values who are enterprising, creative, innovative, equipped with 21st century skills of global citizenship as well as lifelong learners in cross-cultural learning environment. The learners from diverse background are expected to be actively involved in sharing resources through blended mode learning environment rich with easy access information mainly from Open Education Resources (OERs) including interdisciplinary and cross-curricular studies. The essential skills to be developed from early years' education include thinking, technology and life (work/entrepreneurial/survival) skills.

The preliminary work of SEAMEO Borderless School project started in 2013 with piloting of research instrument entitled 'Survey on knowledge/attitudes towards sustainable living in the borderless world' and trialling of e-platforms involving several groups of science and mathematics educators from various nationals in SEAMEO (Malaysia, Indonesia, Thailand and Philippines) and associate member (Germany) countries who provided feedback to improve the instruments and refine the BS framework. The project continued in Fiscal year 2014/2015 with piloting of instruments and trialling of e-platforms involving several groups of SEAMEO science and mathematics educators. Interactive curriculum resources were also prepared and posted in the Edmodo social networking platform.

The following are the four main themes identified for blended-mode learning activities that are introduced in the Open and Distant Learning (ODL) modules to be developed for training of trainers to facilitate students' networking, i.e. (1) Telecare and Healthy Lifestyle (TeleHeal); (2) Climate Awareness and Disaster Risk Reduction Education (CADDRED); (3) Conservation and Wise Use of Resources (ConWUR); and (4) Sustainable Energy for All (SE4ALL).

The LeSMaT (Borderless) project initiative continued in F.Y.2016/2017 with the following R&D activities:

- a. The 'Critical Success Factor' (CSF) kick-off workshop in 26 November 2015 in which the project was renamed as Learning Science and Mathematics Together (LeSMaT) in the Borderless world [in brief LeSMaT (Borderless)] after much deliberation with planning of more comprehensive framework and future direction. The CSF workshop series 1 from 23-26 May 2016 that include meeting with Learning Activity Management System (LAMS) experts to prepare sustainable e-learning platforms; LAMS workshop, colloquium/seminar on 'Developing ODL modules and tools to promote ESD and values-based education: (i) Experience with ODL institutions and international organisations; (ii) Use of d-book and Edmodo social learning platforms to promote LeSMaT in the borderless world; as well as the writing of Open and Distant Learning (ODL) modules to promote LeSMaT focusing on the aforementioned four main themes.

- b. The review of ODL modules was made between May to September before the editing workshop from 10 to 13 October 2016. A workshop on Edmodo and/or introduction to LAMS is also scheduled to be conducted as one of the activity in conjunction with the 4th International Conference on ESD (4thICESDev) with the theme: “Collaboration and Linkages: Keys for Global Educational Inclusion for Sustainability” (25-27 October 2016).
- c. The CSF (2/2016)(from 10 to 14 October 2016) workshop included colloquium/seminar on: “Planning Open and Distant Learning (ODL) modules for networking and professional development aiming at ‘Enhancing Teachers’ Continuing Professional Development (CPD) with Higher-learning-opportunities (EnTeaCH)”:
 - (i) Considering instructional design of blended learning in module writing;
 - (ii) Redesigning student-centred learning in the borderless world;
 - (iii) Promoting Golden SEAMEO students’ networking activities through LeSMaT (Borderless) e-platforms with more opportunities/exposure and EnTeaCH; Experience and benefit gained from a graduate learning opportunity as ex-alumni of INNOTECH.
- d. The CSF (3/2016/17) workshop held from 15 to 19 May 2017 included colloquium/seminar on: (i) Open Education Resources (OER), open access and copyright issues for collaborative projects; (ii) Developing ODL modules using d-book considering copyright issues for OER;
- e. Participation has been encouraged in the blended learning activities organised under the “SEAMEO 50x3 Schools’ Network project” to promote sharing and development between schools across the SEAMEO region using Edmodo social learning platform and LAMS e-portal. Six (6) local teachers were also participated in the ‘Workshop on building spirit of Entrepreneurship through Science Education’ organised from 15-16 February with lesson ideas related to promotion of entrepreneurial skill (an area identified under LeSMaT project) contributed by two experienced teachers as lead and co-writers. All the CSF(1 to 3) workshops included writing and editing of ODL modules to promote LeSMaT (Borderless);focusing on the four curriculum titles incorporating pedagogical content knowledge (PCK) approaches, use of Edmodo social learning and LAMS digital platforms.
- f. After the workshops, pilot studies of the curriculum were also conducted in some schools at Penang (as shown in the executive report) and in Selangor (e.g. Sekolah Menengah Kebangsaan Serendah and SRK Sathya Sai) to prepare for the writing of research-based poster proposals for participation in ‘Champion School Award’ competition in conjunction with the organisation of the 7th Conference on Science and Mathematics Education (CoSMEd) 2017 and celebration of RECSAM’s 50th anniversary.

(ii). *Other Research Projects*

(a) *Southeast Asian Regional Standards for Science Teachers (SEARS-ST) and Malaysian Science Teachers' Quality Standards (MSTQS) publications*

SEARS-ST will support SEAMEO Member Countries to fulfill priority areas No. 5 and No. 7 in the following ways:

- As guide for continuing professional development (CPD) of teachers in the SEAMEO member country;
- For benchmarking in the formulation of any development initiatives for the quality of teachers;
- Future research and development activities that could be extended for policy direction and formulation by developing local descriptors in the context of each SEAMEO member country;
- As reference for the need to plan relevant CPD programmes in line with 21st century curriculum in the changing global contexts.

After the second SEARS-ST workshop (16–18 June 2014) and the endorsement of the final version of SEARS-ST at the 36th High Officials Meeting (HOM) in February 2014 as an official documentation to address Science Teachers Standards and is encouraged to be adopted in the 11 SEAMEO countries, a workshop to develop Malaysian Science Teacher Quality Standards (MSTQS) was conducted from 26-27 May 2015. A colloquium was organized to disseminate information on SEARS-ST on 27 May 2015. Both SEARS-ST and MSTQS executive summary were also shared with Teacher Education Division, Ministry of Education Malaysia after this workshop. Emails were sent to all participants involved in the development of MSTQS document for further comments by two consultants. The document was further edited and proofread by two more consultants during the workshop conducted for the development of ODL modules to promote Learning Science and Mathematics Together (LeSMaT) in 23-26 May, 2016. The final edited version of executive report was presented in the 38th HOM (High Officials Meeting) in 2016.

(b) *Outdoor Learning Guidebook (OLG)*

OLG will support SEAMEO Member Countries to fulfill priority areas No. 5 and No. 7 in the following ways:

- As guide for continuing professional development (CPD) of SEAMEO teachers to enhance their knowledge/skills in facilitating students' outdoor learning activities;
- As reference for the need to plan relevant CPD programmes in line with 21st century curriculum that is related to outdoor learning.

As a follow-up activity for the research on "*Children's Connectedness to Nature*" with its report published in 2013 and the workshops for the development of Outdoor Learning Guidebook (OLG) that were conducted on 30 September 2014 and 25 May 2015, further workshop was made to assign reviewers for OLG during the LeSMaT workshop between 23 to 26 May 2016. The OLG publication was revised further by a few associate editors the editing workshop 10 to 13 October 2016 and need to be further revised after plagiarism check. The final draft will be included as part of reference resource for LeSMaT (Borderless) under sub-theme ConWUR.

(c) *Assessment on Transversal Competencies: A Case Study in Malaysia*

This regional study was hosted and funded by Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP), UNESCO Bangkok. The purpose of this study was to explore approaches and practices adopted in assessing transversal competencies in the Asia-Pacific region. The study started from October 2015 until May 2016. An orientation meeting was held in UNESCO Bangkok in October 2015 for a briefing of the study for the representatives from nine participating countries. In fulfilling the SEAMEO Priority Area No. 7 (Adopting a 21st Century Curriculum), SEAMEO RECSAM has participated in this regional study. This study employed qualitative approach with interview method for data collection. Data were collected from six school teachers and six teachers from each three primary and secondary schools respectively in Penang, Kuala Lumpur, and Putrajaya. The full report of the study has been completed and submitted to NEQMAP, UNESCO Bangkok in 1 May 2016. The highlights of the study have been presented in the 4th International Conference on Education for Sustainable Development held from 25-27 October 2016 in SEAMEO RECSAM, Penang, Malaysia.

(d) *The Impact Study of Higher Order Thinking Skills (HOTS) Programme*

In line with SEAMEO Priority Area No.5 (Teacher Education), this impact study aimed to evaluate the extent to which the participants who have participated in Higher Order Thinking Skills (HOTS) Programme in SEAMEO RECSAM 2013 have delivered their mandated main tasks to the teachers either at classroom or school or district or state level. In Phase I, one workshop was conducted in February 2016 to develop one set of survey items for each mathematics and science group. The online survey has been conducted in Mar-May 2016. Phase II will be commenced in August 2016. One workshop will be conduct in developing classroom observation protocol. Interview and classroom observation are expected to be carried out in Aug-Oct 2016. The full report is expected to be completed in Dec 2016. The highlights of the study will be presented in the 4th International Conference on Education for Sustainable Development from 25-27 October 2016 in SEAMEO RECSAM, Penang, Malaysia.

(e) *ESD Mainstreaming (Sustainability Science)*

One of the available approaches is through collaboration with other institution with our SEAMEO region. Organic Agriculture Integration in Basic Education (Science, Mathematics and Communication Arts-English) was developed by the Department of Education-Davao del Norte Division and Funded by the Department of Agriculture of the Philippines and Thai Education Foundation-Thailand as a pilot education project. In line with the SEAMEO Priority Area No. 4, this projects aims to develop the technical vocational skills of both the teachers and the students while addressing the issue of poverty, food security and environmental sustainability. SEAMEO RECSAM, Department of Education (DepEd)-Davao del Norte Division, Region XI and Iloilo Science and Technology University (ISAT U), collaboratively work on this education project to develop the resource manual on rice and vegetable for primary and secondary with a curriculum guide. In order to formalize the collaboration effort the Memorandum of Understanding (MoU) between SEAMEO RECSAM, DepEd-Davao del Norte Division and ISAT U was signed.

This education project was started in 2015 and it will be completed in 2017 with an expected output the publication of resource manual on rice and vegetable with a curriculum guide. This collaborative education and research project on the development of integrated pedagogy of learning science and mathematics while enhancing the communication skills with funding support from the Department of Agriculture and Education and Thai Education Foundation, Thailand, while RECSAM provides technical support especially in pedagogical development while ISAT U provides technological support and Department of Education-Davao del Norte as the main proponent.

(f) *Research on the Application of HOTS and Real-life Experience in the Classrooms*

In conjunction with the SEAMEO Priority Area No.4 (Promoting Technical and vocational Education and Training (TVET) and No. 5 (Teacher Education), a research related to the application of HOTS and real-life experience in the classroom has been conducted. This six-month research using a participant observation method was employed on three secondary schools among nine teachers and 230 students in Year 7, 8 and 10 from May to November 2015. It was found that teachers in this sample were not using HOTS at the highest Blooms Taxonomy level yet. The findings from this research were published in Malaysian Journal of HOTS in Education Volume No. 1 by Universiti Teknologi Malaysia in 2016 and Online Journal Mathematics and Science Education by SEAMEO RECSAM December 2015. This research is expected to be extended in 2016/2017 among three more high performing schools in Penang. A book on HOTS is expected to be published as a reference for potential and practicing teachers.

RECSAM with the collaboration of Universiti Utara Malaysia has planned a robotic engineering, organic farming and programming projects among primary students at Year 4 and Year 5 in a rural primary schools in Kedah. The project was launched in mid of June 2016 and is expected to complete in December 2016. The aim is to expose primary school pupils in rural areas in Kedah to the real applications of science and mathematics in their daily lives. Two Japanese experts from SEAMEO RECSAM are involved for this STEM related program.

(g) *Education in the 21st Century: The Way Forward for Malaysia*

This is a project in collaboration with Penang Education Department. The programme is planned to provide teachers with the knowledge of 21st century education in various countries including USA, Singapore and Finland. The Organization for Economic Cooperation and Development (OECD) has conceptualised 21st century skills and the P21 framework for 21st century learning. Pedagogical content knowledge (PCK) is thus needed by teachers for effective science and math teaching and learning. A Model was presented that included using audio visual aids, models prepared by students or teacher, using HOTS, and class interactions that are related to daily life and to global contexts, to engage our students to facilitate their developing 21st century skills. This was followed by a hands-on presentation on creative teaching aids that teachers could make for teaching Physics.

(h) Entrepreneurship Education in Secondary Science

Entrepreneurship education has focused on simply teaching and training individuals about the tools of entrepreneurship and not the spirit, but many initiatives are increasingly becoming more action-oriented, emphasising learning by doing and hence the need to inculcate the entrepreneurship spirit in day to day learning especially math and science. The workshop conducted on 15-16 February 2017 was a starting point to provide illumination of basic concepts, procedures, stages and essential indices for acquiring entrepreneurial skills in globalised teaching enterprise by teachers, lecturers and students alike. It also provides justification for inclusion and acquisition of entrepreneurial skills in the professional development and the essential pedagogical strategies that can be used by educators in the field of science education. This would ultimately promote employability of science education students in globalised economy. This workshop also focused on the trends and challenges in Entrepreneurship Education for the 21st Century as well as how to sustain life by applying entrepreneurship knowledge and skills. The objectives of the workshop were for the participants to able to: (i) understand entrepreneurship in science education, (ii) promote entrepreneurial skills among educators and students and apply the knowledge and skills of entrepreneurship for sustainable living. Following the workshop, the module on entrepreneurship education is developed for the sharing of knowledge with the schools and other institutions.

b) Capacity Building

For fiscal year 2016/2017, one thousand six hundred and ninety six (1,696) participants across the SEAMEO region and beyond attended several training programmes, courses, seminars, workshops, and colloquia organised / offered / conducted by RECSAM.

(i) Regular Courses

RECSAM successfully conducted its 4 (four) regular courses for a total of 61 (sixty one) educators from eleven (11) SEAMEO member countries. The duration of the courses was for a period of four weeks. Details of the regular courses conducted for F.Y. 2016/2017 from 3 to 28 April 2017:

- RC-PS-141-1: Fostering Higher Order Thinking Skills in Primary Science Education
- RC-SM-141-2: Enhancing Mathematical Thinking in Secondary Classroom
- RC-PS-141-3: Technology-Enhanced Learning (TEL): Enhancing Primary Science Teaching and Learning through Technology
- RC-SM-141-4: Enhancing Secondary Mathematics Teaching and Learning through Professional Learning Community

Fiscal Year	Courses	Number of Participants		Total
		Fee-Paying	On Scholarship	
2013/2014	4	1	72	73
2014/2015	4	1	57	58
2015/2016	4	0	76	76
2016/2017	4	3	58	61

SEAMEO Member Countries	Number of Participants for Fiscal Year 2016/2017	
	Fee-Paying	On Scholarship
Brunei Darussalam		4
Cambodia		7
Indonesia	1	7
Lao PDR		7
Malaysia		7
Myanmar		7
Philippines	1	0
Singapore		2
Thailand	1	7
Timor-Leste		3
Vietnam		7
Total	3	58

(ii) *In-Country Training Programmes / Courses*

RECSAM conducted 5 (five) in-country training courses during this fiscal year for a total of two hundred twenty nine (229) educators.

- The in-country training course for teachers and educators from Indonesia on “*Lesson Study: Promoting Collegial Collaboration and Continuing Professional Development*” was held in Situbondo District East Jawa, Indonesia from 10 to 14 October 2016. This five-day training course was organised by Dinas Pendidikan Situbondo of Indonesia and was conducted by RECSAM’s specialists from the Training Programme Division, Mr. Lee Shok Mee and Mr. Pedro L. Montecillo, Jr. This course on “Lesson Study” for teachers and educators introduced participants to various creative problem solving strategies in the learning of Science and Mathematics in context through Structured Problem Solving (SPS). Throughout the five-day duration of the course, participants were also taught how to develop lesson plans for improving teaching and learning of science and mathematics and design a multiplier effect proposal or action plan based on the course content & strategies with creative problem solving, and implement it in their schools. All the activities were student-centred and emphasised on developing lesson plans, lesson observations, lesson tryout and school tryout. A total of 60 (sixty) participants attended the training course.

- The Philippines in-country training course for science teachers and educators on “*Technology-Enhanced Learning Approaches in Science*” was held at Cebu City, Philippines from 5 to 9 December 2016. This five-day training course was organised by the DepED Ecotech, Department of Education of the Philippines. The course was facilitated by two specialists from RECSAM; Dr. Fazzlijan Binti Mohamed Adnan Khan from the Training Programme Division and Mr. Julito Aligaen from the Research and Development Division. The main objective of this course was to develop skills in using technology-enhanced learning (TEL) applications and tools to improve teaching and learning of science. Throughout the five-day duration of the course, the participants were able to collaboratively plan, design and implement a TEL lesson for the elementary and high school classroom. In the last two days, each group of the participants actualized their lesson plans in two of the local schools selected. A total of 49 (forty nine) elementary teachers participated in this training course.
- A short in-country training course for academic staff of Iloilo Science and Technology University (ISAT U), Philippines on “*Embracing Technology Through Inquiry-Based Learning (Ibl) Energy and Flipped Classroom Approach*” was held at ISAT U Leon Campus, Iloilo City, Philippines from 10 to 12 December 2016. This three-day training course was organised by the university and facilitated by two specialists from RECSAM; Dr. Fazzlijan Binti Mohamed Adnan Khan from the Training Programme Division and Mr. Julito Aligaen from the Research and Development Division. The main objective of this course was to highlight the exemplary pedagogy and good classroom practices on the philosophy of inquiry-based science education and technology enhanced learning (TEL). Throughout the training, the participants participated and collaborated actively in the intellectual discourse to plan and design inquiry-based and TEL lessons. A total of 31 (thirty one) academic staff of ISAT U participated in this training course.
- The in-country course for teachers and educators from Lao PDR on “*21st Century Learning in Science / Mathematics*” was held at Luang Prabang Teacher Training College (TTC), Luang Prabang Province, Lao PDR from 8 to 10 May 2017. This training course was aimed to improve pedagogical skills and content knowledge of science and mathematics educators in enhancing creativity and higher order thinking skills for the 21st century learning and teaching. Participants gained exposure to various teaching and learning strategies that are aligned with the current learning theories and practices in the schools. Throughout the three-day duration of the course, participants were exposed to various teaching and learning approaches in science and mathematics; Inquiry-based learning, Problem-based learning, Problem solving and understand its various features in support of the 21st century learning and living towards a more sustainable nation and citizens. This three-day training course was organised by Luang Prabang Teacher Training College (TTC) and was conducted by RECSAM’s Specialists, Ms. Khor Sim Suan and Ms. Teh Kim Hong. A total of 54 (fifty four) participants attended the training course.
- The in-country training course for a group of Thai science teachers and educators on “*Meaningful Learning in Science and Mathematics using Simulations and Mobile Devices*” was recently held at Chaophya Park Hotel, Bangkok, Thailand from 22 to 26 May 2017. The course was organised by the Office of the Private Education Commission Ministry of Education, Thailand. The main purpose of this course was to expose participants to various technology enhanced learning (TEL) approaches which emphasize on the usage of

simulation and mobile devices in science and mathematics subject. Teachers were guided to design a meaningful learning experience for their students using numerous ICT tools available freely through the internet. Techniques for conducting full class learning, small group learning, stimulating discussions to enhance conceptual understanding of the usage of ICT-integrating lesson were presented. The course attempted to demonstrate activities that can be used to promote meaningful learning of science and mathematics, in providing fruitful experiences that help students discover meaningful relationships between abstract ideas of subject and practical applications in the real world. This 5-day in-country course was conducted by RECSAM's Training Programme Specialist, Dr. Fazzlijan Mohamed Adnan Khan. A total of 35 (thirty five) teachers from various provinces in Thailand participated in this training course.

(iii) *Third Country Training Programme (TCTP) / Malaysian Technical Cooperation Programme (MTCP)*

During fiscal year 2016/2017, 4 (four) MTCP and TCTP courses were offered and 46 (fourty six) educators benefited from these programmes.

- A Malaysian Technical Cooperation Programme (MTCP) on “*Professional Development Programme for Science and Mathematics Teachers and Teacher Educators*” was successfully conducted by RECSAM from 25 July to 12 August 2016. This training programme was aimed to strengthen the capacity of teacher educators by enhancing their skills in promoting active teaching and learning in Science and Mathematics anchored on the philosophy of constructivism and 21st century learning. Course participants were exposed to a wide range of topics covering both theoretical knowledge and practical application of inquiry-based and problem-based learning as well as strategies to promote higher order thinking, effective use of thinking tools, effective questioning techniques and the integration of ICT. This year's training programme received 22 (twenty two) with 12 science and 10 mathematics participants from Bangladesh, Cambodia, Malaysia, Maldives, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Timor Leste and Uzbekistan. This in-service training programme was supervised by Dr. Fazzlijan Mohamed Adnan Khan (Science group) and Mr. Pedro L. Montecillo, Jr, (Mathematics group), both Specialists from Training Programme Division and was funded by MTCP (Malaysian Technical Cooperation Programme).
- Two MTCP-TCTP-JICA Programmes for Primary Science and Mathematics Educators' Training for African Countries on “*Enhancing Constructivist-Based Pedagogy and Content Knowledge*” were conducted by RECSAM from 10 to 30 August 2016 in Penang, Malaysia for twenty four (24) participants from African countries. A group of fourteen (14) participants attended the Science group training under Mr. Lee Shok Mee's supervision while the other ten (10) participants attended the Mathematics group training under Ms. Teh Kim Hong's supervision. This training programme was aimed to strengthen the capacity of the participants by enhancing their skills in promoting active teaching and learning in science and mathematics anchored on the philosophy of constructivism. Over the duration of the course, participants were exposed to various theoretical knowledge and practical applications of inquiry-based and problem-based learning as well as outdoor study and the incorporation of ICT and non-ICT instructional technologies that support effective teaching and learning of science and mathematics at the primary level. This three-week

training course was jointly organised by the Malaysian Technical Cooperation Programme (MTCP) and Japan International Cooperation Agency (JICA).

(iv) *Workshops*

Workshops are enrichment activities organised by RECSAM for teachers and teacher educators from the SEAMEO member countries. The workshops' content are leading-edge developments in the teaching and learning techniques, approaches and strategies relevant to science and mathematics education. The workshops are facilitated by RECSAM's Specialists, local and foreign consultants, or RECSAM's specialists in partnership with invited consultants. A total of fourteen (14) training workshops were held in this fiscal year with a total number of seven hundred and fourteen (714) participants.

- A two-day workshop for students on "*Developing 21st Century Skills through Science and Mathematics*" from Triam Udom Suksa School, Nakhon Si Thammarat Province, Thailand was held at RECSAM on 30 June and 1 July 2016. This workshop was aimed to cultivate interest in science and mathematics among secondary school students. Through this workshop, the students were exposed to the fundamental problem solving skills for the 21st century learning of science and mathematics. Workshop participants were exposed to various meaningful science and mathematics hands-on activities such as; (i) learning science and mathematics with toy designing and (ii) exploring magic of science and mathematics through games. A total of 56 (fifty six) students and teachers participated in this two-day programme which was facilitated by our Specialists, Mr. Hideo Nakano and Mr. Pedro Lucis Montecillo Jr. from the Training Programme Division.
- Mr. Hideo Nakano, Specialist from RECSAM recently conducted a workshop entitled "*STEM Using Low Cost Materials*" for secondary science and mathematics teachers and educators on 16 & 17 August 2016. The aim of this workshop was to introduce participants to effective hands-on activities using low-cost educational materials to build teaching aids to improve the teaching and learning of STEM (Science, Technology, Engineering and Mathematics) subjects and particularly to enhance participants' capability in effective teaching and learning particularly in engineering related subjects. The two-day training was conducted in a workshop format with 5 to 6 participants in a group and participants were taught how to build inexpensive science educational materials that they can use in their classrooms through step by step instructions. Workshop participants were also exposed to various hands-on activities and demonstrations such as sound activities with wave visualisation, paper-based activities using wind energy, plastic straw 3D models for statics and paper toy propeller and simple self-propelled toy made of rubber bands and a propeller to name a few. Twenty two (22), 16 fee-paying and 6 fully-funded participants participated in this workshop.
- A workshop on "*Fundamental Robotics*" for teacher educators was organised by RECSAM on 8 & 9 August 2016 at RECSAM in collaboration with Penang Science Cluster (PSC). The two-day workshop was facilitated by Mr. Tan Wei Sheng, the Lego Robotics Technical Lead in PSC. The workshop was designed in order to promote the interest in Science & Technology and also to improve the logical thinking skills. Through this workshop, participants were exposed to the basic concepts of Lego robotics. Workshop participants were also taught to manage and utilise various sensors (ultrasonic sensor, touch sensor, colour sensor and gyro sensor) and motors and apply them to

complete challenges. A total of 22 (twenty two) on-scholarship participants attended the 2-day workshop.

- A workshop on: “*Academic Writing and Paper Presentations*” was conducted by RECSAM’s Research & Development Division Specialists for a group of participants from Nakhon Sawan Rajabhat University, Thailand from 18 to 20 July 2016 at RECSAM. The purpose of the workshop was to expose participants to techniques on how to write and present a research paper (both science and social science perspective) in conferences, symposiums and poster presentations as well as strategies for converting a written paper into an oral presentation, using limited time effectively, and incorporating multimedia elements into a presentation. Workshop participants were introduced to the basic structure of academic writing and were exposed to the essential elements and attributes of the academic writing style such as preparing an abstract and how to plan and prepare for presentations. Thirty (30), 22 fee-paying and 8 in-house participants participated in this workshop.
- A three-day workshop for students on “*Enhancing 21st Century Skills through Science, Mathematics and Technology*” from Hatyaiwittayalai School, Thailand was held at RECSAM from 2 to 4 November 2016. This workshop was aimed to enhance 21st century skills through learning of science, mathematics and technology among secondary school students. Through this workshop, the participants was exposed to the science, mathematics and technology activities as well as the fundamental skills of using English in learning science and mathematics. This workshop also provided the participants with demonstrations, group activities and individual activities to let the participants acquire ideas and skills of 21st Century. A total of 97 (ninety seven) participants which comprised 85 (eighty five) students and 12 (twelve) teachers participated in this three-day programme which was facilitated by the Training Programme Division.
- On 9 to 11 November 2016, RECSAM conducted a three-day workshop for another group of students from Hatyaiwittayalai School, Thailand. The workshop focusing on “*Enhancing 21st Century Skills through Science, Mathematics and Technology*” was aimed to enhance 21st century skills through learning of science, mathematics and technology among secondary school students. Through this workshop, the participants was exposed to the science, mathematics and technology activities as well as the fundamental skills of using English in learning science and mathematics. This workshop also provided the participants with demonstrations, group activities and individual activities to let the participants acquire ideas and skills of 21st Century. A total of 94 (ninety four) participants which comprised 84 (eighty four) students and 10 (ten) teachers joined this three-day programme which was facilitated by our Specialists from the Training Programme Division.
- RECSAM once again conducted a two-day workshop on “*Enhancing 21st Century Skills through Science, Mathematics and Technology*” for Hatyaiwittayalai School, Thailand on 24 and 25 November 2016. This workshop was aimed to enhance 21st century skills through learning of science, mathematics and technology among secondary school students. Through this workshop, the participants was exposed to the science, mathematics and technology activities as well as the fundamental skills of using English in learning science and mathematics. This workshop also provided the participants with demonstrations, group activities and individual

activities to let the participants acquire ideas and skills of 21st Century. A total of 137 (one hundred and thirty seven) participants which comprised 127 (one hundred and twenty seven) students and 10 (ten) teachers joined this two-day programme which was facilitated by our Specialists from the Training Programme Division.

- A training workshop on “*SPSS and SmartPLS*” for teacher educators was conducted by RECSAM on 13 and 14 October 2016. The main goal of this workshop was to expose workshop participants to the use of statistical software packages to know the basic steps of such as how to use SPSS and SmartPLS to perform analysis and get more out of the data they possess by using inferential statistics and interpret the data output in a manner that relevant to their research objectives. The 2-day workshop was facilitated by Assoc. Prof. Dr. Lay Yoon Fah from the Faculty of Psychology and Education (FPE), Universiti Malaysia Sabah (UMS) together with Dr. Ng Khar Thoe, Specialist from SEAMEO RECSAM. Through this workshop, participants were exposed to SPSS, AMOS and SmartPLS softwares. Among other topics that covered during the 2-day workshop were (i) preparation for quality data, (ii) diagnosing missing values, (iii) coding-recoding, (iv) Factor Analysis, (v) correlation, (vi) regression, (vii) why SmartPLS, (viii) other practical applications and the use of software application. A total of 19 (nineteen), with 2 (two) fee-paying participants attended the two-day workshop.
- A four-day workshop on “*ODL Module Editing and Learning Science and Mathematics Together’ (LeSMaT) Curriculum Editing*” was conducted by RECSAM from 10 to 13 October 2016. The purpose of the conduct of this workshop was to expose workshop participants with comprehensive knowledge and skills in writing ODL modules that can be used to guide teachers in promoting LeSMaT in the borderless world. Invited speakers from Malaysia, Philippines and Singapore with diverse backgrounds and experiences in science education supported by research-based technology-enhanced learning, ESD as well as education for sustainable living shared their views and experiences on “Developing ODL modules and tools to promote LeSMaT in the borderless world”. Dr. Woo Huay Lit, Advisor for Curriculum and Instruction based at the Meridian Junior College in Singapore shared his experience on “Considering instructional design of blended learning in ODL module writing”. Mr. Lim Chee Leong, Associate Director, e-Learning Academy at Taylor’s University shared his views on “Redesigning student-centred learning in the borderless world” and Dr. Ng Khar Thoe, Specialist from RECSAM gave her perspectives on “Promoting Golden SEAMEO students’ networking activities through LeSMaT (Borderless) e-platforms with more enriched exposure and Enhancing Teachers’ Continuing-Professional - Development with Higher-learning-opportunities (EnTeaCH)”. This workshop received 24 (twenty four) participants.
- RECSAM recently conducted a training course on “*Helping Students Become Competent in HOTS (KBAT) through Mathematics Teaching and Learning*” for a group of primary mathematics teachers and teacher educators. The two-day course was facilitated by Dr Yeap Ban Har from Marshall Cavendish Institute, Singapore from 23 to 24 January 2017. The workshop was centered on exposing the participants to the five competencies that teachers need to focus on and the five features of a mathematics lesson that allow to happen through examples based on topics included in the Malaysian mathematics syllabus. Through this training course, participants were also taught how to prepare

students for a curriculum that demands HOTS (KBAT) and methods to assess students accurately in HOTS (KBAT). A total of 78 (seventy eight), 67 fee-paying and 11 on-scholarship / in-house participants attended the 2-day training course.

- A training workshop on “*Building Spirit of Entrepreneurship through Science Education*” for science teacher and educators was conducted by RECSAM on 15 & 16 February 2017. The main goal of this workshop was to expose participants to entrepreneurial skills and entrepreneurship spirit in their day to day science teaching. The training workshop also focused on the trends and challenges in Entrepreneurship education for the 21st century as well as how to sustain life by applying entrepreneurship knowledge and skills. The 2-day workshop was facilitated by Mr. Paul D'Souza, an entrepreneur based in Hong Kong with markets in Europe with vast experience in this field and has involved with UNESCO on various platforms and conducted workshop on Entrepreneurship at UNESCO Entrepreneurship Summit. Through this workshop, participants had the opportunity to design a lesson plan with entrepreneurship spirit in 21st century, and apply the knowledge and skills of entrepreneurship for sustainable living. The lesson plans will be incorporated into an exemplar that could be used in schools. A total of 38 (thirty eight), 26 fee-paying and 12 on-scholarship/funded participants participated in the two-day workshop.
- A training workshop on “*Improvisation of Instructional Materials for Effective Teaching and Learning of Science*” by Mr. Yuji Otsuka, Senior Volunteer from Japan International Cooperation Agency (JICA) based at RECSAM, for science teacher and educators was conducted by RECSAM on 10 and 11 April 2017. The aim of this workshop was to introduce participants to a number of individual and group hands-on science activities to suit their classroom science lessons. Through this workshop, participants were also able to obtain practical science skills and knowledge to create effective teaching materials in their own lessons. The two-day training was conducted in a workshop format with 5 to 6 participants in a group and participants were taught how to build inexpensive science educational materials such as simple air pressure rocket, electroscope, paper clip motor and charcoal battery that they can use in their classrooms through step by step instructions. Fifty three (53), 51 fee-paying and 2 fully-funded participants participated in this workshop.
- A training workshop on “*Enhancing Teaching and Learning through Lesson Study*” was conducted by Ms. Teh Kim Hong, Specialist from Training Programme Division on 12 & 13 April 2017. Workshop participants were introduced to the basic fundamentals of Lesson Study and were taught how to carry out a Japanese lesson study using collaborative lesson research (CLR) model and prepare a lesson study research proposal based on the mathematics curriculum through *kyouzai kenkyuu*. Through this workshop, participants were also able to discuss the outcome and impact of lesson study for teaching and learning improvement and misconceptions and challenges of lesson study. The two-day training was conducted in a workshop format which covers some input of interactive talks and hands-on activities. At the end of the workshop, participants worked collaboratively in small groups to prepare research proposals. A total of 30 (thirty) fee-paying participants attended the 2-day workshop.

- The Curriculum Synchronization workshop meetings between Brawijaya Smart School – Universiti Brawijaya, Indonesia and RECSAM were recently held from 1 to 3 May 2017 and 22 to 25 May 2017 at RECSAM. The purpose of the workshop meetings was to (i) review and agree on the necessary changes to be made on the draft of Brawijaya Smart School Southeast Asia-Based (SEA-Based) curriculum, and to (ii) finalise the Brawijaya Smart School SEA-Based Curriculum. The workshop meetings were facilitated by the Research & Development Division, Dr. Nur Jahan Ahmad, Mr. Dominador D. Mangao, Dr. Miranda Yeoh Poh Khoon and Mr. Pedro Lucis Montecillo, Jr. A total of fourteen (14) participants participated in the workshop meeting led by Dr. Drs. Sugeng Riando, Director of Brawijaya Smart School, Indonesia.

(v) *Conferences / Congress / Seminars / Symposiums*

To provide more opportunities for science mathematics educators in the SEAMEO region to disseminate their research findings, RECSAM has also been organising its own conferences, congresses and seminars. This fiscal year, these events organised by RECSAM attracted more than three hundred and nineteen (319) participants. Among the conferences, congress, seminars, seminar-workshops and symposium held at RECSAM during this fiscal year were:

- A five-day seminar-workshop on “*Enhancing Communication English through Science, Mathematics and Technology*” was held at RECSAM from 17 to 21 October 2016 from Datdaruni School, Chachoengsao, Thailand. Through this workshop, participants were exposed to various learning context to provide opportunities for them to speak using English language. The participants also gained deeper understanding of science and mathematics through exploration and problem-based learning. In addition, they were engaged in different learning strategies to develop important 21st century learning skills and were taught to design simple toys and models to aid understanding of abstract concepts in science and mathematics. This seminar-workshop was essentially activity-oriented with active involvement of participants in group discussions, outdoor learning, demonstrations and presentations. ICT skills were also incorporated appropriately in various activities. A total of 60 (sixty) participants, inclusive of 54 (fifty four) students and 6 (six) teachers participated in this five-day programme which was facilitated by the Training Programme Division.
- RECSAM, in partnership with the Association of Science and Mathematics Coaches of the Philippines (ASMaC Philippines) organised the “*4th International Conference on Education for Sustainable Development*” from 25 to 27 October 2016 at RECSAM, Penang. R&D Division served as Conference Secretariat in collaborating with ASMaC for this conference. The Conference was held with great success, with over 100 attendees from Southeast Asia and beyond. The Conference was comprised of keynote, plenary, parallel, symposium and workshop sessions running for three days, including two school visits and Penang tour. Representatives from teacher education institutions, professional regulation offices, and Ministries of Education joined the said Conference to share their expertise, experiences and researches in Education for Sustainable development (ESD). There was also a special round table session for networking and linkages among the academics from international and national institutions. The possibilities to collaborate in research and training with other institutions and universities were discussed in this session. The Conference attracted more than 150 (one hundred fifty)

participants and guest speakers including stakeholders from various sectors and levels such as policy-makers, education and development practitioners, academics, scholars and international organisations. The sessions consisted of two keynote addresses and four plenary sessions that attempted to address global challenges by integrating education for sustainable development into education plans and curricula. Prof. Jasper L. Pastrano, National President of ASMaC Philippines and Dr. Hj. Mohd. Johan bin Zakaria, Centre Director of RECSAM delivered their welcoming remarks and opening speeches respectively. Dr. Raul F. Muyong, President of Iloilo Science and Technology University and Prof. Dr. Munirah Ghazali, Coordinator of the Regional Centre of Expertise (RCE) on Education for Sustainable Development (ESD) in Universiti Sains Malaysia led the presentation of this Conference during the keynote sessions. Dr. Raul emphasized on the importance of quality education in higher education while Prof. Dr. Munirah shared valuable information on Collaboration and Linkages for ESD through RCE (Regional Centre for Expertise) Network. Subsequently, plenary sessions were also conducted where the speakers discussed various topics related to (i) Entrepreneurship, Education & Sustainability for the Environment, (ii) Society and Economy, Education to Highly Vulnerable Communities and (iii) Role of Education in Sustainable Development. Through the presentations and workshops conducted in the 3-day Conference, the participants were able to identify common challenges and best practices to promote sustainable living in teaching and learning. The participants were also able to identify areas of new possibilities and suggest possible future collaboration and cooperation with other professionals in related field.

- A two-week continuing professional development programme on “*Enhancing Capacity Building in Science and Mathematics Pedagogy*” for 22 (twenty two) Science and Mathematics Teachers from Brawijaya Smart School, Malang, Indonesia was held at RECSAM from 14 to 28 February 2017. The aim of this programme was to enhance capacity building in pedagogy for the teachers concerned to act as more efficient agents of change in inculcating scientific and mathematical literacy amongst the school students in communicational, interpretational, analytical and critical thinking abilities. Through this seminar-workshop, course participants were exposed to various strategies and fundamental to improve teaching and learning of science and mathematics such as Problem-Based Learning (PBL) and Inquiry-Based Teaching & Learning. Participants were also tasked to design and develop programmes for improving teaching and learning of science and mathematics. This programme was funded by Universitas Brawijaya, Malang, Indonesia.
- A one-week seminar-workshop on “*Developing 21st Century Skills through Learning of Science and Mathematics*” for students from Brawijaya Smart School, Malang, Indonesia was conducted by RECSAM from 14 to 21 February 2017. This seminar-workshop was activity-oriented and emphasised on active involvement of students in group discussions, presentations, outdoor learning and demonstrations on inquiry of various problem-based learning based on the selected mathematics and science curriculum of the school. Through this seminar-workshop, students were exposed to various learning skills related to habits of minds of human characters, outdoor and ICT-based science and mathematics learning in order to develop their scientific and mathematical thinking as well as scientific and mathematical processes that can be aligned with 21st century skills. A total of 33 (thirty three) students

(Grades 10, 11, 12) participated in this one-week seminar-workshop funded by Universitas Brawijaya, Malang, Indonesia.

- A five-day seminar-workshop on “*Enhancing Communication English through Science, Mathematics and Technology*” was held at RECSAM from 6 to 10 March 2017 for 54 (fifty four) students from Datdaruni School, Chachoengsao, Thailand. This workshop was aimed to expose the participants with a few active teaching and learning strategies that can be used in primary/secondary science classrooms to cultivate an interest in science and technology as well as to gain deeper understanding of science and mathematics content through varied active learning strategies such as Problem-based learning, ICT-based science and mathematics learning as well as learning science and technology through exploration such as toy making. Various meaningful science and mathematics topics and activities were conducted during the five-day seminar-workshop for these participants such as; (i) exploring science and technology through toy making (ii) problem-based learning in Science (iii) ICT-based science and mathematics learning and (iv) experiential learning through educational visit.

(vi) *Colloquium*

Four (4) colloquia were held in this fiscal year with a total of three hundred and twenty seven (327) participants. These colloquia were conducted for 2 hours in the afternoons to enable more teachers in Penang to attend these talks.

- Ms. Teh Kim Hong, Senior Specialist from Training Programme Division gave a talk on “*Revisiting Lesson Study*” to 153 (one hundred and fifty three) Science and Mathematics teachers and teacher educators on 18 November 2016 at RECSAM.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division conducted a colloquium on “*Planning Open and Distant Learning (ODL) modules for networking and professional development aiming at ‘Enhancing Teachers’ Continuing Professional Development (CPD) with Higher-learning-opportunities’ (EnTeaCH)*” for teachers and teacher educators on 11 October 2016 at SEAMEO RECSAM. The session attracted 48 (fourty eight) participants.
- Dr. Margaret Chmiel from the Smithsonian Science Education Centre, United States gave a talk at RECSAM on “*Colloquium Challenges and Opportunities for Implementing STEM Education: Perspectives from the United States of America (U.S.A)*” on 28 October 2016. The sharing session attracted 54 (fifty four) participants.
- Dr. Ng Khar Thoe, Specialist from R&D Division, Dr. Suma Parahakaran and Dr. Devadason Robert Peter, invited consultants were invited to give a talk on “*Learning Science and Mathematics Together in the Borderless World [LeSMaT (Borderless)] through Open and Distant Learning (DDL) Modules and Blended-Mode Technology-Enhanced Learning (TEL)*” at RECSAM Auditorium on 16 May 2017. A total of seventy two (72) school teachers / educators came for the talk.

c) Recognition and Benchmarking

(i) *Engagement in Consultancy Services*

RECSAM Specialists have also been invited to provide consultancy services to local and international institutions. In this fiscal year, RECSAM's Specialists have been commissioned to take part in programmes and projects of mutual interest organised by the Education Ministries and leading agencies from the SEAMEO region and beyond.

- Mr. Lee Shok Mee, Specialist from Training Programme Division traveled to Kenya to attend a workshop on "*Preparation of Training Materials for Third Country Training Programme (TCTP)*" organised by Centre for Mathematics, Science and Technology Education in Africa (CEMASTEAM) and funded by Japan International Cooperation Agency (JICA) at CEMASTEAM from 27 June to 1 July 2016.
- Mr. Lee Shok Mee, Specialist from Training Programme Division traveled to Kenya to attend a workshop on "*Preparation of Training Materials for Third Country Training Programme (TCTP)*" organised by Centre for Mathematics, Science and Technology Education in Africa (CEMASTEAM) and funded by Japan International Cooperation Agency (JICA) at CEMASTEAM from 27 June to 1 July 2016.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division was invited as a speaker in the "*First Asia Summit on The New Avatar: Zooming Technology into the Future and Preparing for the Present*" organised by GEAERD"-Global Educators Association for Educational Research & Development at Telengana Tourist Plaza, Begumpet, Hyderabad, India on 2 July 2016.
- Mr. Julito C. Aligaen, Specialist from Research & Development Division was invited as a Consultant to conduct the final try-out on the "*Stand Alone Lesson Plans: Organic Agriculture Integration in the Basic Education Curriculum (BEC) and Final Workshop for Lesson Plan Publication*" organised by the Department of Education (DepED) Region XI, Division of Davao Del Norte, District of Asuncion at Asuncion National High, Davao, Philippines from 12 to 19 July 2016.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division was invited as a Judge in the "*Innovation Competition of Science and Engineering*" during the State Level Education Carnival of Science and Technology 2016 organised by the Penang State Education Department at Teachers' Training Institute, Tuanku Bainun Campur, Bukit Mertajam, Penang on 20 & 21 July 2016.
- Dr. Nur Jahan Ahmad, Deputy Director (Research & Development) was invited as a Judge in the "*Science & Technology Literacy Competition between Penang Secondary Schools*" organised by Association for Science & Mathematics Education, Penang (ASMEP) at RECSAM on 6 August 2016.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division was involved as an Organising Committee in the "*Science & Technology Literacy Competition between Penang Secondary Schools*" organised by Association for Science & Mathematics Education, Penang (ASMEP) at RECSAM on 6 August 2016.

- Dr. Thien Lei Mee, Specialist from Research & Development Division was involved as a Session Moderator in the “*First National & International Conference of Nakhon Sawan Rajabhat University on Understanding the Change of Localisation in the 21st Century*” organised by Nakhon Sawan Rajabhat University, Thailand at Nakhon Sawan Rajabhat University on 10 August 2016.
- Dr. Thien Lei Mee, Specialist from Research & Development Division was invited to give a motivation and learning talk in the “*International Student Assessment (PISA) and Higher Order Thinking Skills (HOTS) Programme at Lahad Datu Science Secondary School*” organised by the Parent Teacher Association at Lahad Datu Science Secondary School, Sabah on 13 August 2016.
- Dr. Nur Jahan Ahmad, Deputy Director (Research & Development), attended the “*24th IUPAC (International Union of Pure and Applied Chemistry) International Conference on Chemistry Education (ICCE) 2016*” organised by the Malaysian Institute of Chemistry, Kuala Lumpur at Borneo Convention Center, Kuching, Sarawak from 15 to 20 August 2016. She was involved as a National Organising Committee Member.
- Dr. Mohd. Sazali bin Hj. Khalid Mr. Julito C. Aligaen, Specialists from Research & Development Division conducted a workshop on “*Robotic, Organic Farming and Scratch Programming for Year 4 & 5 Students*” organised by Universiti Utara Malaysia (UUM) and RECSAM at SK Tandop Besar, Padang Terap, Kedah Darul Aman on 27 August 2016.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division was involved as a “*Teaching Practicum Supervisor observing one of the primary mathematics teaching session*” organised by Wawasan Open University at SRK(C) Kong Min Cawangan Satu, Ayer Itam, Penang on 29 August 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director was invited as a speaker to give a talk during the “*Integrity Day - Integrity of Heart*” event organised by Tengku Bainun Teachers Training Institute at Tengku Bainun Teachers Training Institute on 22 August 2016.
- Ms. Teh Kim Hong (Senior Specialist) and Dr. Fazzlijan Mohamed Adnan Khan (Specialist) from Training Programme Division were involved as facilitators in a seminar conducted for mathematics engineering students organised by *Politeknik Ungku Omar* on 14 October 2016.
- Mr. Hideo Nakano, Specialist from Training Programme Division conducted a workshop on “*Science, Technology, Engineering and Mathematics (STEM) Using Low Cost Materials*” for participants in *Institut Pendidikan Guru Kampus Perlis* on 7 and 8 November 2016.
- Ms. Teh Kim Hong (Senior Specialist) and Mr. Lee Shok Mee (Specialist) from Training Programme Division travelled to China to facilitate a session of the “*21st Century Learning in Education for Chinese Teachers*” and were involved as judge officers in the International STEM Study Competition organised by the Research Institute of Science Education, Guangxi Normal University, Guilin, People's Republic of China from 29 November 2016 to 6 December 2016.
- Mr. Hideo Nakano, Specialist from Training Programme Division ran a workshop on “*Hands-on Science*” organised by Tech Dome Penang on 17 September 2016.

- Mr. Hideo Nakano, Specialist from Training Programme Division conducted a workshop on “*STEM using Low Cost Materials*” for students from *Sekolah Seri Puteri*, Cyberjaya, Selangor on 19 November 2016.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division was involved as a Speaker and Resource Person in the Third International Science, Mathematics and Technology Education Conference (ISMTEC) 2016 on “*STEM Education: Preparing a Workforce for the Future*” organised by SEAMEO Secretariat and IPST (Institute for the Promotion of Teaching Science and Technology) Thailand at Ambassador Hotel Bangkok, Thailand from 19 to 22 October 2016.
- Mr. Yuji Otsuka, Mr. Hideo Nakano and Dr. Fazzlijan Mohamed Adnan Khan, Specialists from Training Programme Division ran some “*Basic Science Activities (Basic Electronics Phase 4, Basic Robotics Activity Phase 4 and Scratch Programming Phase 4)*” for a group of Grade 5 students from *SK Tandop Besar*, Kedah on 25 September 2016.
- Dr. Nur Jahan Ahmad, Deputy Director of Research and Development Division was involved as a Facilitator in the “*Pembangunan Item Penilaian Kompetensi Kemahiran Pedagogi Guru Bidang STEM Bil 4/2016 Workshop*” organised by Teacher Education Division, Ministry of Education of Malaysia on 8 September 2016.
- Dr. Thien Lei Mee, Specialist from Research & Development Division conducted the “*Second KBAT (Kemahiran Berfikir Aras Tinggi) in-house workshop*” for all RECSAM professional staff on 9 September 2016.
- Dr. Mohd Sazali bin Hj. Khalid, Specialist from Research and Development Division was invited as a Keynote Speaker in the “*Third Annual International Seminar on Trends in Science and Science Education*” organised by the Faculty of Mathematics and Natural Sciences, State University of Medan in Medan, Indonesia from 6 to 7 October 2016.
- Dr. Thien Lei Mee, Specialist from Research and Development Division participated in the “*Fourth International Symposium on Mathematics Education Innovation on Issues and Challenges in 21st Education: Working Towards Meaningful Teaching and Learning*” and was involved as a Keynote Speaker in the symposium organised by SEAMEO QITEP in Mathematics in Yogyakarta, Indonesia from 1 to 3 November 2016.
- Dr. Thien Lei Mee, Specialist from Research and Development Division was invited as a keynote speaker in the “*Stadium Generale and Workshop in PGRI (Persatuan Guru Republik Indonesia) on Enhancing Student's Mathematics Literacy w lth Higher Order Thinking Skill in Secondary School*” organised by University of Yogyakarta on 4 November 2016.
- Dr. Nur Jahan Ahmad, Deputy Director of Research & Development Division and Dr. Fazzlijan Mohamed Adnan Khan, Specialist from Training Programme Division, conducted an in-house workshop on “*Development and Impact Evaluation*” workshop for all RECSAM professional staff on 23 November 2016.
- Mr. Julito C. Aligaen, Specialist from Research & Development Division and Dr. Fazzlijan Mohamed Adnan Khan, Specialist from Training Programme Division, conducted a training workshop for Iloilo Science and Technology University Leon Campus at Iloilo, Philippines from 10 to 12 December 2016.

- Mr. Lee Shok Mee, Specialist from Training Programme Division ran a workshop on "*Upgrading Teaching Professionalism through Lesson Study*" organised by Politeknik Tuanku Sultanah Bahiyah at Kulim, Kedah on 18 & 19 January 2017.
- Dr. Ng Khar Thoe, Specialist from Research & Development Division was involved as a Keynote Speaker in the "*Regional Academic Seminar: Smart ASEAN via Smart Learning Hub*" organised by Sukhothai Thammathirat Open University (STOU), Pakkret District, Nonthaburi, Bangkok, Thailand on 7 & 8 February 2017.
- Mr. Julito C. Aligaen, Specialist from Research & Development Division conducted an "*Organic Farming Workshop*" for the primary school teachers of SK Tandop, Padang Terap, Kedah from 18 to 20 March 2017. This programme was part of RECSAM's corporate social responsibility (CSR) initiative in partnership with Kedah State Education Department and Universiti Utara Malaysia (UUM).
- Mr. Yuji Otsuka, JICA Senior Volunteer based at Training Programme Division conducted a "*Science Literacy Workshop*" for the primary school students of SK Tandop, Padang Terap, Kedah on 19 & 20 March 2017. This programme was part of RECSAM's corporate social responsibility (CSR) initiative in partnership with Padang Terap District Education Office.
- Dr. Ng Khar Thoe and Mr. Julito C. Aligaen, Specialists from Research & Development Division were invited as Judges for the Poster Drawing Competition in conjunction with "*World Water Day 2017*" organised by Water Watch Penang (WWP) at Taman Kuari, Penang on 23 April 2017.
- Mr. Lee Shok Mee, Specialist from Training Programme Division conducted a workshop on "*STEM Approach in Science and Mathematics Education*" organised by Saint Joseph Thare School, Thailand from 20 to 24 March 2017.
- Dr. Fazzlijan Mohamed Adnan Khan, Specialist from Training Programme Division was invited as a keynote speaker in the "*Mini Konvensyen Penyelidikan Pendidikan 2017*" organised by Kolej Matrikulasi Teknikal, Pendang, Kedah on 15 June 2017.
- Mr. Lee Shok Mee, Specialist from Training Programme Division travelled to Kenya to facilitate a workshop for the preparation of training materials for "*Third Country Training Programme (TCTP) 2017*" organised by Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA) and funded by Japan International Cooperation Agency (JICA) from 19 to 24 June 2017.
- Mr. Yuji Otsuka, Specialist from Training Programme Division was invited to facilitate a school "*Science Workshop*" organised by *Sekolah Jenis Kebangsaan (Cina) Union* in Penang on 13 May 2017.

(ii) *Centre's Involvement in the Development and Implementation of Policy/Strategy/ Programme/Activities by the Education Ministries and Agencies from the SEAMEO Region and Beyond*

- Mr. Hideo Nakano, Specialist from Training Programme Division attended the "*Opening Ceremony of Tech Dome Penang*" organised by Tech Dome Penang at KOMTAR Geodesic Dome on 16 July 2016.

- Mr. Yuji Otsuka, Senior JICA (Japan International Cooperation Agency) Volunteer attended the “*JICA Volunteer Annual General Meeting 2016*” organised by JICA at JICA Office in Kuala Lumpur on 19 July 2016.
- Ms. Khor Sim Suan, Acting Deputy Director (Training Programme) represented the Centre Director to attend the Launching Ceremony of “*Pertandingan Literasi Sains dan Teknologi Antara Sekolah-Sekolah Menengah Pulau Pinang 2016*” organised by Persatuan Pendidikan Sains dan Matematik Pulau Pinang (ASMEP) in collaboration with Majlis Pendidikan Pulau Pinang, SEAMEO RECSAM and Jabatan Pelajaran Pulau Pinang on 6 August 2016 at SEAMEO RECSAM.
- Ms. Khor Sim Suan, Acting Deputy Director (Training Programme) attended the “*Opening Ceremony of Flexible Education Colloquium 2016*” organised by the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia (USM) on 16 August 2016 at USM.
- Dr. Nur Jahan Ahmad, Deputy Director (Research & Development) and Ms. Khor Sim Suan, Acting Deputy Director (Training Programme) attended the coordination meeting of “*Capacity Development Workshop for the Strengthening STEM Curricula for Girls in Africa and Asia and The Pacific (Phase 1) Project under the Malaysia-UNESCO Cooperation Programme (MUCP)*” organised by the Curriculum Development Division, Ministry of Education of Malaysia on 22 August 2016 at Putrajaya.
- Dr. Hj Mohd Johan Zakaria, Centre Director attended the “*Hari Anugerah Cemerlang 2016*” of SMK (P) St. George, Pulau Pinang organised by SMK (P) St. George on 11 August 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director attended the “*47th SEAMEO RECSAM Governing Board Meeting 2016 Pre-Council Meeting*” organised by the Policy and International Relation Division, Ministry of Education of Malaysia on 1 September 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director was invited to attend and present a working paper on RECSAM’s Application for Additional Grant in the “*Pengurusan Tertinggi Kementerian Pendidikan Malaysia Bil. 12/2016 Meeting*” organised by Ministry of Education of Malaysia on 14 September 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director represented RECSAM to attend the “*NoU (Note of Understanding) Signing Ceremony between SEAMEO RECSAM and Polytechnic Education Department, Ministry of Higher Education*” organised by Polytechnic Education Department at Putrajaya on 30 September 2016. Also present during the event were Mr. Shamsul Azha Md Yusuf, Deputy Director of Administration and Dr. Hj Sazali Mohd Khalid, Specialist from Research and Development Division.
- Dr. Hj Mohd Johan Zakaria, Centre Director was invited to attend the “*Hari Ucapan & Penyampaian Hadiah Kali ke-200*” organised by Penang Free School on 21 October 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director was invited to attend the Opening Ceremony of the “*Third International Conference on Teaching Learning and Development (ICTLD) on Embracing Creativity-Improving and Sustaining Teacher Education: What Works?*” organised by the Institute of Teacher Education of Malaysia at Cititel Hotel Penang on 28 November 2016.

- Dr. Hj Mohd Johan Zakaria, Centre Director attended the “*Central Curriculum Committee Meeting No. 2/2016*” organised by the Curriculum Development Division, Ministry of Education of Malaysia and was involved as committee member in the meeting held at Putrajaya on 22 December 2016.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division was involved as a Moderator in an educational forum on “*Pedagogical Innovation through STEM Education*” for school principals and excellent teachers in Penang organised by RECSAM in conjunction with the 47th Governing Board Meeting held at RECSAM on 22 September 2016.
- Ms. Bhavani Ramasamy and Ms. Rabiatul Adawiah, Programme Officers from Training Programme Division attended the “*Malaysian Technical Cooperation Programme (MTCP) Monitoring and Evaluation Meeting*” organised by the Malaysian Technical Cooperation Programme (MTCP) at Bandar Baru Bangi, Selangor on 29 September 2016.
- Dr. Nur Jahan Ahmad (Deputy Director of Research and Development), Mr. Julito C. Aligaen (Specialist from Research & Development) and Mr. Pedro Lucis Montecillo Jr. (Specialist from Training Programme) was involved as facilitators in a teleconferencing session between University of the Philippines Integrated School (Manila, Philippines) and Penang Free Secondary School on “*Innovation of Mathematics Education Through Lesson Study: Challenges to Energy Efficiency on STEM and Cross Border Education*” organised by RECSAM and University of the Philippines on 29 September 2016.
- Mr. Pedro Lucis Montecillo Jr, Specialist from Training Programme Division was involved as a Resource Person in a Colloquium organised by RECSAM on “*Enhancing Quality Professional Development through Graduate Degrees Programme: Experience from Some Regional Centres*” on 11 October 2016.
- Ms. Khor Sim Suan (Deputy Director) and Ms. Bhavani Ramasamy (Programme Officer) from Training Programme Division attended the “*Post-mortem meeting for Malaysian Technical Cooperation Programme (MTCP)-Japan International Cooperation Agency (JICA)- Third Country Training Programme (TCTP) 2016 on Primary Science and Mathematics Educators’ Training for African Countries: Enhancing Constructivist-based Pedagogy and Content Knowledge*” organised by RECSAM and funded by the Ministry of Foreign Affairs Malaysia at Wisma Putra on 18 November 2016.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division represented the Centre Director to attend the “*Kurikulum Negeri Bil. 3/2016 meeting*” organised by Penang State Education Department on 21 December 2016.
- Dr. Thien Lei Mee, Specialist from Research and Development Division travelled to Lahad Datu, Sabah and conducted interviews, class observations and collect data at SMK Agaseh and SMK Sepagaya for a research study on “*Impact Study of Higher Order Thinking Skills (HOTS) Programme*” from 3 to 6 October 2016.
- Dr. Thien Lei Mee, Specialist from Research and Development Division travelled to Miri, Sarawak and conducted interviews, class observations and collect data at SMK Tunku Miri and SMK Riam for a research study on

“Impact Study of Higher Order Thinking Skills (HOTS) Programme” from 9 to 11 October 2016.

- Mr. Julito C. Aligaen, Specialist from Research and Development Division represented the Centre Director and attended the *“Partners Night”* organised by SEAMEO SEARCA at Dusit Thani, Manila City, Philippines on 5 December 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director, graced the opening ceremony of *“SEAMEO RECSAM Support Staff UNION Course”* held at Sri Malaysia Hotel, Penang on 14 January 2017.
- Dr. Nur Jahan Ahmad, Deputy Director of Research & Development represented the Centre Director to attend the *“APEC-Tsukuba and UNESCO (MGIEP) International Conference”* funded by APEC and organised by University of Tsukuba, Tokyo Campus, Japan from 9 to 12 February 2017.
- Mr. Pedro Lucis Montecillo Jr., Specialist at Training Programme Division travelled to Japan to attend the *“Southeast Asia Basic Education Standard (SEA-BES) and Asia Pacific Economic Conference (APEC) Meeting”* organised and funded by the Center for Research on International Cooperation in Educational Development (CRICED) Tsukuba University, Japan and funded by the Center for Research on International Cooperation in Educational Development (CRICED), Tsukuba University, Japan from 7 to 13 February 2017.
- Mr. Shamsul Azha bin Md Yusuf, Deputy Director of Administration represented the Centre Director and attended the *“Establishment of National Science Centre & Action Plan Development Workshop”* organised by the MOSTI (Ministry of Science, Technology and Innovation), MOE (Ministry of Education), MOHE (*Ministry of Higher Education*), Akademi Sains Malaysia, British Council and Pusat Sains Negara from 20 to 22 February 2017 at Akademi Sains Malaysia, Kuala Lumpur.
- Ms. Teh Kim Hong, Specialist at Training Programme Division travelled to Japan to attend a meeting on *“Drafting of Guide book for South East Asia Basic Education Standard- Common Core Regional Learning Standards (SEA-BES CCRLS) in Mathematics”* organised and funded by the Center for Research on International Cooperation in Educational Development (CRICED) Tsukuba University, Japan at Tsukuba University, Japan from 20 to 26 February 2017.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division represented the Centre Director and attended the *“National Committee Meeting of World Engineering Education Forum (WEEF) 2017”* organised by the Society of Engineering Education Malaysia (SEEM) and Universiti Teknologi Malaysia (UTM) at Universiti Teknologi Malaysia on 25 February 2017.
- Ms. Rabiatal Adawiah binti Megat Jiwa and Ms. Bhavani Ramasamy, Programme Officers from Training Programme Division attended the *“Third Country Training Programme (TCTP) Workshop 2017”* organised by the Malaysian Technical Cooperation Programme (MTCP) and Japan International Cooperation Agency (JICA) at Putrajaya Marriott Hotel, Putrajaya on 27 February 2017.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division, Ms. Rabiatal Adawiah binti Megat Jiwa and Ms. Bhavani Ramasamy,

Programme Officers from Training Programme Division attended the “*Kick-off meeting for Malaysian Technical Cooperation Programme (MTCP) - Japan International Cooperation Agency (JICA) Third Country Training Programme (TCTP)*” organised by RECSAM and funded by Third Country Training Programme (TCTP) - Japan International Cooperation Agency (JICA) at Wisma Putra, Ministry of Foreign Affairs Malaysia on 13 March 2017.

- Dr. Hj Mohd Johan Zakaria, Centre Director presented a talk on “*21st Century Education*” and graced the opening ceremony of “*Mesyuarat Agung Majlis Guru Besar Kuala Kangsar ke-31/2017*” organised by Majlis Guru Besar Kuala Kangsar on 3 April 2017 at RECSAM.
- Ms. Khor Sim Suan, Deputy Director from Training Programme Division represented the Centre Director to attend the “*International Congress on Education for the 21st Century*” and was involved as a Moderator for the session on “*Making Accessible and Inclusive Quality Education Happen – Quality Assessment*” organised by the Ministry of Education Thailand collaboration with SEAMEO Secretariat at the Berkeley Hotel Pratunam, Bangkok, Thailand on 3 & 4 May 2017.
- Ms. Khor Sim Suan, Deputy Director from Training Programme Division represented the Centre Director to attend the “*Japan International Cooperation Agency (JICA) and the Economic Planning Unit (EPU) 60 Years and Beyond: The Way Forward*” Seminar jointly organised by JICA and EPU at Le Meridien, Putrajaya on 18 May 2017.
- Ms. Khor Sim Suan, Deputy Director and Ms. Bhavani Ramasamy, Programme Officer from Training Programme Division attended the “*Selection Meeting for Malaysian Technical Cooperation Programme (MTCP) - Japan International Cooperation Agency (JICA) Third Country Training Programme (TCTP) 2017*” organised by RECSAM, TCTP and JICA at Wisma Putra, Ministry of Foreign Affairs, Putrajaya on 19 June 2017.

2.2 KRA 2: REGIONAL VISIBILITY

a) Strengthening Linkages with Inter-Centre, National, Regional, and International Institutions

(i) Collaborative Activities Conducted With Inter-Centre/Regional/International Institutions and Community Involvement

Apart from the mainstream linkages with the ministries of education of the member and associate member countries, collaboration with other institutions and organisations had enabled the Centre to stay in the mainstream of global educational developments. During the period in review, the Centre established and/or renewed formal agreements with various institutions and carried out activities to foster closer relationships with them.

- A writeshop was organised by University of Tsukuba with the support from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan and SEAMEO RECSAM under the grant from CRICED (Center for Research on International Cooperation in Educational Development) which engages the

project known as Southeast Asian Basic Education Standard (SEABES) Common Core Regional Learning Standards in Mathematics (CCRLS). The aim of the writeshop conducted was to produce quality mathematics curriculum and to discuss the working paper on SEABES-CCRLS which is composed of the Executive Summary and the five (5) strands excluding the mathematical activity. Professor Masami Isoda, Director, CRICED, University of Tsukuba together with 3 (three) RECSAM Mathematics Specialists attended and contributed to the development of the said project. Three Specialists from RECSAM travelled to Tsukuba University, Japan on three different schedules; namely Mr. Pedro Lucis Montecillo, Jr. (3 to 13 June 2016), Ms. Teh Kim Hong, (13 to 19 June 2016) and Dr. Mohd Sazali Bin Khalid, (19 to 26 June 2016). There were a lot of recommendations, suggestions, deliberations and discussions in order to come up with the Asian identity based curriculum for mathematics in the 21st century learning and beyond. As a result, a refined, coherent and hefty mathematics learning standards for Southeast Asia will be developed. This SEABES-CCRLS project will also contribute to the development of the newest curriculum reform for every country at this Era of Regional Integration and Cross-Border Education.

- A ceremony to commemorate the handing over of the PYDC (Penang Youth Development Corporation) Modules of Fun Science and Mathematics Activities was held on 20 July 2016 at RECSAM and was attended by representatives from RECSAM and the PYDC. Representing SEAMEO RECSAM at the handing-over was Dr. Hj. Mohd Johan Bin Zakaria, Centre Director while PYDC was represented by its Executive Head, Mr. Mr. Teng Kok Liang. Present to witness the ceremony were RECSAM's management team members, Ms. Sim Phoi Yong from the Chief Minister's Office in Penang and Dr. Lim Gin Keat from Universiti Sains Malaysia. The Fun Science and Mathematics Activities Module for Years 1 – 3 is one of the first, initiated by PYDC in collaboration with RECSAM. RECSAM's Specialists have contributed in writing and reviewing the activities for both the modules. The event started with a ceremonial handover of the modules to PYDC representative, followed by presentation of certificates and honorarium to the writers and reviewers and souvenirs to the Centre Director and the Publication Unit of RECSAM. The occasion was significant in that it represented yet another CSR (corporate social responsibility) initiative and commitment by RECSAM to improve the quality of science and mathematics education in this region and beyond.
- RECSAM, in collaboration with the Ministry of Education of Malaysia, UNESCO-Malaysia Funds-In-Trust and UNESCO-International Bureau of Education (IBE) organised the "*Capacity Development Workshop for Strengthening STEM Curricula for Girls in Africa and Asia and the Pacific (Phase 1) under Malaysia-UNESCO Cooperation Programme (MUCP)*" from 26 to 30 September 2016 at RECSAM, Penang. The primary objective of this workshop was to introduce, pilot and validate the resource pack, "*Training Tools for Curriculum Development – a Resource Pack for Gender Transformative STEM Education*" with the national teams and experts as well as to develop concrete strategies using the resource pack in each country's settings to mainstream inclusive gender responsive STEM education giving effect to its policy, curriculum framework, learning and teaching resources, pedagogical strategies and teacher education and professional development. In addition, the workshop also aimed to share the Malaysian expertise on its experience on strengthening gender sensitive STEM education across the key areas, through presentations, discussions and school visits to further analyse the implementation of the curricula as well as seeking the

strategies to contextualise them for each country's setting. Key triggers of the five-day workshop included focal point presentations based on each country settings by experts from Ministry of Education, Malaysia, International Bureau of Education, UNESCO, National University of Malaysia, University of Malaya, Malaysia, Malaysia Biotechnology Information Centre, UNESCO Bangkok, University College London, Kenya Institute of Curriculum Development and SEAMEO RECSAM. The workshop also provided the experts with a venue to review, discuss and present the resource pack modules which covers: Formulating Gender Responsive STEM policies (Module 1), Developing Gender Sensitive STEM Curricula (Module 2), Creating Gender Inclusive STEM Pedagogies, Learning and Assessment (Module 3), Teacher Education and Teacher Professional Development to Support Gender Sensitive STEM Curricula and Pedagogies (Module 4), Developing Gender Sensitive STEM resources (Module 5) and Raising Community Awareness and Commitments around Gender Sensitive Policies (Module 6). Dr. Azian TS Abdullah, Rector of Institute of Teacher Education Malaysia presided over the opening of the five-day workshop. The workshop was participated by country teams from Cambodia, Kenya, Nigeria, Vietnam and Malaysia. The five-day workshop concluded with country team presentations followed by concrete strategies to use the resource pack in their settings and the way forward (Roadmap). The utmost importance is to find relevance in learning STEM and to develop among students, the skills needed to fulfil the needs of each country. The project is supported by the Ministry of Education of Malaysia, UNESCO-Malaysia Funds-In-Trust and UNESCO-International Bureau of Education, and co-organised by RECSAM. RECSAM is one of the implementing agency/ module contributors for the module/ resource pack under this project. The resource pack produced will be evolved into a worldwide training tool, packaged in a tutorial guidance that can be available to all UNESCO Member States.

- RECSAM hosted a consultative meeting on “*Education and Information and Communication Technology (ICTs) Officials to Elaborate a Modern Developmental Vision for the Education Sector and Discuss the Legal and Regulatory Framework for E-Learning*” from 26 to 28 September 2016 at RECSAM, Penang. The meeting was co-organised by the Ministry of Education of Malaysia and ISESCO (Islamic Educational, Scientific and Cultural Organization). The meeting aimed to 1) assist education competent authorities in Member States in formulating and developing policies which integrate ICTs into their educational systems; 2) reinvigorate the decisive roles that can be played by ICTs in achieving universal and quality education in Member States. The meeting was participated by 22 (twenty two) participants comprising of RECSAM representatives, ISESCO representatives, and country representative s from Bangladesh, Brunei, Maldives, Malaysia and Pakistan and was led by Professor Rozhan bin Mohammed Idrus, Director of Global Open Access Learning (GOAL) Centre at Universiti Sains Islam Malaysia and Prof. Dr. Hanafi Atan, Deputy Director (E-Learning) at Centre for Development of Academic Excellence, Universiti Sains Malaysia. During this 3-day meeting, various presentation and group discussion sessions were held which focused on the sharing of country initiatives and best practices on the use of ICT in Education System. Various topics on (i) Ecosystem for the Implementation of Strategy/Initiative/ Activity, (ii) Strategy/Initiative/Activity to Achieve the Aspiration of the e-Learning Implementation, (iii) Impact/Outcome/Aspiration of e-Learning Implementation (Student, Teacher, Parents, Ministry) and (iv) Action Plan for the Implementation

of the Strategy/Initiative/Activity were discussed and presented on 28 September 2016 by the participants during the meeting.

- The Penang International Science Fair (PISF) 2016, organised by Penang State Government was held at SPICE (Subterranean Penang International Convention and Exhibition Centre) on 12 and 13 November 2016. Science museums, universities and multinational corporations exhibited assorted science and technological products and exposed visitors to hands-on activities, games and shows. RECSAM's Science fair team led by Mr. Lee Shok Mee, Science Education Specialist conducted various science hands-on activities for parents and school students that visited RECSAM's booth. The activities conducted focused on using low cost materials to make simple science toys and gadgets to enhance learning of science in schools.
- RECSAM and Universitas Brawijaya recently signed a Memorandum of Understanding (MoU) to facilitate academic cooperation between the two institutions. The MoU was signed by Dr. Hj. Mohd Johan bin Zakaria, Centre Director of SEAMEO RECSAM and Prof. Dr. Ir. Mohammad Bisri, Rector of Universitas Brawijaya, Indonesia on 17 February 2017 at RECSAM, Penang. Through this partnership, both institutions will conduct joint educational-related research activities, training programmes, staff exchange programmes, partnership on implementation of joint programmes and activities as well as other educational projects in areas of mutual interest. The signing ceremony was witnessed by Mr. Shamsul Azha Md. Yusuf, Deputy Director of SEAMEO RECSAM and Dr. Drs. H. Sugeng Rianto, Director of Brawijaya Smart School, Malang. Also present at the event was the management and professional team of SEAMEO RECSAM.
- With financial support from the Ministries of Education of SEAMEO Member Countries and the SEAMEO Secretariat, RECSAM organised the "*SEAMEO Basic Education Standards (SEA-BES): Regional Consultative Meeting and Workshop for the Finalisation of Common Core Regional Learning Standards (CCRLS) in Science and Mathematics*" from 28 to 30 March 2017. The objectives of the workshop were to (i) discuss the comments, suggestions and recommendations on the draft of working papers; (ii) agree on the framework, aims, strands and standards across the three key stages for revision and finalisation; and (iii) gather suggestions and recommendations on the Way Forward for SEA-BES CCRLS in Science and Mathematics. The meeting and workshop process were guided by two foreign experts, namely; Prof. Masami Isoda from the Centre for Research on International Cooperation in Educational Development, University of Tsukuba, Japan and Dr. Mark Windale from the Centre for Science Education, Sheffield Hallam University in United Kingdom. A total of 55 delegates attended the event composed of science and mathematics experts, professors, specialists, and educators from the 10 Ministries of Education of SEAMEO Member Countries; selected universities and research institute in Japan (Chiba University, Shizuoka University and National Institute for Educational Policy Research - Ministry of Education, Culture, Sports, Science and Technology, NIER-MEXT); Malaysian universities (Sultan Idris Education University, Universiti Sains Malaysia), Institut Pendidikan Guru (IPG) Kampus Pulau Pinang, Kampus Tuanku Bainun, and Kampus Ipoh), national science centres (Institute for the Promotion of Teaching Science and Technology in Thailand, University of the Philippines - National Institute for Science and Mathematics Education Development), SEAMEO sister centres (SEAMEO QITEP Science, and QITEP in Mathematics), RECSAM and SEAMEO

Secretariat. The agreed and final content strands of the SEA-BES CCRLS in Science and Mathematics are as follows: (i) CCRLS in Science (Strand 1: Scientific Inquiry, Strand 2: Life and the Living World, Strand 3: Material World, Strand 4: Energy and Change, Strand 5: Earth and Space and Strand 6: Science, Technology, Engineering, and Mathematics); (ii) CCRLS in Mathematics (Key Stage 1: Numbers & Operations, Quantity & Measurement, Shapes, Figures & Solids and Pattern & Data Representations), (Key Stage 2: Extension of Numbers & Operations, Measurement & Relations, Plane Figures & Space Solids and Data Representations & Graphs) and (Key Stage 3: Numbers & Algebra, Space & Geometry, Relationship & Functions and Statistics & Probability). The future use and the Way Forward of the CCRLS in Science and Mathematics include: (i) As a reference document when developing, reviewing and/or reforming curricula across SEAMEO; (ii) Curricula will be developed from the standards; (iii) New structures will be developed to reflect philosophies, principles and practices; (iv) Learning experiences will be developed from the curricula; (v) Guide book or exemplars will be developed to support the use for classroom practitioner; (vi) Pilot development; (vii) Developing SEA-BES experts who can be consultants; (viii) Developing an assessment framework based on SEA-BES CCRLS; and (ix) Setting up a committee comprising of policy makers in the respective countries to ensure the aims and objectives of SEA-BES CCRLS are achieved. It is a dynamic document that can be further developed following the local context and perspectives.

(ii) *Visitors to RECSAM*

RECSAM also organised and served as host to many groups of visitors. During this fiscal year, various personages from different local and international agencies, institutions, government and non-government organisations, visited RECSAM. They were briefed on the Centre's programmes and activities, given a tour of RECSAM facilities, or oriented to a particular project of RECSAM. Through these visits, the Centre established and developed working relationships with other organisations and institutions for programmes and activities that are of mutual interest. The list below shows the organisations and its details that visited RECSAM in the fiscal year 2016/2017.

- Ms. Norhayan Ishak, Head of Department, Computer Science, Japan Malaysia Technical Institute, 15 July 2016
- Ms. Halimaton bt Ishak, Computer System Department, Japan Malaysia Technical Institute, 15 July 2016
- Hajah Asiah binti Husing, Deputy Director, Wilayah Persekutuan, Kuala Lumpur Education Department, 19 delegates, 22 July 2017
- Mr. Minoru Ikegami, Coordinator of JICA Malaysia, 26 July 2017
- Dr. Anantha Duraiappah, Director of UNESCO MGIEP, New Delhi, India, 10 August 2016
- Mr. Dominic Boudville, Consultant, Strategic Training & Development Consultant PLT, 22 August 2016
- Mr. Shanmugam, Consultant, Strategic Training & Development Consultant PLT, 22 August 2016
- Mr. Kiyoshi Itoi, Consul-General of Japan in Penang, 30 August 2016
- Mr. Megat Hafizal b. Megat Ramli, Assistant Secretary, Policy & International Relations Division, MOE, Malaysia, 7 September 2016
- Professor Hanafi Atan, Universiti Sains Malaysia, 7 September 2016

- Professor Rozhan M. Idrus, University Sains Islam Malaysia, 7 September 2016
- Ms. Siriwan Wangkoon, Prince of Songkla University, 19 September 2016
- Ms. Siwipa Pruitikaneer, Prince of Songkla University, 19 September 2016
- Mr. Majid b. Madon, Yang Di-Pertua, Majlis Guru Besar Gombak & 16 Delegates, 17 October 2016
- Mr. Muntasir bin Muaz, Assistant Director, Malaysia Teachers Training Institute, MOE, Malaysia, 19 October 2016
- Mr. Razali bin Ibrahim, Mathematics Lecturer, Malaysia Teachers Training Institute, Perlis, 9 November 2016
- Professor Dato' Dr Ab. Rahim Selamat, Ex-Centre Director of SEAMEO RECSAM (1997/1999), 23 November 2016
- Drs. Moh. Saleh, Principle, Brawijaya Smart School, Indonesia, 8 December 2016
- Dr. Sugeng Rianto, Director, Brawijaya Smart School, Indonesia, 8 December 2016
- Dr. Yeap Ban Har, Principal, Marshall Cavendish Institute, 23 January 2017
- Dr. Sarkar Arani, Nagoya University, Japan, 22 February 2017
- Professor Hiroyuki Kuno, Nagoya University, Japan, 22 February 2017
- Mr. Zakaria bin Hussin, Yang Di-Pertua, Majlis Guru Besar Kuala Kangsar, 7 March 2017
- Ms. Ekajit Kraivichien, Consul-General of Thailand in Penang, 28 April 2017
- Ms. Lee Li Men, Form 6 Teacher, SMJK Shing Chung, Sungai Siput, Perak, 34 delegates, 30 May 2017

(a) *Other Centres/ Existing Partners or Organizations/ New Contacts/ Individuals:*

- On 22 July 2016, RECSAM played host to twenty delegates from Kuala Lumpur Federal Territory Education Department. The delegation, led by Pn Hj Foziah Buang, Director of the Department was received by RECSAM's management team led by Dr. Hj. Mohd Johan Bin Zakaria, the Centre Director. After receiving a warm welcome from the Centre Director, Dr. Hj. Mohd Johan Bin Zakaria, an in-house "*RECSAM Forges Ahead*" video presentation was shown. This was then followed by a brief presentation of the Center's activities & programmes. The delegation was briefed on the Center's activities for F.Y. 2015/2016 and plans for action in the next coming fiscal year. The delegates also spent time with RECSAM's management team in a question & answer (Q&A) session, discussing ideas as well as best practices in areas including programme design & evaluation and RECSAM's role in training and research & development. The discussion session which lasted for more than one hour was ended with token presentations, a group photo session and a visit to Tanjung Gallery.
- On 19 September 2016, RECSAM hosted 21 (twenty one) delegates from Prince of Songkla University, Thailand. The delegation, led by Dr. Siriwan Wongkoon was received by RECSAM's management team led by Dr. Hj. Mohd Johan Bin Zakaria, the Centre Director. After receiving a warm welcome from the Centre Director, an in-house "*RECSAM Forges Ahead*" video presentation was shown. This was then followed by a welcome remark by the Centre Director. The delegation was briefed on the

Center's Research and Development (R&D) activities and plans for action in the next coming fiscal year. The delegates also spent time with RECSAM's management team in a question and answer (Q&A) session, discussing ideas as well as best practices in research and development. The discussion session which lasted for more than one hour was ended with token presentations, a group photo session and a simple luncheon at Mutiara Lounge.

- On 17 October 2016, RECSAM once again played host to sixteen (16) delegates from *Majlis Guru Besar Daerah Gombak* (MGBDG). The delegation was led by Mr. Majid Bin Madon, Yang Di-Pertua of MGBDG. These delegates were received by RECSAM's management team led by Dr. Hj. Mohd Johan Bin Zakaria, the Centre Director. After receiving a warm welcome from the Centre Director, an in-house "*RECSAM Forges Ahead*" video presentation was shown. This was then followed by a brief presentation of the Center's activities and programmes by the Information and Documentation Team. The delegation was briefed on the Center's activities for F.Y. 2015/2016 and plans for action in the next coming fiscal year. The delegates also spent time with RECSAM's management team in a question and answer (Q&A) session, discussing ideas as well as best practices in areas including programme design and evaluation and RECSAM's role in training and research & development. The discussion session which lasted for more than one hour was ended with token presentations, a group photo session and a simple luncheon.
- On 8 December 2016, RECSAM welcomed two delegates from Brawijaya Smart School University Brawijaya, Malang, Indonesia. Dr. Drs. Sugeng Rianto (Director) and Drs. Moh. Saleh (Principal) were received by RECSAM's management team led by Dr. Hj. Mohd Johan Bin Zakaria, the Centre Director. Both delegates were briefed on the Center's Training Programmes and Research and Development (R&D) activities and plans for action in the next coming fiscal year. The delegates also spent time with RECSAM's management team in a question & answer (Q&A) session, discussing the progress of SEA-BES (Southeast Asian - Basic Education Standards) project, which was initiated by RECSAM. Other key collaborative research and programmes were also discussed and agreed upon between both parties. These include the development and training programme for teachers/educators/professional and students that reflect 21st Century Learning and the revision of the current curriculum for teaching and learning of Science and Mathematics. As a result of the productive dialogues between both Centres, a collaborative agreement was produced. The session which lasted for more than two hours ended with token presentations and a group photo session.

(b) Centre/Network's Partners

During this fiscal year, the Centre also conducted collaborative programmes and activities with the support of the following institutions and agencies below:

- Academy of Science, France
- Academy of Science Malaysia
- Association for the Development of Education in Africa (ADEA)
- Association for Science Education, United Kingdom

- Association of Science and Mathematics Teachers of Penang
- Association of Science and Mathematics Coaches of the Philippines (ASMaC Philippines)
- Bahagian Pendidikan Menengah, Majlis Amanah Rakyat (MARA)
- Brawijaya Smart School, Universitas Brawijaya, Indonesia
- British Council, Kuala Lumpur
- Colombo Plan Secretariat
- CRICED (Center for Research on International Cooperation in Educational Development) University of Tsukuba, Japan
- Datdaruni School, Chachoengsao, Thailand
- Deakin University, Australia
- Iloilo Science & Technology University, Philippines and Department of Education (DepED), Philippines
- Institute of Teacher Education (IPG), Malaysia
- Institute for the Promotion of Teaching Science and Technology (IPST), Thailand
- Institut Kimia Malaysia (IKM)
- International Council of Associations for Science Education (ICASE)
- International GeoGebra Institute
- International Science Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC)
- Japan International Cooperation Agency (JICA)
- Kamphaeng Phet Rajabhat University, Thailand
- Kanchanaburi Rajabhat University, Thailand
- Malaysian Technical Cooperation Programme (MTCP)
- Mathematics Education Department, Sriwijaya University, Indonesia
- Ministry of Education, Malaysia
- Ministry of Foreign Affairs, Malaysia
- Ministry of Higher Education, Malaysia (Polytechnic Education Dept)
- Nakhon Si Thammarat Rajabhat University (NSTRU), Thailand
- Persatuan Melayu Pulau Pinang (PEMENANG)
- Persatuan Pendidikan Sains dan Matematik Pulau Pinang (ASMEP)
- Petrosains Malaysia
- Politeknik Sultanah Bahiyah
- Rajabhat Maha Sarakham University, Thailand
- Regional Centre of Expertise (RCE) on Education for Sustainable Development (ESD), Universiti Sains Malaysia
- SEAMEO Ministries of Education
- SEAMEO Sister Centres
- SEAMEO Secretariat, Thailand
- Sriwijaya University, Indonesia
- State Education Department, Penang

- Thepsatri Rajabhat University, Thailand
- UNESCO
- UNESCO IBE (International Bureau of Education)
- UNECSO MGEIP (Mahatma Gandhi Institute of Education for Peace and Sustainable Development)
- University of the Philippines National Institute for Science and Mathematics Education Development (UP NISMED), Philippines
- Universiti Kebangsaan Malaysia (UKM)
- Universiti Malaya (UM)
- Universiti Malaysia Sabah (UMS)
- Universiti Pendidikan Sultan Idris (UPSI), Malaysia
- Universiti Sains Malaysia (USM)
- Universiti Teknologi Malaysia (UTM)
- Universiti Utara Malaysia (UUM)
- University of Canterbury, New Zealand
- University of New South Wales, Australia
- University of the Philippines National Institute for Science and Mathematics Education Development (UP NISMED)
- University of South Australia
- University of Western Sydney, Australia
- Valaya Alongkorn Rajabhat University, Thailand

b) Increase Means for Stakeholders to Access SEAMEO Programmes

(i) Marketing of RECSAM's Programmes, Facilities and Services

The efforts to increase access to RECSAM's programmes, facilities and services to markets within and beyond the SEAMEO region were sustained. The marketing team continued to identify new market outlets for its programmes and International House, amidst a very competitive environment prevailing in the region.

Advertising the Centre's events and activities in the local media, distribution of promotional brochures and flyers to prospective clients, wider circulation of the Centre's publications such as the Journal of Science and Mathematics Education in Southeast Asia and RECSAM newsletters, hosting of regional and international seminars, congress and conferences as well as the display of banners and posters at international events outside RECSAM and official visits by officers and academicians had helped to publicise the Centre's programmes and facilities widely.

The Marketing Unit has introduced a new medium of communication between the Centre and potential customers. The public can now reach the Centre by using WhatsApp communication platform. RECSAM's official webpage and social networking site such as Facebook / Twitter / Instagram still play a major role in supplementing the Centre's other information materials dissemination. Contents were updated regularly and reflected current and upcoming programmes and activities for all users across the region and beyond.

RECSAM staff also went all out to support the Merdeka Day celebration on 31 August 2016 to enhance its visibility to stakeholders by participating in an annual Parade held at Bandar Perda, Seberang Perai, Penang. This time, our contingent comprised of 35 (thirty five) staff representing Deputy Directors, Specialists, Managers, Programme Officer, Technical Assistants and Administrative Assistants as well as General Assistants. Mr. Shamsul Azha Md Yusuf, Deputy Director (Administration) was the head of our contingent while Mr. Mohamad Hilal Zulkifli, Admin Officer from Administration Division, was the commander. The celebration was graced by His Excellency, Tuan Yang Terutama Tun Dato' Seri Utama (Dr.) Haji Abdul Rahman Bin Haji Abbas, the Governor of Penang and Y.B. Tuan Lim Guan Eng, Chief Minister of Penang.

The regular practice of RECSAM's managerial and academic staff meetings with leading educationists and experts at regional and international events had helped the Centre expand contacts and strengthen its international links. The quality of the Centre's programmes and support facilities had also impressed visitors to the Centre.

(ii) *Publications Produced by the Centre*

Several publications were produced at RECSAM to compliment the workshops and conferences as well as to continue running the biannual Journal. Brochures and flyers with promotional information and newsletters were distributed widely from time to time. The lists of publications are as follows:

- Journal of Science and Mathematics Education in Southeast Asia Volume 39 Number 1 and Volume 39 Number 2
- Online Journal "Learning Science and Mathematics" Issue Number 11, November 2016
- Assessment on Transversal Competencies Publication: A Case Study in Malaysia
- Revitalising Science Teaching and Learning Culture towards Sustainable Living
- Revitalising Mathematics Teaching and Learning Culture towards Sustainable Living
- Learning Science and Mathematics Together' (LeSMaT) in a Borderless World Using Technology
- Southeast Asia Regional Standards Mathematics Teachers (SEARS-MT) Project Report
- Malaysian Mathematics Teacher Quality Standards (MMTQS) Project Report
- Learning from TIMSS Together and Moving Forward
- Malaysian Student's Misconceptions in TIMSS Mathematics Items
- SEAMEO RECSAM Annual Report F.Y. 2015/2016
- SEAMEO RECSAM 47th Governing Board Meeting Proceedings
- Periodical newsletters Volume 47, Number 1,2,3
- Executive Summaries of Programmes and Activities in F.Y. 2015/2016 for Centre Directors' Meeting and High Officials' Meeting

(iii) *Centre's Presentation in Regional and International Conferences / Congress/ Seminars / Workshops / Professional Visits*

Professional development of our staff had been central and vital in the growth of RECSAM's services to educators of this region and beyond. In this fiscal year, to date, about twelve (12) human resource development programmes were provided to the academic staff members:

- Mr. Lee Shok Mee, Specialist (Training Programme) and Dr. Ng Khar Thoe, Specialist (Research & Development) attended a talk by Professor Nakamura, Nobel Prize Winner about "*The Endless Possibility in STEM (Science, Technology, Engineering & Mathematics)*" organised by Penang Science Cluster on 29 July 2016.
- Dr. Hj Mohd Johan Zakaria, Centre Director attended the "*APEC-Khon Kaen International Symposium 2016: Innovation of Mathematics Education through Lesson Study Challenges to Energy Efficiency on STEM and Cross-border Education*" and the "*9th International Conference on Education Research (ICER)*" organised by APEC (Asia-Pacific Economic Cooperation) and Khon Kaen University Thailand from 12 to 15 November 2016.
- Mr. Lee Shok Mee, Specialist from Training Programme Division travelled to Nairobi, Kenya to participate in the "*2016 Third Country Training Programme (TCTP)*" organised by Japan International Cooperation Agency (JICA), Kenya CEMASTEAM at CEMASTEAM (Centre for Mathematics, Science and Technology Education in Africa) from 12 to 23 September 2016.
- Dr. Nur Jahan Ahmad, Deputy Director of Research and Development Division participated in a training course on "*Science and Technology Education Leveraging Relevance (STELR) Science Technology Engineering Mathematics (STEM) Programme*" organised by SEAMEO QITEP in Science and Australian Academy of Science (ATSE) at SEAMEO QITEP Bandung, Indonesia from 31 October to 4 November 2016.
- Dr. Ng Khar Thoe, Specialist from Research and Development Division attended the "*EdTechXAsia 2016 Summit*" at Max Atria, Singapore Expo organised by EdTechXGlobal and SingEx Exhibition on 8 & 9 November 2016.
- Dr. Nur Jahan Ahmad, Deputy Director of Research and Development Division attended the "*BETT Asia Leadership Summit 2016*" organised by BETT Asia at Mandarin Oriental, Kuala Lumpur on 15 and 16 November 2016.
- Ms. Khor Sim Suan, Deputy Director of Training Programme Division attended a public lecture on "*Reimagining and Implementing Education for Sustainable Development (ESD) Practices for Education 2030: Learning and Beyond*" by Prof. Charles Hopkins organised by Universiti Sains Malaysia on 24 January 2017.
- Mr. Shamsul Azha bin Md Yusuf, Deputy Director of Administration represented the Centre Director participated in a workshop on "*Capacity Building for Communicating the SEAMEO Education Agenda*" organised by SEAMEO SEAMOLEC on 24 & 25 February 2017 at SEAMEO SEAMOLEC, Jakarta, Indonesia.
- Dr. Nur Jahan Ahmad, Deputy Director of Research & Development attended the "*2017 Science, Technology, Engineering, Math, Conference (STEMCON) on Advancing the future of Vietnam: Inspiring Students, Makers, Educators & Entrepreneurs to Innovate*" organised by the Higher Engineering Education

Alliance Program (HEEAP), Vietnam at Intercontinental Hanoi Westlake Hotel, Hanoi on 1 & 2 March 2017.

- Dr. Ng Khar Thoe, Specialist from Research & Development Division attended and presented a paper at the “*International Conference on Recent Development in Science, Technology, Humanities and Management (ICRDSTHM-17)*” organised by Society for Research Program at Hotel Royal, Kuala Lumpur on 28 & 29 April 2017.
- Dr. Fazzlijan Mohamed Adnan Khan, Specialist from Training Programme Division attended the “*First International Congress of Muslim in Education Technology (ICMET)*” organised by Universiti Sains Malaysia on 6 March 2017.
- Mr. Pedro Lucis Montecillo, Jr. Specialist from Training Programme Division attended the “*International Conference on Interdisciplinary Research in Higher Education (ICIRHE 2017)*” organised by International Association of scholarly Publishers Editors and Reviewers, Incorporated and was involved as a Research Paper Presenter, Panel of the Board of Judges, and Session Manager held at Sokha Angkor Resort Siem Reap, Cambodia from 28 to 30 June 2017.

2.3 KRA 3: SOLID RESOURCE BASE

a) Financial Viability

Financial operations had, as in the past fiscal year, been effectively controlled. The management gave sufficient emphasis towards income generating activities and controlling expenditure by maximizing the use of resources, professional as well as facilities.

Despite these efforts, the estimated total revenue for fiscal year 2016/2017 decreased by 12.00% from RM 2,219,796.44 in the previous fiscal year to a current standing of RM 1,943,502.98. The decrease was due to the absence of long duration courses such as customised courses, TCTP (Third Country Training Programme), MTCP (Malaysian Technical Cooperation Programme), reduced number of fee-paying participants for seminars and workshops and number of walk-in guests for the International House. The Centre also has offered discounted rates for International House guests in conjunction with the 50th Anniversary celebration.

The Centre’s Reserve Fund as of 30 June 2017 decreased to RM 10,313,943.43 as compared to RM 10,878,964.12 in the last fiscal year. This was primarily due to the reduced in amount of principal invested into fixed deposit.

There was a decrease in expenditure from the operating funds by 0.01% from RM 7,273,048.59 in the last fiscal year to RM 7,221,461.90. This was due to the cost saving measures taken by the Centre to reduce daily operating costs.

There was a decrease in expenditure from the Special Funds by 45.00%. This was primarily due to the reduced number of participants in the Regular Courses.

b) Management Efficiency

In addition to attending the SEAMEO Council Conference (SEAMEC), High Officials' Meeting (HOM), Centre Directors' Meeting (CDM), and Governing Board Meeting (GBM), in-house meetings were also conducted by the Centre to provide more opportunities for the Centre Director, academic and management staff towards managerial competence and to discuss the progress of on-going projects. Experiences and advanced knowledge gained from the meetings were shared through existing communication media within the Centre.

(i) In-House Meeting

At RECSAM, in-house meetings and workshops were regularly held to ensure all activities ran smoothly and efficiently. The primary meetings, all chaired by the Centre Director, were those that included the academic staff in their pursuit of executing all programmes for our clients, while the management meetings comprised all Deputy Directors and Executives. The Personnel Advisory Committee Meetings are conducted once in two months to discuss service and other matters relating to staff. Other meetings, of equal importance, were held within a period of time to facilitate the organising of conferences/ congress, for example, CoSMEd and SSYS organising and working committee meetings.

- A management retreat for the management and academic team members of RECSAM was held from 13 to 15 December 2016 at Heritage Hotel, Cameron Highlands, Pahang with the objective of bridging thoughts within the Centre to consciously and collectively recommend the way forward for the Centre's upcoming plan. The Meeting was chaired by Dr. Hj. Mohd Johan Bin Zakaria, Centre Director. Respective heads from each division (Administration, Training Programme and Research and Development) presented their 2017 annual plans which had been determined based on the Centre's strategic goals and key results areas (KRAs). Each division was required to set individual key performance indicators (KPIs) based on its job scope and responsibilities in line with the Centre's strategic goals. This was followed by other issues & concerns and calendar of events for 2017. With this alignment, the staff will have a clearer vision of the Centre's direction and what is expected of them.

(ii) 47th Governing Board Meeting (GBM) 2016

SEAMEO RECSAM Governing Board members along with representatives of SEAMEO member countries and the SEAMEO Secretariat convened the 47th Governing Board Meeting (GBM) at SEAMEO RECSAM, Penang, Malaysia from 20 to 22 September 2016. The Centre Director and RECSAM's management team also attended the meeting. Observers from the Policy and International Relations Division, Ministry of Education of Malaysia were also present. The Centre tabled a total of eleven (11) working papers and eight (8) information papers for the deliberation of the board members. As the highest policymaking body of RECSAM, this meeting tackled the Centre's strategies and directions in boosting the region's science and mathematics education development through RECSAM's core training programmes as well as research and development (R&D) activities. Among other key working papers submitted for considerations were: Proposed New SEAMEO RECSAM Remuneration System; (ii) Proposed Revision of the Quantum of Housing Loan for the Interest Subsidy; (iii) Amendments in RECSAM Staff Rules & Regulations 1995 (Revised September 2012) and (iv) Proposed New RECSAM SEASO (SEAMEO Science Olympiad) to

name a few. After lengthy deliberations, the working papers were adopted with recommendations that RECSAM continue to keep its programmes flexible and relevant to changing times and devise ways to increase the impact of its programmes and activities in the region. Other information papers reported the updates of (i) RECSAM Total Quality Management System; (ii) Report on the 10th Regional Congress on Search for SEAMEO Young Scientist (SSYS) 2016; (iii) Report on the 6th International Conference on Science and Mathematics Education; (iv) Report on SEAMEO Basic Education Standards (SEA-BES): Common Core Regional Learning Standards (CCRLS) in Science and Mathematics; (v) Report on SEAMEO Learning Science and Mathematics Together (LeSMaT) and (vi) RECSAM 50th Anniversary Celebration Plan to name a few.

(iii) Centre Directors' Meeting (CDM) 2016

The annual meeting of SEAMEO Regional Centre Directors was held at S31 Sukhumvit Hotel, Bangkok, Thailand from 27 to 29 July 2016. This year, the Meeting was attended by more than 80 participants comprising the Centre Directors, Deputy Directors, key officials of SEAMEO Centres/Network, representatives from SEAMEO Associate and Affiliate Members as well as the invited presenters and observers. The three-day meeting which was chaired by the Director of SEAMEO Secretariat, Dr. Gatot H. Priowirjanto also tackled proposals for new projects and collaborative activities. Representing RECSAM were Mr. Shamsul Azha B. Md. Yusuf, Deputy Director (Administration) and Dr. Nur Jahan Ahmad, Deputy Director (Research & Development). The Centre presented 2 (two) research reports on "*SEA-BES Common Core Regional Learning Standards*" and "*SEAMEO LeSMaT (Learning Science and Mathematics Together in the Borderless World)*" during the 3-day meeting held in Bangkok.

(iv) High Officials' Meeting (HOM) 2016

The 39th SEAMEO High Officials Meeting (HOM) was convened at Amari Watergate Hotel, Bangkok, Thailand from 15 to 17 November 2016. This year's meeting saw a participation of more than a hundred and twenty high officials and representatives from various Ministries of Education of SEAMEO member states, including Timor-Leste, representatives from SEAMEO associate members and affiliate members, and observers from partner organisations of SEAMEO with the purpose to discuss the direction of educational, scientific and cultural development in Southeast Asian nations. His Excellency General Dapong Ratanasuwan, Minister of Education of Thailand presided over the opening ceremony on 15 November 2016 and addressed over a hundred education officials and representatives from 17 countries and 28 international organisations and specialist institutions. Mr. Shamsul Azha B. Md. Yusuf, RECSAM's Deputy Director of Administration representing the Centre Director participated in the meeting and presented the (i) *SEAMEO Basic Education Standards (SEA-BES)* and (ii) *SEAMEO Learning Science and Mathematics Together (LeSMAT)* reports during the meeting.

(v) *Research Meeting in Japan on SEAMEO-Basic Education Project: Development of Common Core Regional Learning Standards in Science*

SEAMEO RECSAM in collaboration with Toho University, Japan and with financial assistance under the Science and Mathematics Curriculum Development between ASEAN and Japan Project from CRICED (Center for Research on International Cooperation in Educational Development), University of Tsukuba, Japan organised the Research Meeting on SEAMEO-Basic Education Project: Development of Common Core Regional Learning Standards in Science in Tokyo, Japan from 13 to 17 June 2016. The meeting was aimed to discuss the working paper on SEA-BES Common Core Regional Learning Standards (CCLRS) in Science which is composed of the Executive Summary and the six strands of the Science Learning Standards with the Japanese science professors and researchers from various universities and institutions. It also served as a platform to gather views, perspectives and recommendations from experts to serve as inputs in the planned regional meeting and workshop with the SEAMEO science curriculum specialists in order to refine/improve the science standards. The three Japanese universities and research institute involved in the meeting were Toho University, Shizuoka University, and Chiba University as well as the NIER (National Institute for Educational Policy Research), MEXT (Ministry of Education, Culture, Sports, Science and Technology). Representing SEAMEO RECSAM in the meeting were Dr. Nur Jahan Ahmad, Deputy Director and Mr. Dominador Dizon Mangao, Specialist from the Research & Development Division. A number of significant suggestions and feedback were reached during the discussions and deliberations with the Japanese experts which include redefining the Science Framework – content, scientific thinking and processes, values and attitudes, and discussion on scientific inquiry and STEM Education. As a result of the productive meetings and knowledge sharing between SEAMEO RECSAM and these Japanese experts, a more coherent, robust and meaningful Science Learning Standards for Southeast Asia will be produced.

c) Human Resource Management

(i) *Staffing*

Staffing strength stood at 84 (eighty four) as of 30 June 2017. There was eight (8) staff that left the Centre during this fiscal year. The departure of staff included one (1) Centre Director, one (1) Senior Specialist, five (5) Specialists, and one (1) Technical Assistant.

Dr. Hj. Mohd. Johan Bin Zakaria, Centre Director retired from his service on 28 April 2017. Ms. Teh Kim Hong, Senior Specialist at Training Programme Division retired from her service on 30 December 2016.

Both Mr. Dominador Dizon Mangao, and Dr. Thien Lei Mee Specialists from Research and Development Division, left the Centre on 27 August 2016 and 7 December 2016 respectively. Dr. Hj. Mohd. Sazali Bin Hj. Khalid, Specialist based at Research and Development Division ended his contract on 17 November 2016.

Mr. Hideo Nakano, Specialist from Training Programme Division, completed his contract and left on 31 December 2016. Mr. Julito C. Aligaen, Specialist from Research & Development Division, left the Centre on 30 May 2017.

Ms. Leong Yik Chin, Technical Assistant (Creative Design and Graphics) left her position on 1 November 2016 after serving the Centre on monthly contract basis upon her retirement in June 2016.

In its bid to streamline work procedures and enhance the specialization as well as replace the vacated posts, RECSAM employed four (4) new Specialists, one (1) Technical Assistant, one (1) Administrative Assistant and one (1) General Assistant.

Mr. Dominador Dizon Mangao, former Specialist at Research & Development rejoined RECSAM on 9 January 2017. Dr. Miranda Yeoh Poh Khoon, Specialist based at Research & Development Division started her contract with RECSAM on 1 February 2017. Ms. Teh Kim Hong, who retired from RECSAM as a Senior Specialist, joined RECSAM as a Specialist based at Training Programme Division on 1 January 2017. Dr. Warabhorn Preechaporn, former Specialist based at Training Programme Division returned to RECSAM on 24 March 2017.

Mr. Muhammad Nadzrul Syafiq bin Zulkefli joined RECSAM as a Technical Assistant (Creative Design and Graphics) based at Publication Unit since 1 August 2016. Mr. Hasrisaufee Bin Mohd Hassan joined the rank as an Administrative Assistant based at International House on 1 January 2017 and Mr. Aznan Bin Sudin joined as a General Assistant (Gardening) since 1 September 2016.

Table 1: Staff Strength for fiscal year 2016/2017 (ending 30 June 2017)

Category	Non-Malaysian	Malaysian
Director		0
Deputy Director		3
Senior Specialist		0
Specialist	4	5
Manager		6
Programme Officer		3
Research Officer		1
Officer / Technical Officer		8
Technical Assistant		10
Administrative Assistant		15
General Assistant		29
<i>Sub-Total</i>	<i>4</i>	<i>81</i>
Total		84

(ii) *Staff Welfare*

Financial assistance had been a mainstay in RECSAM's role of being a caring organisation towards the well-being of its staff members. Staff members enjoyed the continuous support in terms of medical insurance, welfare loan, housing loan interest subsidy, vehicle loan interest subsidy, computer loan and gratuity payment upon retirement.

Type of Welfare Assistance	Number of Staff
Welfare Loan	31 staff
Housing Loan Interest Subsidy	-
Vehicle Loan Interest Subsidy	-
Computer Loan	3 staff
Gratuity Payment Upon Retirement	1 staff

(iii) *Social Activities*

(a) *Family Day*

- On 8 and 9 October 2016, 170 staff and family members of RECSAM gathered for a two-day of fun amidst good food, entertaining activities and lucky draws! This year's family day held at Seagull Beach Village Resort, Pangkor Island was a fitting finale to a year of hard work, and had the staff looking forward to the New Year with renewed vigour and enthusiasm. This year's family day downpour did nothing to dampen the high spirits of the crowd! Organised by the RECSAM's Family Day Committee members, it began with a journey trip from the campus at 7 am before reaching the Lumut Jetty, Perak at noon. All staff and their family members then took a joyful ferry ride to reach the Pangkor Island where they were taken by vans to reach the resort. They were served lunch in the afternoon at the resort and took part later in games in the evening at the seaside. The Centre Director, Dr. Hj. Mohd Johan bin Zakaria welcomed the staff and their family members in his opening speech during dinner. Prizes for games were given away immediately followed by lucky draws where all staff were given the chance of getting the lucky draw prizes stored for them at the Centre. Staff and their families continued to enjoy the event the next day when they took part in snorkeling and island hopping in the morning. They were again served lunch in the afternoon and were treated with a round island tour before departing for home in the evening. It was a fun day for all! Overall, the staff enjoyed the two-day event and looked forward to a better 2017!

(b) *Festive Celebrations at RECSAM*

At RECSAM, we take great care to promote a sense of belonging and harmony among our staff through social gatherings and festive celebrations.

- To further enhance the spirit of Hari Raya, RECSAM held its festive gathering with all staff on 22 July 2016. All RECSAM staff attended the gathering which commenced from 4.00pm - 5.30pm with lively "Raya" songs. It also created an opportunity for the foreign staff to understand Malaysian culture of "Unity in Diversity" of races and religions in Malaysia a little better. Overall, it fulfilled the objective to promote a healthy and harmonious working relationship and culture at RECSAM. Everyone had a delightful feast and it was a great festive gathering to be remembered!
- Deepavali, also known as the "*Festival of Lights*", is celebrated by the Hindus every year. It is a time to spread the light of love and hope, regardless of race, language or creed. In upholding the Centre's spirit of Muhibbah (solidarity), the festival was celebrated on 4 November 2016 with sparkling joy. The celebration saw RECSAM staff from various races having a good time and savouring a delicious spread of hi-tea and festive delicacies. Staff were all smiles and laughter as they sampled the Deepavali spread as well as Indian delicacies

such as thosai, putu mayong, chapatti and vadai. Apart from sharing the festive joy within staff fraternity, the presence of staff from various races and religions reflects Malaysian spirit of Muhibbah.

- During the monthly assembly on 17 February 2017, RECSAM organised a Chinese New Year celebration gathering for all staff members. All Chinese colleagues were dressed in their best costumes and dished out oranges for wealth and good fortune. There were specially ordered cookies, cakes and snacks and the favourite was certainly the symbolic and mouth-watering “love letters” or “*kuih kapit*”. Everyone had a delightful feast and it was a great festive gathering to be remembered!

(c) *Appreciation Dinner*

- A yearly appreciation dinner gathering was held on 13 January 2017 for all RECSAM staff in appreciation of another successful year and to celebrate the holiday season. RECSAM’s Centre Director, Dr. Hj Mohd Johan bin Zakaria was present to grace the happy occasion along with the rest of the staff. The Centre Director set the ball rolling with a brief heart-warming message. Then the much awaited announcement for “RECSAM 50th Anniversary Logo Design Competition” and the “Malaysian Standard Examination” certificate presentations to the winner and staffs’ dependent brought the crowd to cheers. All staff gathered together to enjoy a sumptuous and relaxing Christmas celebration. RECSAM staff were invited to feast on the Christmas dinner offerings. There was a widespread of delectable food choices that included whole roast lamb, spaghetti, international selections and a great dessert island. It was simple yet a great day for all staff.

(d) *Science and Mathematics Camp*

- RECSAM recently conducted a Science and Mathematics Camp on 3 and 4 September 2016 for the staff’s children as part of its CSR (Corporate Social Responsibility) initiatives. The purpose of this camp was to spark the interests of young children in the field of science, mathematics and technology and inspire them to subsequently pursue studies and careers in these fields. The camp showcased various science, mathematics and technology-related hands-on activities and interactive classes for children up to 17 years of age. Children gained broad views and understanding of science and mathematics through activities such “Science out of the Box”, “Magnets attract you!”, “Fun and Interactive Electricity Activities” “Exploring Math through Games” and “Science and Mathematics Challenges with ICT”. Children participated in various interesting hands-on interactive activities conducted by RECSAM’s science and mathematics Specialists; Mr. Pedro Montecilio, Jr., Mr. Hideo Nakano, Mr. Yuji Otsuka led by Dr. Fazzlijan Mohamed Adnan Khan. The 2-day long camp exposed these young children to various hands-on experience like gaining knowledge on the effectiveness and flexibility of using low-cost educational materials in learning science, creating new design in learning science concept, understand the concept of electricity and magnetic in daily lives and using online ICT tools to understand mathematics and science. A total of 26 (twenty six) children registered for this camp.

(iv) *Staff Development Programmes*

The Centre is committed to the development of our human resources through emphasis on training programmes to upgrade their knowledge and skills. During this fiscal year, all staff at RECSAM were provided opportunities to further develop their knowledge and skills. This included both managerial and support staff.

- Ms. Tiana Mohamad, Programme Officer from Research and Development Division participated in the “*Quantitative and Qualitative Methods in Designing Development Evaluation Workshop*” organised by SEAMEO TROPMED Bangkok at Centara Watergate Hotel, Bangkok from 5 to 8 December 2016.
- A two-day workshop on “*RECSAM towards MS ISO 2001:2015 Total Quality Management*” for 34 (thirty four) participants was held on 21 and 22 November 2016. The 2-day workshop session was designed to make the participants understand effective process management. The workshop focused on the current ISO quality standard (2001:2015), which provides principles and guidelines for the Centre to follow in order to achieve a constant level of quality and to meet customer satisfaction. The 2-day workshop discussed many topics, such as: introduction to QMS (Quality Management System), fundamental and benefits of QMS, ISO 2001:2015 series standards, documentation, and roles & responsibilities. It also underpinned the new instruments to be used in the implementation of ISO 2001:2015 Quality Standards such as Quality manual, quality management procedure, overall business process, work instructions and business forms. During the first day of the workshop, the importance / fundamental steps towards ISO certification and designation of main and related processes towards ISO certification were covered, whereby participants were introduced to various quality management principles which are internationally recognized quality management principles. On the second day, workshop participants worked in groups to improve their documentations, records, formal file processes and establish a formal ISO file designations. The training also focused on developing the right quality culture among staff and staff engagement in the quality process.
- Mr. Baharulnizam Baharum, Ms. Farahdina Omar and Ms. Wong Lai Cheng, Managers from Administrative Division attended a training workshop on “*The New Era Manager*” by Dr. Steven Khaw organised by Dynamic Network System (M) Sdn. Bhd. on 10 & 11 April 2017 at Concorde Hotel, Kuala Lumpur.
- The Centre also conducted a two-day “*MS ISO 9001:2015 Total Quality Management Workshop Series 4*” on 1 and 2 March 2017. The workshop was attended by 31 (thirty one) staff comprising of management, professional and support staff. Mr. Shamsul Azha, Deputy Director of Administration, delivered his welcoming address and facilitated the 2-day workshop. The purpose of this workshop was to introduce the MS ISO 9001:2015 quality manual and to provide a practical approach in preparing the documentation needed to implement the quality management system in RECSAM. On the first day of the workshop, the development of main related processes and designated files and documentations were covered, whereby workshop participants were tasked to prepare work files and folders. On the second day, the participants worked in groups to enhance their work files and folders and developed their

divisional & unit client charters. The 2-day workshop ended with the conclusion on the presentation of each divisional and unit main related processes and client charters review presented by the facilitator.

- Workplace safety cannot be taken for granted and any issues must be taken into serious consideration. On 22 May 2017, thirty (30) RECSAM staff underwent a full-day in-house training on “*Occupational First Aid & AED (Automated External Defibrillator)*” outlined in Occupational Safety and Health Administration (OSHA). The training was conducted by Mr. Gan Hoo Kok, First Aid Trainer from Safetyware EHS Consultancy Sdn. Bhd. Staff were taught on basic life support skill such as CPR & Choking and other first aid related topics such as general principles of resuscitation, bleeding & wounds, burn & scald, fracture & spinal injuries for basic life support. They were also guided on how to use AED with the combination of CPR and practice Lay Rescuer Basic Life Support (CPR) and were briefed on the importance of Action at Emergencies – What to do, what not to and Casualty Assessment (DRSABCD) as well as proper dressings and bandages management. The workshop sessions consisted of theory presentation, practical session and life-like simulation (casualty make-up) to equip them not only knowledge, but also the skill to handle various emergencies. All staff enjoyed the training as they learnt more about common medical emergencies management and the topics discussed can help them in their day-to-day work.

d) Facilities

(i) Infrastructure, Assets and Equipment

The infrastructure and support facilities were always in constant need of change or improvements. Towards the end of this fiscal year 2016/2017, a number of improvements and ICT equipment purchases were made. Summary of the projects are as follows:

- Purchase of 7 (seven) sets of roller blinds for Vietnam Room
- Purchase of 93 (ninety three) units of cotton pillow for RECSAM International House
- Purchase of 2 (two) units of cabinets for Science Lab
- Purchase of 1 (one) unit of Fargo ID Card Printer for RECSAM use
- Purchase of 1 (one) set of Microsoft Licensing for RECSAM PCs
- Purchase of 1 (one) set of Kapersky Anti-virus for RECSAM PCs
- Purchase of 1 (one) unit of Fortigate License (Firewall) for ICT Server Room
- Purchase of 2 (two) units of HP Notebook Pro for R&D Division and ICT Unit
- Installation of loop carpet for Vietnam Room
- Installation of roller blinds at RECSAM Hall
- Repair and replacement works for 2 units of lift at RECSAM Apartment
- Installation of pressure switch at RECSAM Apartment
- Renovation and painting work at Vietnam Room
- Renovation work and ceiling repainting work at RECSAM Cafeteria
- Renovation, repainting and waterproofing work at RECSAM *Surau*
- Renovation, waterproofing and finishing works for floor leakage for 11 (eleven) rooms at RECSAM International House

- Replacement of new tiles and pipes for washrooms at administration building
- Renovation and painting works for washrooms at administration building
- Installation of pump shaft seal, capacitor, bearing, press control at RECSAM International House
- Installation of 2 (two) units of non-return valve pumps at RECSAM International House
- Repair work for electrical calibration testing
- Repair work for broken pipe at RECSAM Tea Garden
- Repair and painting works for leaking pipes for 5 (five) rooms at RECSAM International House
- Repair work for broken pipes for RECSAM Administration building
- Repair 12 (twelve) units of old study tables at Vietnam Room
- Fabrication and construction of new roof at RECSAM Cafeteria
- Fixing of 6 (six) units of doors frame at RECSAM International House