



2ND

Asia Marine Educators Association

CONFERENCE



WITH THEME

**"COORDINATION, COLLABORATION, COOPERATION (3C's)
TOWARDS A STRONG MARINE EDUCATION"**

SEPTEMBER 6-8, 2017

**ORGANIZED BY AMEA IN 3C'S WITH THE
MARITIME ACADEMY OF ASIA AND THE PACIFIC**



KAMAYA POINT, MARIVELES BATAAN

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Republic of the Philippines
OFFICE OF THE PRESIDENT
COMMISSION ON HIGHER EDUCATION



MEMORANDUM FROM THE CHAIRPERSON

FOR : ALL CHED CENTRAL AND REGIONAL OFFICE DIRECTORS
ALL PRESIDENTS/ HEADS OF PUBLIC AND PRIVATE HIGHER
EDUCATION INSTITUTIONS (HEIs)

SUBJECT : PARTICIPATION IN THE 2ND INTERNATIONAL CONFERENCE WITH
THE THEME, "COORDINATION, COLLABORATION, COOPERATION
(3CS) TOWARDS A STRONG MARINE EDUCATION", ORGANIZED BY
THE MARITIME ACADEMY OF ASIA AND THE PACIFIC (MAAP),
IN COLLABORATION WITH THE ASIA MARINE EDUCATORS
ASSOCIATION (AMEA) TO BE HELD ON SEPTEMBER 6-8, 2017,
IN MARIVELES, BATAAN, PHILIPPINES

DATE : July 27, 2017

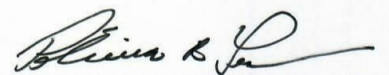
In accordance with the pertinent provisions of Republic Act (R.A.) 7722, otherwise known as the "Higher Education Act of 1994", this Office hereby endorses the above undertaking organized by the Maritime Academy of Asia and the Pacific (MAAP) in collaboration with the Asia Marine Educators Association (AMEA) for the support and participation of all concerned.

This activity is open to all interested participants from higher education institutions (HEIs).

Participation of officials, employees and students from private higher education institutions (HEIs) shall be VOLUNTARY. Officials and employees of State and Local Universities and Colleges (SUCs and LUCs) who will participate in this activity should obtain prior approval from the President/Head of their respective institutions and are hereby reminded to observe proper use of government funds in accordance with the Department of Budget and Management (DBM) National Budget Circular No. 486 and Administrative Order No. 103.

For registration and further information, you may coordinate with the organizers through Dr. Angelica M. Baylon at telephone numbers (02) 784-9200, (047) 237-3355 local 4031, through mobile number 0920-966-9226 or via email at ambaylon@gmail.com.

Wide dissemination of this Memorandum is desired.


PATRICIA B. LICUANAN, Ph.D.

07-27-094_MAAP and AMEA _2017

Greetings from President, MAAP and the AMEA Conference Chair

The Chairman of AMEA **Dr. Tsuyoshi Sasaki** and distinguished members of the AMEA Board, the eminent members of NMEA and other



organizations, participants, ladies and gentlemen, with much delight and enthusiasm, let me express my cordial welcome to the distinguished delegates and guests of the Asia Marine Educators Association (AMEA). It is always an honour and privilege to host and be a part of an Asian gathering like AMEA, anticipated to be exceptionally enriching and fulfilling with the participation of Asian delegates and eminent speakers from the USA. The AMEA theme "*Coordination, Collaboration, Cooperation (3Cs) Towards a Strong Marine Education*" is indeed focused on the strategic direction of sustaining the much desired excellence in marine education with AMEA taking a lead role thru *coordination, cooperation and collaboration (3Cs)*. Everyone is convinced of what researches can do, in knowing what has been known, in establishing frontiers and in creating twists and turns for solutions, improvements, and developments, thus empowering marine providers towards sustainable development. AMEA as an advocate of marine excellence is taking a center stage in the enhancement of research and development of scientific and technical cooperation, exchange of ideas and sharing of best practices among marine and ocean institutions all over the Asian region. It has richly anchored in the Philosophy that excellent marine education is research-based and the same must be shared and disseminated. Significantly, AMEA is serving as a driving force thru annual conferences with *provision of scholarships*.

Speaking of *scholarships or sponsorships*, it is worth citing that MAAP has been invited twice with sponsorships from AMEA. First was during its first kick off meeting in 2015 hosted by Tokyo University of Marine Science and Technology (TUMST) Japan. The second time was during the 1st AMEA International Conference hosted by the National Taiwan Ocean University (NTOU) in Keelung Taiwan in 2016 through the initiative of **NTOU Dr. Chia-Dai (Ray) Yen**.

Indeed, AMEA is annually making a difference as it provides its member institutions from Japan, Taiwan, Philippines, Korea, Indonesia, India, China and Bangladesh, the opportunities to present significant researches and best practices that contribute to the development of marine education. Certainly, benchmarking is the trend of globalization and to be competitive, institutions should share and benchmark on good practices for the development of marine education.

We at MAAP, IMAREST Ph Branch and NI Ph Branch, would like to express our sincerest appreciation and support to AMEA and its member institutions. We are also glad that our consistent partner – PAEPI Global being led by the University of Pasig in partnership with University of Makati are co-hosting an extended AMEA activity seminar with the theme "*Ocean Literacy for the Protection of the Environment*" that would also promote ocean literacy and introduce AMEA to other higher educational institutions who are co-members of PAEPI. We look forward to continuously and pro-actively support AMEA for its membership expansion and in upholding the quality of marine education.

Confidently at the end of this event, everyone will be returning to their respective institutions fully recharged with commitment and renewed passion. It is hoped that inspired with the theme, we will all align our respective programs and practices with strategic directions towards quality marine education thru regional 3Cs among marine and fisheries industries. Once again, Welcome and Mabuhay (Long Live)!


VADM EDUARDO MA R SANTOS AFP (RET)

President, MAAP and the AMEA Conference Chair; President, IMAREST Philippine Branch; President, NI Philippine Branch

Greetings from AMEA President



On behalf of Asia Marine Educators Association, I'd like to extend my appreciation for the great efforts of committee members of International AMEA Conference in Philippine, especially President of Maritime Academy of Asia and the Pacific (MAAP), and the AMEA Conference Chair, VAdm Eduardo Ma R Santos AFP (Ret), and Professor of MAAP, PAEPI Global Chairman Emeritus, Dr. Angelica M Baylon, and it is extremely pleasing that this conference will be held in Bataan, Philippines.

AMEA strongly collaborates with marine educators in the world including National Marine Educators Association, Europe Marine Science Educators Association, International Marine Educators Network, and AMEA is an association formed on the basis of a common philosophy of enhancing individual's autonomy and endogenous through marine education and each individual's strong trust relationship.

The theme of this conference is "Coordination, Collaboration, Cooperation (3Cs)" towards a Strong Maritime Education. I hope that all participants will dialogue equally, deepen the discussion, build trusting relationships, and spread fruitful results throughout Asia and throughout the world due to creativity and reciprocity.

I would like to express my gratitude to all the marine educators from all over the world who got involved and welcome wishes for further happiness and prosperity.

A handwritten signature in black ink, reading '佐々木 剛' (Sasaki Tsuyoshi), written over a light blue horizontal line.

Tsuyoshi Sasaki, Ph. D

Chair, Asia Marine Educators association,

Chair, Japan Aquatic Marine Environmental Education

Associate Professor, Tokyo University of Marine Science and Technology

Greetings from DOST Regional Director



Julius Caesar V. Sicat, Ph.D.
DOST Regional Director



My warmest greeting to the Asia Marine Educators Association (AMEA) chaired by Prof. Tsuyoshi Sasaki of Tokyo University of Marine Science and Technology (TUMST).

It is inspiring to note that the Maritime Academy of Asia and the Pacific (MAAP) is once again hosting an international conference in our region and this provides an opportunity for all stakeholders to come together, to interact, share ideas and participate in resolving current issues and concerns of the marine industry. AMEA plays a very important role in sharing their best practices and push for coordination, collaboration and cooperation (3Cs) which is the theme of the conference.

It is a pleasure to note MAAP's strong international linkages. Just last year, they hosted the 13th International Youth Peace Ambassador cum lectures of Visiting Professors. As their guest of honor and speaker, I have been requested by the American University of Sovereign Nations (AUSN) President to stand beside him when he awarded a plaque to **MAAP President VAdm Eduardo MA R Santos, AFP (Ret)** as Visiting Professor for Ocean and Maritime Affairs. Pres. Santos delivered a lecture on ocean as a Medium of Peace and Understanding, which was warmly applauded by the attendees representing 50 nations both on site and via skype.

It is thus commendable that MAAP is hosting this AMEA 2 International Conference for the marine education this year which DOST truly supports as this exercise, facilitates the exchange of ideas among the marine students and educators to advance education affecting the industry. And I believe we must emphasize global competitiveness and protection of the environment.

DOST also would like to extend its appreciation to MAAP for its support in various DOST activities be it in the province or in the region. Last June 24-27, 2016 the DOST regional office spearheaded the Regional Science and Technology Week celebration and we have noted the active participation of 14 MAAP faculty, staff and students. They also had 5 scientific entries for the various invention contest categories. I encourage everyone to continuously submit research project proposals to the DOST for possible financial or technical assistance.

With this, we wish that the AMEA with its officers, members and committed partners like the PAEPI-Global, the Maritime Academy of Asia and the Pacific (MAAP), the University of Makati (UM), the University of Pasig (PLP) and all its supporters and friends shall continue to progress with all your good endeavours.

Rest assured that the DOST will always be with you in pursuing world class, relevant and region-based science, technology and innovation initiatives. Mabuhay!

Julius Caesar V. Sicat, PhD

DOST Region III Director

Greetings from PAEPI Chair Emeritus



**Prof. ANGELICA M. BAYLON, MBGPH, MSBM,
PhD, MBA, MS**

*PAEPI Chair Emeritus, AMEA Conference Coordinator in
the Philippines*

MAAP External Relations Director



On behalf of the PAEPI officers, Board of Directors, 86 members institutions and 300 individual active members, superbly led by its incumbent **PAEPI President Dr. Atty April Amihan Alcazar** who is also the University President of the Pamantasan ng Lungsod ng Maynila (PLP) or University of Pasig, PAEPI, we have the honour to extend our heartfelt appreciation to the Board of Directors of the Asia Marine Educators Association (AMEA) chaired by **Dr. Tsuyoshi Sasaki of Tokyo University of Marine Science and Technology (TUMST) Japan** with AMEA Secretariat chaired by **Dr. Chia-Dai (Ray) Yen of National Taiwan Ocean University (NTOU), Taiwan** for unanimously selected Philippines with MAAP as the venue for the 2nd International AMEA Conference with its theme “*Coordination, Collaboration, Cooperation (3Cs) Towards a Strong Marine Education.*” I am also happy with the support of eminent speakers from the US and Asian Countries (Japan, Taiwan, China, Bangladesh, Indonesia, and India) for taking time out from their work to join AMEA in the Philippines, all in the spirit of 3 Cs.

Hosted by the Maritime Academy of Asia and the Pacific (MAAP), under the able leadership of our dear President **VAdm Eduardo Ma R Santos, AFP (Ret)** as AMEA Conference chair, with yours truly as conference coordinator in the Philippines, I am more than confident, that the entire hosting of MAAP shall truly be another wonderful event to the complete satisfaction of our friends and guests.

Aware that the members and participants of the AMEA are mostly first time visitors in the Philippines and in support to MAAP hosting of AMEA, we in PAEPI Global, inspired with the conference theme and actual application of 3 Cs, agreed to host an extended AMEA seminar–workshop with theme “*Ocean Literacy for the Protection of Environment*” with the University of Makati as host, cum tour of Tagaytay hosted by the University of Pasig. PAEPI is a recognized professional association whose nationwide membership is consists of responsible officials and extension implementers from varied CHED accredited higher educational institutions and other organizations nationwide, as we engage on the conduct of professional development activities and projects for the enhancement of competencies of its members in coordination, collaboration and cooperation with our global counterparts like AMEA.

From the **arrival on Sept 5 till departure on Sept 11, 2017**, the AMEA event in the Philippines is a 5-day event:

Day 1- 4 Parts namely: MAAP welcome & Tour of MAAP Facilities; Opening ceremonies with eminent GOH & Speakers; Plenary Presentations with workshop and AMEA Board Meeting c/o MAAP

Day 2- 6 Parallel Presentation with 18 presenters c/o MAAP

Day 3- Educational and Cultural Tour in the Province of Bataan c/o Provincial Governor

Day 4- PAEPI –Seminar with cultural dinner presentations c/o University of Makati

Day 5 Educational and Cultural Tour in Tagaytay c/o University of Pasig (PLP)

It is hoped that the MAAP and PAEPI- Global hosting of AMEA in the Philippines will serve as a good opportunity for other institutions to know more about AMEA and its advocacy, and may the strategic directions of 3CS among all concerned marine stakeholders in the academe and various organizations be sealed with the sharing of organizational best practices towards a strong Marine Education! Thank you!

Greetings from Bataan Governor

BATAAN

CRADLE OF HEROES
ITAGUYOD ANG BATAAN
TUNGO SA MAUNLAD NA PAMAYANAN



My warmest greetings and congratulations to the officers and members of the Asian Marine Educators Association (AMEA), the Maritime Academy of Asia and the Pacific (MAAP), the Philippine Association of Extension Program Implementers (PAEPI Global), the University of Makati (UM) and the Pamantasan ng Lungsod ng Pasig (PLP) as you conduct the 2nd International AMEA Conference at MAAP from September 6 to 8, 2018 and the AMEA-PAEPI seminar workshop at the University of Makati on September 9 and 10, 2017.

Organizing this Conference with the theme “3Cs (coordination, collaboration and cooperation) towards a strong marine education” is truly a laudable effort that deserves everyone’s recognition and support.

Bataan, with its geographic coastal location, is rich in aquatic resources and very much suitable for fisheries, marine environment, eco-tourism and various marine activities and studies. This we firmly believe plays a vital role in the attainment of our vision that by the year 2020, our province will have the lowest poverty incidence resulting from quality growth attaining top-level human development index in the country.

Towards this end, the Provincial Government of Bataan is grateful to the Maritime Academy of Asia and the Pacific for hosting this event in our province as we support and acknowledge the relevance of 3Cs for a strong marine education. I enjoin the fisheries school, concerned agencies and other stakeholders in Bataan to actively participate in this worthwhile endeavor.

As I warmly welcome the organizers, delegates and other stakeholders to this conference, I wish that you all have a productive and enjoyable stay and experience the fullness of what Bataan has to offer.

To God always be the glory!


ALBERT S. GARCIA
Governor



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Greetings from Mariveles Mayor



Congratulations and my warmest greetings to the people behind the AsiaMarine Educators Associations (AMEA) and to the Maritime Academy of Asia and The Pacific (MAAP) for hosting the 2nd International AMEA Conference with the theme “3 Cs (Coordination,



collaboration and cooperation towards a Strong Marine Education.” The conference will certainly provide an opportunity for all researchers, educators and scholars to discuss and share their respective good practices on marine education, that may also bridge the gap and maximize the resources in bringing services to the people thru 3 Cs.

In a couple of hours drive away from Metro Manila, in the province of Bataan lies the beauty of Mariveles. It is a treasure surrounded by nature and made even better by time. The Mariveles is located in a cove at the southern tip of the Bataan Peninsula. It is 164 kilometres (102 mi) from Manila via the North Luzon Expressway, Jose Abad Santos Avenue and Roman Highway. According to the Philippine Statistics Authority, the municipality has a land area of 153.90 square kilometres (59.42 sq mi) [2] constituting 11.21% of the 1,372.98-square-kilometre- (530.11 sq mi) total area of Bataan. In the 2015 census, Mariveles had a population of 127,536. The population density was 830 inhabitants per square kilometre (2,100/sq mi).

The theme 3Cs also relates to the Mariveles vision, mission, goals and objectives (VMGOs) in educating its people in partnership with both private and other agencies. The Mariveles Municipality has been a strong partner of MAAP ever since its establishment in 1998 and we take pride in having the best maritime school in the Asia Pacific located in Mariveles, hence providing opportunities for our deserving students in Bataan to avail of the entrance examinations for MAAP scholarships

At the heart of MAAP's many noble objectives as an organization, and most notably for this conference, is its contribution for the attainment of Asian integration of a strong marine education thru 3CS. We laud AMEA continuing effort through its advocacy and sharing of researches and best practices. This is a journey that we applaud AMEA and MAAP and we look forward to having more opportunities to work with your organization in the future.

Thank you and best wishes for a successful and enjoyable Conference in Bataan!

Atty. ACE JELLO C. CONCEPCION
Municipal Mayor

Greetings from NRCP Division 1 Chair



I would like to extend my warm greetings to the participants of the **2nd AMEA International Conference** organized by the Maritime Academy of Asia and the Pacific (MAAP) in collaboration with the Asia Marine Educators Association (AMEA).

This year's theme, "*Coordination, Collaboration, Cooperation (3Cs) Towards a Strong Marine Education*" is timely and relevant given the developments in the world shipping industry, in the advanced applications of new maritime technologies, and in the stricter standards in maritime safety and pollution prevention. Eminent marine scientists, researchers and educators during the plenary sessions, will explicate these aforementioned issues. Moreover, the papers presentations in the parallel sessions will also focus on these issues.

Undoubtedly, the conference will serve as an important venue for exchange of ideas and discussion of research activities and educational innovations that will further the quality of marine education in the world. We hope that through this conference, policy statements or recommendations that will elucidate how to attain excellence in maritime education and training will be formulated.

To all the participants and guests, may all of you have fruitful and worthwhile experiences during this 3-day conference!

Congratulations!



Professor Maricar S. Prudente, PhD

Chair, Division 1-Educational, Governmental and International Policies
National Research Council of the Philippines

Greeting from NMEA President

I would like to extend my greetings to AMEA membership and participants from both the National Marine Educators Association (NMEA) in the US and from the Aquarium of the Pacific in Long Beach California. As an educator for more than 19 years at the Aquarium of the Pacific and as a member of NMEA for the same amount of time, I know the importance of professional organizations such as AMEA. I am happy that there is leadership all over the world now helping to engage people in better understanding our ocean planet.



From educating about marine biology, to climate change, sustainable fisheries, and conservation of marine endangered species there is so much that your work does to help make the world a better place.

On behalf of NMEA and the Aquarium, I wish you a productive and informative conference.

Dave Bader

dbader@lbaop.org

Director of Education at the Aquarium of the Pacific

President of the National Marine Educators Association

Greeting from EMSEA president



European Marine Science Educators Association (EMSEA) –



www.emsea.eu

EMSEA was founded in 2011 by three educators who were inspired by the work undertaken by members of the National Marine Educators Association (NMEA) in the United States and presented at a lively, fun conference in Boston.

EMSEA's goals are to:

- Stimulate dialogue between European and international marine educators and scientists;
- Provide training and teaching materials to support marine educators;
- Raise educators' awareness of ocean issues and the need for a sustainable future for our coasts, seas and oceans.

EMSEA has held an annual conference since the first was held in Plymouth in 2013 and has been instrumental in developing Ocean Literacy in Europe and Transatlantic Ocean Literacy initiatives.

AMEA has had a similar evolution and like AMEA EMSEA faces a number of challenges. The first being language. There are 27 different languages spoken in Europe with diverse cultures and traditions. The working language of EMSEA is English but in an effort to be inclusive we are in the process of establishing Regional Sea groups such as EMSEA MED who can work together to promote ocean literacy in their region. Funding is always an issue but with the dedication of a number of core EMSEA people we do what we can which includes actively seeking funding and developing a membership scheme. EMSEA and AMEA have a close connection even if we operate in different areas of our blue planet. Both Associations want to enhance ocean literacy and build a robust network of marine educators and stakeholders for future generations. The annual conference is a great opportunity to do this so I wish you all a great conference in the Philippines and hope we can continue to support each other in the coming years.

All the best

Fiona Crouch

EMSEA President

Greeting from IPMEN

Warm greetings from Australia to all AMEA 2017 delegates. As one of the people involved in creating the International Pacific Marine Educators Network (IPMEN) I am delighted to see AMEA growing so quickly to become such an important organization on the international marine education scene. While both organizations have similar aims, IPMEN had a much slower growth than AMEA and the story of IPMEN's origins is worth exploring.



The concept for a network of marine science educators around the Pacific was first proposed over an informal breakfast meeting at the National Marine Educators Association (NMEA) conference in Long Beach in the USA. That was in July 2000 and I was fortunate enough to have been present at that meeting. At that time there were no international marine education organizations and only two national marine education organizations – NMEA in the USA and MESA here in Australia. Although it took five years, a small group of MESA people worked with a similarly small group of NMEA folk to set-up the One Ocean Marine Forum (OOMF) as a two-day meeting of international delegates following the 2005 NMEA conference in Hawaii.

OOMF in Hawaii was a great success with the formation of IPMEN being one of the main outcomes of this meeting. Although IPMEN has no organizational or board structure it has developed over the years since 2005 with the main activity being an IPMEN conference every two years. The most recent IPMEN conference was in Indonesia in 2016 and plans are in place for the next IPMEN conference in Taiwan in 2018.

Although it has taken some time, IPMEN has grown into a successful informal network of marine educators whose shared vision is to nurture a fuller understanding of the ocean's value, leading to informed, responsible and creative decisions that conserve and restore the integrity of the ocean's ecosystems in the Pacific. The mission of IPMEN is to foster collaborative relationships that will create the resources, programs, training and leadership necessary to build ocean literacy at every level of society in the Pacific region.

I believe the mission of AMEA is similar to that of IPMEN and wish you all success in your endeavors to create resources, programs, training and the leadership necessary to build ocean literacy throughout Asia. This is a massively challenging task, especially in such a diverse region as Asia. Nevertheless, I believe the success of IPMEN and, more recently, the European Marine Science Educators Association (EMSEA) show a clear path forward. That path is based on collaborative effort and a willingness to share. In particular, I see this willingness to share as being a trait common to educators worldwide and encourage you all to share your time, experience and resources openly.

Harry Breidahl, Mornington, Australia, August 2017

2017 AMEA conference schedule

5 September 2017 (Tuesday) <i>Arrival of AMEA Delegates (Aloha Hotel, Manila, Philippines)</i>	
13:00-18:00	Registration open in Aloha hotel Manila lobby
15:00-17:00	AMEA Board Meeting (Aloha hotel) (CAFÉ ELISA) 3PM-5PM
18:30	AMEA BOD Dinner (SZE CHUAN HOUSE) 6PM-8PM
6 September 2017 (Wednesday) WELCOME & Opening Ceremonies	
07:30	AMEA delegates to proceed to MYC Manila
07:50	Registration at Manila Yacht Club (MYC)
08:00	Ferry boat ride to MAAP
08:00-09:30	Arrival at MAAP IMMAJ Campus
10:00-12:00	Side boys Honor at IMMAJ Campus Welcome drinks /snacks (MPH) Welcome and Briefing about MAAP - VAdm Prof. Eduardo Ma R Santos, AFP (Ret), MAAP President Photo Opportunities Brief Tour of MAAP facilities (State of the art – 2 groups -15 /group) AMEA 2 formation by MAAP cadets at MAAP grounds c/o 1/CI Santander, Dion Eric B, Fleet Operation Center Commander ➤ (Group photo with Flags as Background (11 countries) ➤ Group photo with AMEA 2 formation as background)
12:00 -13:00	Welcome Lunch at MAAP IMMAJ MPH
	MAAP Bus to transfer delegates to CAMS
13:00-14:00	Formal AMEA Opening Session at CAMS Auditorium Masters of Ceremonies: Ms. Ma Celeste A. Orbe <i>MAAP Research Coordinator</i> ➤ National Anthem ➤ Invocation Ms. Susan M. Murillo, MAAP AQMR ➤ Acknowledging DOST, Partners, Guests and AMEA Participants/ Statement of Conference Objectives/ Programme of Activities Dr Angelica M. Baylon, ERO Director, MAAP Conference Coordinator <i>and PAEPI Chair</i> ➤ Message of Support: Message & Introduction of MAAP officers involve in hosting VAdm Eduardo Ma R. Santos, AFP (Ret), <i>President, MAAP / Conference Chair, NI and Ph Branch President</i> ➤ Message from CHED Higher Education Regional Research Center (CHERRC) – Dr. Roberto C. Pagulayan, Director, CHERRC ➤ Message from NRCP Divison1 Educational Government and International Studies Dr. Maricar S. Prudente, NRCP DIv1 Chair Director

	➤ Message from AMEA President and acknowledging his BOD officers Dr. Tsuyoshi Sasaki (<i>TUMSAT, Japan</i>) ➤ Message from International Marine Education Association NMEA President, EMSEA President, CaNOE President (video) ➤ Introduction of GOH and Speaker by Provincial Director Rosalia Ona ➤ Keynote Speech from Regional DOST Director Hon Dr. Julius Caesar V. Sicat ➤ Awarding of Plaque and Tokens to DOST Regional Director- MAAP President assisted by ERO Director, AMEA President and DOST Provincial Director ➤ Photo Opportunities						
	Moderators: Dr Angelica M. Baylon (MAAP, Bataan) and Dr. Chia-Dai (Ray) Yen (NTOU Taiwan) and AMEA Secretariat						
14:10-14:40	Keynote speech 1: NRCP Chair Dr. Maricar S. Prudente (DLSU Manila), NRCP 2015 Lifetime Achievement Awardee <i>“21st Century Challenges in Marine Education and Research”</i>						
14:40-15:10	Keynote speech 2: AMEA President Dr. Tsuyoshi Sasaki (TUMST, Japan) <i>“Role of Asia Marine Educators Association (AMEA) towards Resilient and Sustainable Society”</i>						
15:10-15:40	Keynote Speech 3: Programme Specialist, IOC, UNESCO, Regional Bureau for Science and Culture in Europe Francesca Santoro						
15:40 - 15:50	Awarding of Plaques and Tokens to Keynote speakers - MAAP President assisted by ERO Director and AMEA Secretariat Photo Opportunities with Keynote Speakers						
1600-16:10	Snacks						
16:10-18:10	Plenary session: Asian Marine Education Policies and Practices Moderator: Emily King <table border="0"> <tr> <td>1. Japan: Tsuyoshi Sasaki</td> <td>2. Taiwan: Cheng-Chieh Chang</td> </tr> <tr> <td>3. China: Yong Ma</td> <td>4. Korea: Chun-Hee Shin</td> </tr> <tr> <td>5. Philippines: Roberto Pagulayan</td> <td>6. Bangladesh : Mohammad Uddin</td> </tr> </table>	1. Japan: Tsuyoshi Sasaki	2. Taiwan: Cheng-Chieh Chang	3. China: Yong Ma	4. Korea: Chun-Hee Shin	5. Philippines: Roberto Pagulayan	6. Bangladesh : Mohammad Uddin
1. Japan: Tsuyoshi Sasaki	2. Taiwan: Cheng-Chieh Chang						
3. China: Yong Ma	4. Korea: Chun-Hee Shin						
5. Philippines: Roberto Pagulayan	6. Bangladesh : Mohammad Uddin						
18:10-21:00	Welcome Dinner (CAMS Dining Area)						
21:00	Back to Room (Billeting)						

7 September 2017 (Thursday) Sessions		
07:30	Boarding at MAAP Bus at Billeting Area to CAMS Building	
07:40-08:30	Breakfast @ CAMS Dining Area	
08:30-10:00	<i>Scientific Workshop Session - Douglas Levin (Washington College, USA)</i>	
10:00	Morning Snacks @ CAMS MPH	
10:20-12:00	Session A (3 presentations, 30 minutes each) Moderator: <i>Tsuyoshi Sasaki</i>	
	Room A (Rm. A, 2 nd Floor)	1. Russell Steven (South Africa), Marine Sciences: An introduction of a Gr10-12 curriculum 2. Song, Wenhong (China). Ocean University of China's Exploration on Marine Education and Cooperation 3. Ronald J. Maliao (Philippines), Ecotourism in a small insular fishing village in the tropics- bane or boon?
	Session B (3 presentations, 30 minutes each) Moderator: <i>Cheng-Chieh Chang</i>	
	Room B (AVR, 3 rd Floor)	1. Yong Ma (China), Recent Development of Marine Education in Chinese Primary and Secondary Schools 2. Ronaldo Rearte (Philippines), Prototype Multi-Purpose Safety Grinder Attachment 3. Chen Li Shu (Taiwan), Marine technology and science museum in Taiwan.
12:00-13:00	Lunch @ CAMS Dining Area	
13:00-15:20	Session C (3 papers, 30 minutes each) Moderator: <i>Chia-Dai (Ray) Yen</i>	
	Room A	1. Mohammad Uddin (Bangladesh), Education and Ocean Literacy in Bangladesh 2. Chih, Cheng-Hsin & Chin-Kuo Wu (Taiwan), The Curriculum Development of Local Marine Education in Taiwan Counties 3. Dumapi, Mederic, Ramos Ferdinand, Domingo, Lee Martin (Philippines), Harnessing Excess Heat Energy from Ship's Engine by Using Seebeck Effect to Produce Electricity
	Session D (3 papers, 30 minutes each) Moderator: <i>Emily King</i>	
	Room B	1. Angelica Baylon (Philippines), Introducing MAAP, Its partners and the Integrated Coastal Management System: A MAAP Case Study of 3 Cs 2. Chandni Thakkar, Chin-kuo Wu & Cheng-chieh Chang (India/Taiwan), The Analysis of Coverage of Fundamental Ocean Literacy Concepts in Next Generation Science Standards 3. Xinhao Zhu (China), Practical Exploration about Marine Education of Primary School
15:20-15:40	Afternoon Snacks	
15:40-17:40	Session E (5 papers, 20 minutes each) Moderator: <i>Russell Steven</i>	
	Room A	1. Shahidul Islam Kazal (Bangladesh), 3C Between Local Communities and International Communities Towards a Strong Marine Education 2. Jonathan R. Salvador (Philippines), Development of a Hybrid fast Craft Passenger and Cargo Vessel Using Multi Engine and Alternative Energy Source from Ocean Waves

	3. <i>Nellyvette Claire B. De La Cruz (Philippines)</i>, Attraction, Retention and Attrition of Seafarers at Sea. 4. <i>Lugtu, Cedrix Marl Niño M. (Philippines)</i>, Utilization of Digital Technology in Strengthening Marine Education 5. <i>Jose M. Barlis Jr. & Josefin D. Fajardo III (Philippines)</i>, Motivation and Restraints of the Midshipmen in Choosing Maritime Profession towards their Academic Performance
	Session F(3 papers, 30 minutes each) Moderator: Mohammad Uddin
Room B	1. <i>Chia-Dai (Ray) Yen, Hung-Chun Liu, Wei-Lun Chang (Taiwan)</i>, The Promotion of Marine Career Exploration for High School Students with Interaction Devices in Taiwan 2. <i>Shun Chang (China)</i>, General and Marine Education in Ocean University of China: Ideals and Practice 3. <i>Jayson Javier (Philippines)</i> Designing Comic Books as Instructional Material in Automation 4. <i>Raphael Ian F. Tan, Welver Neil Roxas, Junel Kristian Semaña, Dangaran, Rico Loren S. (Philippines)</i>. Effects of Copper Sulfate Pentahydrate as an Antifouling Agent
18:00	Back to room (billeting)
18:30-22:00	Farewell Dinner/ Closing Ceremony (Mariveles, Bataan) Moderator : <i>Angelica M. Baylon</i> Award ceremony: President certificate, Secretary certificate, Board member certificate, Keynote speech certificate, Best presentation certificate

8 September 2017 (Friday) - Tour of Bataan / Fisheries /Turtle Conservatory, etc via MAAP Bus	
07:30-08:30	Breakfast at MAAP – Main Building (MPH)
08:30-09:30	Arrival at Bataan Tourism Center Video about Bataan Museum and Bataan Products for Sale
10:30-12:00	Visiting Mt. Samat / Museum
12:00-13:00	Provincial Bulwagan Hall
13:00- 17:30	Field trip c/o Provincial Government
18:00-19:00	Dinner
19:00-22:00	Travel Time
22:00	Arrival in the Hotel

2017 AMEA –PAEPI workshop 9 September 2017 (Saturday) via PLP Coaster to University of Makati AMEA –PAEPI Seminar with theme “Ocean Literacy for Environmental Protection”	
07:00	Pick Up of AMEA Delegates via PLP coaster
08:30	Arrival and Breakfast at Seminar Site Barong Tagalog (Philippine National Costume) provided as token to foreign guests
09:00-10:30	Formal Opening Ceremonies and Photo ops National Anthem and a minute of silence for global peace Welcome remarks -President of University of Makati Opening remarks – President of PAEPI and University of Pasig Messages of support - CHED International Affairs Services Director - PAEPI President Emeritus- Dr Angelica M Baylon - AMEA Chairman -Dr. Tsuyoshi Sasaki (TUMST, Japan) - BOLT- Dr. Peter Wanner (USA and Tohoku University Japan) - NI and IMAREST Ph Branch /PAEPI Hon Adviser - MAAP President – VAdm Admiral Eduardo Ma R Santos, AFP (Ret) Acknowledgement of Guests and Participants- Secretary of PAEPI Introduction of Keynote Speaker- Vice President PAEPI Keynote Speaker Hon. Salvador Belaro Jr. Partylist UNA ang Edukasyon Congressman Awarding of Plaques to Keynote Speaker, AMEA, BOLT, University of Makati, Plenary Speakers and Foreign Guests Picture taking with everyone
10:00	Morning Snack
10:20-12:00	Plenary Speakers from AMEA
	Prof Tsuyoshi Sasaki Ph.D , Tokyo University of Marine Science and Technology, Japan and Chairman of Asia Marine Educators Association (AMEA)
	Prof Mohammad Muslem Uddin , Institute of Marine Sciences and Fisheries, University of Chittagong, Bangladesh
	Russell Stevens , Head of Education, Two Oceans Aquarium, Cape Town, South Africa
	Dana Winograd (Canada) , Director Operations of Plastic Free Seas, Hong Kong
	Chun-Hee Shin (South Korea) , President of Korea Research Council of Maritime Education
	Emily King (USA) , Development Coordinator for COSEE, Xiamen University, China
12:00	Lunch
13:00-15:00	Bolt Speakers and Moderators for Parallel Session (paper presentations)

15:00	Afternoon Health Snacks
15:30-17:00	Breakout Session • PAEPI Business Meeting • AMEA/BOLT Meeting as judge for paper presenter winners
17:00-18:00	Closing /Awarding Ceremonies
19:00-21:00	Farewell Dinner and Cultural Presentation
21:00	Return to Hotel
10 September 2017 (Sunday)- via PLP Bus “AMEA goes to Tagaytay” c/o PAEPI Global/PLP	
07:30	Pick up of AMEA delegates after breakfast
9:00-12:00	Royale Tagaytay (Clubhouse) (swimming or bowling option for delegates with morning snacks) Other options are badminton and tennis but need to reserve in advance
12:00	Buffet Lunch at Royale Tagaytay Clubhouse
13:00-17:00	Tagaytay Tour
17:00	Sonyas Garden for Massage and Buffet Dinner
22:00	Return to Hotel
11 September 2017 (Monday) - Departure	

Keynote speech 1

Role of Asia Marine Educators Association (AMEA) Towards Resilient and Sustainable Society

Tsuyoshi Sasaki

Associate Professor, Tokyo University of Marine Science and Technology
President of Asia Marine Educators Association (AMEA)

What is important for people is to cooperate with each other while taking advantage of their respective characteristics. And through equal dialogue, new concepts, new work and new disciplines will create. These results will cooperate with each other to eliminate waste, to build a recycling-oriented society with resource conservation as much as possible. The ultimate goal is to build a resilient sustainable society where as many Asian people can live a culturally and welfare life while maintaining order.



To aim these goals, AMEA workshop was held at Tokyo in 2015 to decide the AMEA agenda followings.

- (1) Sharing and learning international marine education information
- (2) Create a network of Asia marine educators
- (3) Research National marine education curriculum standard and promote it.
- (4) Promote Asian ocean literacy including traditional ecological knowledge.
- (5) Encourage cooperation between governments, policy makers, stakeholders, scientists, educators and public

The underlying thing is to acquire the extension of individuality and sociality through marine education, to deepen and recognize the educational principle according to learners' learning. By promoting such efforts, Asian marine educators will be able to contribute to the creation of a resilient sustainable society. In this presentation, we introduce the approach of Aquatic Marine Environmental education which understands the connection between nature and human beings which the authors are carrying out throughout the basin.

Keynote speech 2

21st Century Challenges in Marine Education and Research

Prof. Maricar S. Prudente, PhD

Chair, Division 1, National Research Council of the Philippines

Marine education or otherwise referred to in the literature as ocean literacy is a way of incorporating scientific literacy in practice in education. Scientific literacy not only refers to a person's knowledge of science but also to his or her ability to use this knowledge in making socially responsible decisions. In this context, marine education should enable citizens to view their relationship with the sea, empower them as ocean literate citizens to take direct and sustainable action towards healthy seas and oceans. However, it has been suggested that concepts of responsibility towards the marine environment and marine citizenship are far from being fully developed. The lack of sufficient ocean literacy can be a major barrier for citizens to engage in environmentally responsible behavior or consider ocean-related careers. To overcome this challenge, marine education must provide the capacity to understand environmental issues and to bring about changes in behavior. This necessitates actions that place great importance to marine education and research, which involve cultivating marine talents, promoting the development of marine science and technology, and taking a scientific and sustainable approach in developing, utilizing and protecting the marine environment. All of these actions should lead towards a sustainable harmonious relationship between man and the ocean.



Keynote speech 3 (Video Presentation)

Dr. Francesca Santoro

Programme Specialist, IOC, UNESCO Regional Bureau for Science and Culture in Europe

Francesca works for the Intergovernmental Oceanographic Commission (IOC) of UNESCO where she is in charge of ocean literacy and ocean science communication activities. She is responsible for the co-ordination of contributions of the IOC to research projects funded by the European Commission, such as Sea Change and ECOPOTENTIAL. Francesca holds a PhD in analysis and governance for sustainable development from the School for Advanced Studies in Venice (SSAV) with specialization in marine environmental sciences, marine governance, science education and communication. Francesca joined UNESCO in 2011.



United Nations
Educational, Scientific and
Cultural Organization



Panel session

Moderator Dr. Emily King Development Coordinator at COSEE China (Xiamen)	
Tokyo/Japan Dr. Tsuyoshi Sasaki Department of Marine Policy and Culture, Tokyo University of Marine Science and Technology	
Keelung/Taiwan Dr. Cheng-Chieh (Jack) Chang Associate Professor, National Taiwan Ocean University	
Qingdao/China Dr. Yong Ma Deputy Director of Center for Higher Education Research and Evaluation of OUC, Professor of Ocean University of China	
Seoul /South Korea Miss. Chun-Hee Shin President, Korea Maritime Institute	
Pampanga / Philippines Dr. Robert Pagulayan Director, CHED Higher Education Regional Research Center	
Chittagong/Bangladesh Dr. Mohammad Uddin Associate Professor, Institute of Marine Sciences and Fisheries, University of Chittagong.	

Scientific Workshop Session

Douglas R. Levin, PhD, Coastal Geology Chief Innovation Officer, Center for Environment & Society, Washington College, MD, USA Dlevin2@washcoll.edu , Specialist - Seafloor Mapping, Geology, Marine Technology

“Sustainable, Sequential, Contagious and Fun Learning for Global Watershed and Ocean Literacy”

In July of 2017, the United Nations convened in New York City to set goals for sustainable global development. Goal #14 was “conserve and sustainably use the oceans, seas, and marine resources”. To achieve this goal, it is important to educate teachers who can effectively and contagiously impart concepts of Marine Sciences on their students. Success cannot be achieved in one field trip, one class session or at just one grade level. A sustainable sequence of experiential learning activities has been created that allows progressive interactions with watershed, marine, and ocean environments through consecutive years. These activities build with increasing complexities, involve teamwork and interactive dialog with the lead educator. All exercises are aligned with essential principles of Global Ocean Literacy, Environmental Literacy, and Next Generation Science Standards (a U.S. Standards of Learning Requirement).

Classroom materials are delivered without divulging the topic’s label and with a passion that makes learning “come alive”. For example, instead of announcing that “today, we will be learning about center of gravity and buoy science”, the “hook” becomes; “The world record for a small buoy holding golf balls is 50, I was wondering if you could help me break that record”. This unique delivery is of critical importance. “Build a Buoy” is one of 21 programs in the One Watershed Program (OWP) catalog available to educators from 22 schools of the Chester River Watershed on the Eastern Shore of Maryland. The connection to the watershed is sustained using websites that allow data visualization, shared, delivered, classroom resources, and peer reviewed authored, vetted, Internet available lesson plans. Since 2013 over 90 interdisciplinary educators have completed 80 hours of training in this program.

In this session, we will explore the techniques used to transfer the knowledge to Educators of all grade/age levels and disciplines – including using a Research Vessel and Kayaks to explore the entire 65 km Chester River from the headwaters to the Bay examining land use, sampling its bottom sediments, and using sonar imagery to reveal an 18th century shipwreck. Educators build buoys that measure water quality and design, build and operate underwater robots, they install QR coded tree tags, build electronic thermometers, use kites to learn remote sensing, and track unmanned GPS equipped sailboats moving round global ocean currents. The program strength lies in the cumulative knowledge gained by educators completing all of the professional development components to get a holistic view of novel and effective ways to connect all students of all ages and interests to the global environment. All of program components are adaptable to any global watershed.



Concurrent Session A-1

Russell Steven (South Africa), Marine Sciences: An introduction of a Gr10-12 curriculum

Name: Russell Steven(South Africa)

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Research interests: Education and Courses of Ocean Literacy



Marine Sciences: An introduction of a Gr10-12 curriculum

**Russell Stevens*

The Two Oceans Aquarium, a privately run institution, has education as a critical part of its vision. South Africa is a challenging country with a highly diverse education landscape with extremes of resourced schools in leafy suburbs and impoverished schools in townships and rural areas. Over the past 20 years and against this backdrop, the Aquarium's Environmental Education Centre has developed an extensive Aquarium school excursion programme and a subsequent suite of holiday/weekend enrichment courses. Out of this enrichment programme a customised national grade 10 to 12 Marine Sciences Curriculum has been written and presented for national approval.

This presentation outlines a background to the development of this curriculum. It highlights topics such as geology; chemistry; meteorology; marine biology; marine ecosystems; marine sciences applications, such as aquaculture and human interactions with the ocean. Its focus is to prepare scholars by introducing a Marine Sciences knowledge base for further tertiary studies in the field. In addition, it is designed as a stand-alone subject which adequately challenges and nurtures students, as do similar grade 10-12 three year courses. This paper illustrates the process used to develop the curriculum; the references to international marine science texts and curricula; the wide range of consultation at tertiary level as well as its connection with the seven essential ocean literacy principles and blue economy.

Concurrent Session A-2

Song, Wenhong (China). *Ocean University of China's Exploration on Marine Education and Cooperation*

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Title: Director, Professor

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Research interests: Faculty Development, Higher
Education Management



Ocean University of China's Exploration on Marine Education and Cooperation

**Song, Wenhong*

Today, we are facing more challenges in the world and one of those is the challenges from the ocean and in OUC' case, it concerns marine science and technology and the challenges for sustainable ocean development and so on. So we need to explore the concepts and ideas of fostering regional and global cooperation in marine science, technology and education. This presentation introduces OUC's global vision and proposals on cooperation with institutions in Asia.

Concurrent Session A-3

Ronald J. Maliao (Philippines). *Ecotourism in a Small Insular Fishing Village in the Tropics- Bane or Boon?*

Name: Ronald J. Maliao

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and Marine Sciences

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Research interests:



Ecotourism in a small insular fishing village in the tropics- bane or boon?

**Ronald J. Maliao*

Coastal ecotourism has been hailed as a development strategy to alleviate poverty for sustainable development in the coastal zones, as embodied by the new Philippines National Ecotourism Strategy for 2013–2022. However, very few empirical studies documented whether such expectations are met in the context of small island settings in the country. We evaluated the perceived impacts of the emerging ecotourism industry in Malalison Island, located 7.5 km east of the municipality of Culasi, Antique, Philippines. We used 14 impact indicators categorized in 4 impact criteria (economics, socio-cultural, environment, and sustainability) to collect data on local perceptions of ecotourism and its impacts. The respondents viewed a ladder-like diagram with 10 steps, where step 1 represented the worst possible scenario and step 10 the best possible scenario for each indicator in 3-time frames: before the onset of ecotourism (2010), present (2016) and 5 years into the future. Overall, except for water quality, all impact indicators of ecotourism in Malalison Island showed a significant difference in perceived scores in at least one-time frame (e.g., past vs present vs future) (Friedman test, $p < 0.05$). While economic indicators (income and job multiplicity) have significantly improved at present, these benefits have been offset by a significant increase in the local living cost. Socio-culturally, while local pride and general external knowledge of the local fisherfolks have significantly improved due to encounter with tourists, these positive effects have been negated by the perceived increased of negative external influence to local culture by ecotourism, such as drug use and inequity of benefits. Ecotourism activities are also perceived to negatively affect the environment, particularly with the increase of uncollected solid waste on the island, and the degradation of beach quality. Our study pointed out the risk that accompanied the perceived benefits in promoting ecotourism, particularly in insular, resource-dependent fishing communities.

Concurrent Session B-1

Yong Ma (China). *Recent Development of Marine Education in Chinese Primary and Secondary Schools*

Name: Yong Ma

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Title: Dr., Professor & Vice Director

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Research interests: marine education



Recent Development of Marine Education in Chinese Primary and Secondary Schools

**Yong Ma*

Marine education covers mostly in the first eight years for the nine years' compulsory primary and secondary school education in China. Its location is typically in the coastal areas and its development is unbalanced in different areas. The development of marine education in primary and secondary schools, previously driven in a bottom-up way, are currently in a top-down way. The teaching materials turn from school-based textbooks to regional textbooks. The subject courses and activity courses are combined as methods of teaching. The target and mission of marine education, previously emphasizing the knowledge and attitude about ocean, are turning to marine literacy.

Concurrent Session B-2

Ronaldo Rearte (Philippines). Prototype Multi-Purpose Safety Grinder Attachment

Name: Ronaldo B. Rearte

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Title: Faculty Member

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Research interests: Renewable Energy and Technology
Innovation



Prototype Multi-Purpose Safety Grinder Attachment

** Ronaldo Rearte*

The most common accidents in the workshop involve hand and eye injuries. These injuries seem to be too minor and are usually considered parts of the normal process when working in the laboratory such as the machine shop. However, such accidents may also be attributed to the behavioral lapse of workers while at work and/or the presence of hazards on the machine and power tools being used. Thus, the need to address these concerns as well as develop the safety awareness of the MAAP cadets.

The study aims to design, construct, and test a safety device using ordinary scrap materials found in the workshop to make the machine more efficient and effective as well as safer to use. This prototype attachment aims to help minimize the occurrence of common hand and eye injuries related to the operation of the grinding machine. It also purports to minimize the possibility of burning motor grinder due to overloading. Lastly, it aims to determine the viability and functionality of the constructed attachment, with minimal cost.

The design of the project comes in different parts: the tool rest with a sliding guide, pieces of acrylic glass that serve as covering lids of the grinder with limit switch, and a magnetic contactor with overload relay.

Data have been gathered through survey questionnaires, from which the qualitative results are yielded. Quantitative results are attained by employing the statistical tool of mean. Results of the study show that the constructed attachment is both viable and functional, with minimal cost required. It likewise shows that the multi-purpose safety bench grinder attachment is relevant to the skill being developed, effective and efficient to a very high extent.

Concurrent Session B-3

Chen Li Shu (Taiwan). Marine Technology and Science Museum in Taiwan

Name: Li-shu Chen

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Research interests: marine education



Marine Education Activity in Wanghaixiang Chaojin Bay No-take Zone in Keelung

**Li-shu Chen*

The Wanghaixiang Chaojin No-take Zone Marine Protect Area (WHS CJB NTZ MPA) is one of twenty-eight marine protect areas list in Fisheries Agency, Council of Agriculture in Taiwan. It is categorized as class III protect area which restricts usage based on sustainable utility concern but allows limited utilization of ecology resource in Taiwan. Indeed, it has celebrated its 1st anniversary after the Keelung City Government declared WHS CJB NTZ MPA at 12th May 2016. It is not only the newest and smallest one but also the most challenge one because of its location, popularity and reputation. As a education facility nearby, NMMST carried many different education programs to raise public awareness about the MPA.

Concurrent Session C-1

Mohammad Uddin (Bangladesh). *Education and Ocean Literacy in Bangladesh*

Name: Mohammad Uddin

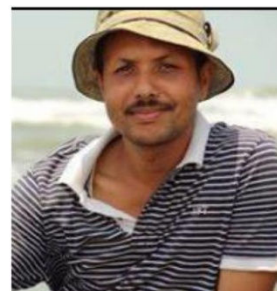
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Research interests: Education and Courses of Ocean Literacy



Education and Ocean Literacy in Bangladesh

**Mohammad Uddin*

The concept of Blue Economy has opened a new horizon for economic development of the coastal countries through utilizing sea and marine resources at national and international level. The concept has become a buzzword for sustainable development particularly in drafting the post-2015 development goals. Bangladesh has the highest population density in the world. Estimates suggest some 30 million Bangladeshi directly depend on oceanic economic activities like fisheries and commercial transportation. Coastal and Island developing countries have remained at the forefront of this Blue Economy advocacy, recognizing that the oceans have a major role to play in humanity's future. Global warming threats like Increasing the frequencies and intensity of cyclones and storm surges, sea level rise, coastal and river bank erosion, salinity intrusion, biodiversity losses have been making the country more vulnerable to the upcoming predicted scenarios. In 1971, the University of Chittagong started a marine science education and research program. Out of 35 public and more than 70 private higher education institutions, only four universities in Bangladesh were offering fisheries degrees until 2015. But the higher education institutes have been blooming up with opening ocean education without almost any ocean experts and no premier ocean education of the potential students before entering in to these institutes for higher education. Ocean scientists and educators struggle with getting people concerned about oceanography and ocean literacy.

It is important to integrate marine education in primary and secondary schools. There are critical issues, such as climate change and the loss of habitats, while we depend on so many resources from the ocean. Actions have an influence on the ocean, and unfortunately school children have less understanding about the marine environment. One way to increase this is with intergenerational learning, where young people are passing along their knowledge to adults. In Bangladesh, marine education is not part of the curriculum. There has been a less of field works for the university graduates and minimum of opportunities, and ultimately a loss of interests. A majority of the children and students visit the beach but just for picnic not for any

knowledge and without ocean knowledge. Unfortunately, many teachers do not have the knowledge to teach marine science topics – there’s a fear of “out of doors” learning and problems with funding for bussing and sharing resources. Teacher training programs can provide the confidence to take a class outside. Teachers can then work with the teachers in their schools and use their experiences in their communities.

It is important to have Bay of Bengal science to be included in the education system either in formal and informal frames. While we, some volunteering organization like Blue Green Foundation Bangladesh have been making the effort to get them incorporated into the Next Generation Science Standards, we are yet to get government attention for a large scale movement and awareness. A reality for teachers is that if something is not in the standards, then it likely won’t be addressed in the classroom. A complicating factor for Bangladesh is that very few students and teachers are exposed to ocean science. There is a big gap in the skill set necessary to teach ocean topics. Pre-service teachers don’t have the opportunity for field research or to develop lab skills for lack of funding and international collaboration. The ocean literacy movement would make major advances in incorporating marine science into K-12 education.

Concurrent Session C-2

Chih, Cheng-Hsin & Chin-Kuo Wu (Taiwan). The Curriculum Development of Local Marine Education in Taiwan Counties

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Research interests: marine education



The Curriculum Development of Local Marine Education in Taiwan

**Chih, Cheng-Hsin & Chin-Kuo Wu*

Taiwan is an island country, so it is inevitable to develop marine education. Since 2001, the government promulgated the "Ocean policy" and started to write marine education programs, and in 2007 promulgated the "Marine Education Policy" to promote all counties to found local marine education resources centre and to make marine education plans for themselves. This study wants to understand the curriculum development of marine education in 22 local Marine Education Resource Center (MERC).

MERC promotes the marine education for elementary schools and junior high schools in various counties, and there are many schools which undertook marine education as their characteristic curriculum, and also attracted numerous students to opt and participate in it. This purpose of this study is to use the expert discussion and the material analytic method. Further, to record the expert-discuss conference by the 22 counties, as well as analyze their achievement reports. Comprehensive analysis of the results obtained the following conclusions: (1) The Marine display area in the center for characteristic teaching, like Shell Hall, Molamola fish hall and so on. (2) The multiplex type marine curriculum, like integrates English or Science curriculum. (3) The marine visits or experience activities outdoors, like Marine botanical garden, Fishing net factory, Fish farm/fishery, experience camp of Small Boat and Canoe, experience camp of the tidal zone and so on. (4) Union local marine society resources include Keelung Islet, National Museum of Marine Science & Technology, National Museum of Marine Biology & Aquarium, Peikuan Crab Museum and so on. (5) Trains the young narrator, particular for the Centre is near the local sightseeing scenic spot, the students are the training main force, and this will not only increase student's marine knowledge but also train their language ability and the self-confidence.

These activities and the curriculum can promote student's marine knowledge and make more their marine awareness. It's a substantive help to regard impels Taiwan's marine education.

Concurrent Session C-3

Dumapi, Mederic, Ramos, Ferdinand, Domingo, Lee Martin G. (Philippines). Harnessing Excess Heat Energy from Ship's Engine by Using Seebeck Effect to Produce Electricity

Name: Ferdinand Ramos

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Title: Deck Cadet

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Research interests:



Harnessing Excess Heat Energy from Ship's Engine by Using Seebeck Effect to Produce Electricity

*Dumapi, Mederic, *Ramos, Ferdinand, & Domingo, Lee Martin*

Industries are constantly in demand of raw materials in order for them to operate and also in demand of transportation of products. Goods are transported by land, water and air. More than seventy-five percent (75%) of goods are transported by water especially ships. Ships are mainly the transport facilities of goods all over the world. Since ships are propelled by diesel engines, innovations are done to reduce the cost of operation and maintenance of the ship. Updates in the ship's design, machineries, operational procedures, equipment and protocols are done in order to minimize the cost of keeping the ship. Ship's engines are modified to increase the efficiency but nothing can be done in the excess heat energy produced by the engine. The unwanted heat energy is usually dissipated. However, that energy can be converted to electrical energy by the use of Peltier pad through the Seebeck Effect. The research used experimental design to find the effectiveness of Peltier pad in harnessing the heat energy and charging a device. The output of the device is as efficient as the charger output when connected to the 110V and 220V. The charging time of Peltier is 15 minutes longer than the 220V and 5 minutes lesser than the 110V. Thus, the researchers conclude that in charging small devices, the Peltier pad is as efficient as charging the device in the Alternating Current. The researchers subjected the Peltier pad in 300°C because the heat source is limited.

KEY WORDS: *Seebeck Effect, Peltier Pad, Engine*

Concurrent Session D-1

Angelica Baylon (Philippines). *Introducing MAAP, Its Partners and the Integrated Coastal Management System: A MAAP Case Study of 3 Cs*

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Research interests: Any topic in support to the theme of any conference



Introducing MAAP, Its partners and the Integrated Coastal Management System: A MAAP Case Study of 3 Cs

**Angelica Baylon*

The paper introduces Philippines, the Province of Bataan and MAAP with emphasis on its geographically location in a typical coastal area. It also shows the Integrated Coastal Management (ICM) Framework and tools that are being implemented thru 3Cs (coordination, collaboration and cooperation) that are based on common objectives to build better coastal governance, increase awareness, promote community participation in coastal management and explore ways for dynamic and sustainable partnerships. This is a case study about MAAP and its being a member of the Bataan Coastal Care Foundation, composed of private industrial companies, supporting and initiating various environmental advocacies in the Bataan Province. MAAP contributed directly and indirectly to: Natural and Man-made Hazard Prevention and Management (related to NATECH); Habitat Protection, Restoration and Management; Water Use and Supply Management; Food Security and Livelihood Management and Pollution and Waste Management. MAAP also contributed thru community projects and publications. Through varied approaches and entry points and in close collaboration with the local government units, MAAP serves as catalyst in protecting the environment in Bataan either individually or collectively, within their respective spheres of influence and capabilities. Indeed a case point on 3Cs that could be explored as one of the strategies and actions for ASIAN networking on coastal management in addressing various ocean and environmental issues.

Concurrent Session D-2

Chandni Thakkar, Chin-kuo Wu & Cheng-chieh Chang (India/Taiwan). *The Analysis of Coverage of Fundamental Ocean Literacy Concepts in Next Generation Science Standards*

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The Analysis of coverage of fundamental ocean literacy concepts in Next Generation Science Standards

**Chandni Thakkar, Chin Kuo Wu, & Cheng-Chieh Chang*

The ocean is a defining feature of our planet earth and it occupies the largest portion of the earth. Further, the ocean is one of the most significant resources as it has impacts on climate change, weather change and level of oxygen. Besides, the ocean is habitat to various aquatic species and provides an excellent mode of transportation as well. However, in recent years, unfavorable events such as overfishing, hurricanes, tsunamis, climate change, and ocean acidification have surfaced due to lack of awareness about the importance of the ocean. In order to publicize the awareness about the importance of ocean, concepts of Ocean Literacy (OL) are designed by several scientists and educators.

In recent years, several initiatives are undertaken by various nations to instil the OL concepts among pupils. Among the other nations, the USA have played a central in revolutionizing science standards. Several leading scientists and educators have contributed to the development of consensus document entitled as "Next Generation Science Standards" (NGSS). The NGSS consensus document represents science standards from kindergarten (e.g., grade k) to grade 12 in three dimensions namely; crosscutting concepts, science and engineering practices, and disciplinary core ideas. Crosscutting concepts scrutinize association over four domains of science including physical science, Life science, Earth and space science and engineering design.

In this study, the scope of OL concepts in NGSS earth science standards from grade k to 12 has been examined. Seven ocean literacy principles are considered as a base to evaluate NGSS earth science standards. To be precise, index topics of seven principals drafted by National Marine Educators Association are used. On the basis of American education systems, grades from k to 12 are segregated into four grade

bands such as k to 2, 3 to 5, 6 to 8 and 9 to 12. Subsequently, NGSS earth science standards are assessed against index topics of OL for each grade band. The presence of OL concepts in NGSS earth science standards is marked either as D (Directly addressed), I (Indirectly addressed), or Blank (Not addressed). This study has followed qualitative approach.

The result of the study shows that mean coverage of fundamental OL concepts addressed directly or indirectly in NGSS earth science standards is found to be 10.25. Grade band 3 to 5 has the highest percentage (e.g., 29.27%) of fundamental OL concepts addressed directly or indirectly among four grade bands. Subsequently, Grade band 6 to 8 and 9 to 12 share identical percentage (e.g., 26.83%) of the proportion of OL concepts in their respective NGSS earth science standards. While grade band k to 2 has only 17.07% of coverage of fundamental OL concepts.

A National grade from “A” to “F” is assigned on the basis of ocean literacy grading scale to conclude the coverage depth of fundamental OL concepts. The finding shows that NGSS earth science standards have incorporated OL concepts with National grade=D. The outcome of the study is expected to provide reflective exploration and recommendations to marine educators, curriculum designers and school teachers.

Concurrent Session D-3

Xinhao Zhu (China). Practical Exploration About Marine Education of Primary School

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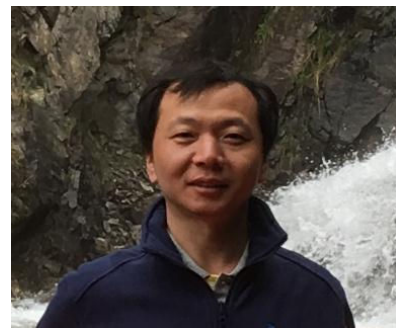
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Practical Exploration about Marine Education of Primary School in Qingdao

Marine education in elementary school in Qingdao has been in the forefront of the Shandong province and even the whole country. First we will introduce the present situation of the primary school of carrying out the Marine education in Qingdao. On the basis of reviewing and analyzing, we will put forward existing problems and development suggestions.

1. Present situation

- 1.1 The curriculum system construction of Marine education
- 1.2 Construction of Marine education comprehensive practice activity
- 1.3 Strengthen the Marine education characteristic school construction
- 1.4 Construction of Marine education protection and resource integration

2. Existing problems

3. Development suggestions

- 3.1 Introduce professional full-time teachers of marine education. Strengthen the part-time teachers' training of marine education.
- 3.2 Focus on the construction of marine education specialized courses. Strengthen the systematic construction of marine education merge-integrated teaching.
- 3.3 Focus on the ocean accomplishment and ocean consciousness of elementary school students.
- 3.4 Further focus on the promotion of marine education characteristic brand in other areas. Lead to the marine education development especially inland areas.

Concurrent Session E-1

Shahidul Islam Kazal (Bangladesh). *3C Between Local Communities and International Communities Towards a Strong Marine Education*

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3C between local communities and international communities towards a strong marine education

**Shahidul Islam Kazal*

“3C” refers to the framework of coordinative, cooperative and collaborative relationship where ‘C’s are used as partnership tools for performing any great work having a definite goal.

Coordination means coming together by combining of diverse parts or groups to make a unit or the ways these parts work together. And Cooperation refers to working together to achieve a common goal. Finally, collaboration means the act of working together with one or more people or communities in order to achieve a definite goal.

Collaborative relationship marks the absolute phase of “3C” model because its functioning requires the establishment of previously coordinative and then cooperative relationship. Therefore, the definition of collaboration includes coordination and cooperation as these are required to lay the groundwork for collaboration.

In the context of expanding marine education the “3C” framework can contribute very effectively. At the coordinating stage establishing various government, non-government and autonomous organizations can help the local communities largely, get coordinated towards a strong marine education. These organizations can connect with the communities by various community based development activities thus coordinate them to a cooperative partnership; the next stage of “3C” framework.

The coordination activities can be accelerated by individual activity among the communities, by various NGOs, GOs, AOs (autonomous organizations), climate leaders, influential, social & political activists and other stakeholders. When more and more such initiatives create a visible vibration among the people in various

communities then we would feel the necessity of “cooperation”; the second partnership tool in the “3C” framework.

Cooperation is the intermediate stage between coordination and collaboration. In this stage all activists from various spectrums would come together to get familiar with their types of activities and start exchanging information and cooperate with each other for a better performance in accelerating marine education among the communities. Arrangements of combined seminar, symposium, awareness activities, media interactions etc are the examples of cooperation towards a strong marine education. Any community is considered “blessed” which has enough cooperative hands and work together for attaining a particular goal keeping their own style of working unique. Now the community is ready for the final stage of “3C” framework; Collaboration.

Collaboration is much more sophisticated in nature requiring extensive time and energy due to its ambiguous nature. This is the stage in which cooperation within national communities and among international communities would result in a trust based relationship. Thus collaboration becomes a trust based partnership tool and centers upon shared purpose.

In this stage the international communities get involved with the local communities more deeply and share their resources among themselves thus try to understand their goals and objectives and individual style of working. They also share various kinds of potentials and obstacles, finally share “mutually inclusive” goal towards the expansion of strong marine education. Involvement of International media, global political leaders, climate leaders, Actors/actress, influential adds an extra fuel in this level of “3C” framework. That’s why collaborative relationships are considered as long term deal rather than a short term tactic.

Concurrent Session E-2

Jonathan R. Salvador (Philippine), Development of a Hybrid Fast Craft Passenger and Cargo Vessel using Multi-engine and Alternative Energy Source from Ocean Waves

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Development of a Hybrid fast craft passenger and cargo vessel using multi engine and alternative energy source from ocean waves

**Jonathan Salvador*

Petroleum-based fuels are the source of 95% world's transportation energy and is responsible for the 14% of 2010 global greenhouse gas emission (GHG). As the most environmentally sound transport, marine transport accounts to 90% of world trade with an estimated 3% of global CO₂ emissions is projected to bring significant carbon footprint. The challenge now is for Filipino shipbuilders to search for innovate ways and suitable alternative marine transport that is safe, environment friendly and cost efficient. It is predicted that hybrid and electric boats and ships are one of the key technologies of marine industries. Thus a need to 1) develop a fast craft vessel that would accommodate the growing transport needs as the economy grows and 2) search for alternative renewable energy for marine transport that would lower greenhouse gas emission that addresses the challenge of global climate change. This project aims to develop a green and alternative way by using hybrid technology that utilize renewable energy from ocean waves providing high efficiency, lower fuel consumption and less GHG emission. The design would be a Trimaran fast craft passenger and cargo vessel that can accommodate 200 passengers, 6 standard sized van and 15 motorcycles, uses independent multi engine technology at minimum 3000hp drive shaft sea class combined with wave energy device, which would be pre-fabricated locally, capable of generating up to 300kw/h energy. Wave energy provides unlimited renewable energy that can be collected and stored in a generator to be used in the electrical components of the fast craft therefore minimizing the fuel consumption of the engine.

Concurrent Session E-3

Nellyvette Claire B. De La Cruz (Philippines). Attraction, Retention and Attrition of Seafarers at Sea

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Attraction, Retention and Attrition of Seafarers at Sea

**Nellyvette Claire B. De La Cruz*

Work aboard ship is seen as a dangerous work place where risks are potential to be seen everywhere and daily routines are in need of stability under pressure. From that perspective, only a few are attracted to take this path as their career. The impact of the global financial crisis, if shipping is to be sustainable, it is necessary for the issue of the attraction and retention of qualified seafarers and officers to remain a prime focus to have competent seafarers in the future. Achieving the necessary level of responsibility, knowledge, coordination and cooperation is one of the principal concerns of the Shipping Companies and this has a direct impact to the company personnel and to the Maritime Institutions. To attract seafarers at sea it might be their passion, career and for stability, freedom, family influence or for self-improvement. What made seafarers leave seafaring is that their distance between family and friends, lack of awareness, they want to stay on each comfort zones and lack of communication. With that, there are possible solutions that can be implemented with the help of Maritime sectors and industry. Coordination of Maritime Schools between its students, Collaboration between Maritime Schools and Industry and the Cooperation of each and every one (3C's). A satisfactory level of familiarization can only be achieved through a long period of practice onboard a ship.

In this paper, the researcher intends to present a study on why people are attracted to go to sea, the reason they leave onboard jobs and how to keep seafarers at sea. The important understandings for seafarers when they choose to develop a career at sea and how the companies can help them retain in the profession.

Concurrent Session E-4

Lugtu, Cedrix Marl Niño M. (Philippines). Utilization of Digital Technology in Strengthening Marine Education

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Utilization of Digital Technology in Strengthening Marine Education

**Lugtu, Cedrix Marl Niño M.*

One consistent thing in this world is change. A part of it is technology, which in almost all aspect of lives including the maritime world is continually advancing to what seems to be no limit. This presentation intends to discuss the effects in both ways of Digital technology in providing a stronger foundation and better building of marine education among students, teachers and professionals as well, in the fast paced world of ours. One field that all is concern about is finding something better than what is existing in the current time. And the conventional way of passing information without much use of digital technology has proven its effectiveness in the pass decades and it's important to develop something better and something that will provide a more effective means. In searching another for innovative means gives people the chance to find a solution to a problem. And upon the introduction of Digital technology in the system of Marine Education it will try to come up with not a solution rather an improvement in the system from the customs of the past decades. Not only will it bring much easier ways but it might give the perks of giving less effort and coming up with a more productive results in the process. This brings the 3Cs into a closer application unto the world.

Through this kind of technology, it can create coordination among nations leading to their collaboration for a better planning and lifting the cooperation of executions in developing a better and stronger marine education. The start of this innovation is a small step that can be taken in order to achieve a greater goal of information sharing resulting to concrete ways or actions needed in the time being and make the world a bit smaller.

Concurrent Session F-5

Jose M. Barlis Jr. & Josefin D. Fajardo III (Philippines). Motivation and Restraints of the Midshipmen in Choosing Maritime Profession towards their Academic Performance

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Motivation and Restraints of the Midshipmen in Choosing Maritime Profession towards their Academic Performance

*Jose M. Barlis Jr. * & Josefin D. Fajardo III*

The role of the Maritime Higher Education institutions (MHEIs) in the Philippines is very vital in producing competent seafarers that will manned the international ships. However, the motivations and restraints of the learners are also important in determining the performance of the midshipmen during their stay in the academe and later their performance as ship officers.

A total of one hundred thirty-five (135) respondents from the Class of 2016 at the Maritime Academy of Asia and the Pacific participated the study during the Academic Year (AY) 2015 – 2016, first semester.

Self-made questionnaire was made to determine the motivations and restraints of the respondents. The questionnaire was divided into six (6) areas of concerns namely: fulfilment of dreams, source of income, expression of myself, challenging work/ workplace, accidentally chosen profession and long term plans.

Among the six (6) areas of concerns, the results showed that the main motivation of the midshipmen in choosing the maritime profession is the source of income while their main restraint is that they find maritime profession as a challenging work or work place.

It also showed that the demographic profile of the respondents and restraints in choosing maritime profession is not significantly associated with their academic performance while motivation is significantly associated with the academic performance.

Key words: motivation, restraints, Maritime Academy of Asia and the Pacific

Concurrent Session F-1

Chia-Dai (Ray) Yen, Hung-Chun Liu, Wei-Lun Chang (Taiwan). The Promotion of Marine Career Exploration for High School Students with Interaction Devices in Taiwan

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The promotion of marine career exploration for high school students with interaction devices in Taiwan

**Chia-Dai (Ray) Yen, Hung-Chun Liu, Wei-Lun Chang*

Taiwan Marine Education Center (TMEC) develops a marine career exploration course with interaction devices. The project started from 2015 to create three marine career development hand books for junior, senior and vocational high school. In 2017, the research team created a 20minute marine career introduction video and four teaching plans for junior and senior high school teachers. The teaching plans include pre and post course test, on-line interaction questionnaires with Kahoot system, and the supplementary information. Students can use mobile devices or personal computer to join the course. TMEC also offers 24 free teaching workshop and build up a website (<https://goo.gl/F5WBEI>) to promote the teaching plans. The project expects to increase students' awareness of marine career and also develop students' ocean literacy of principle 6.

Key words: marine career exploration; digital learning; marine education

Concurrent Session F-2

Shun Chang (China). General and Marine Education in Ocean University of China: Ideals and Practice

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General and Marine Education in Ocean University of China : Ideals and practices

The curriculum system in Ocean University of China has been re-established since 2003 and is guided by the ideals that general education and specialized education is illustrated in terms of substance and function, and that free choice of courses with conditions and recognition of course credentials with degree requirements makes the teaching and learning mechanism. The University makes every effort to improve marine education courses so as to enhance student ocean literacy, including the set-up of general education center and the Xingyuan Academy, outreaching courses, online courses and so on.

Concurrent Session F-3

Jayson Javier (Philippines). Designing Comic Books as Instructional Material in Automation

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Designing Comic Books as Instructional Material in Automation

**Jason Javier*

This development of comic strips is for the purpose of attracting reader's attention from the usual habits of reading books, more specifically skimming or browsing. In some cases, reading may tend to result in strain and the mind is somehow being hypnotized by the kaleidoscope of letters and numbers in some occasions, thereby resulting in decrease of attention span for reading. As a result, reading becomes more of browsing or skimming of pages, which tends to skip sentences or paragraphs of important information.

From a short perspective this developmental study provides a momentary reading experience out of the usual pattern. The uniqueness of the study presented is the approach it demonstrates the topic represented which is the P+I+D controls.

PID's as it is called had many interpretations when searched on the internet or in Books depending on the author's individual view. It is very much variable, there are complicated ones to less complicated presentations; nevertheless, still complicated.

The use of a comic developing app or application, specifically created in producing collages of pictures as a tool have been utilized. Instrumentation images were incorporated, the structures were edited, some speech balloons were situated as lectures, and the outcome was tested. Further, the difference between the pre-test and posttest on the effectiveness of the material and improvement of the learning experience of the reader was recorded.

Concurrent Session F-4

Raphael Ian F. Tan, Welver Neil Roxas, Junel Kristian Semaña, Rico Loren S. Dangaran (Philippines). Effects of Copper Sulfate Pentahydrate as an Antifouling Agent

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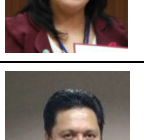
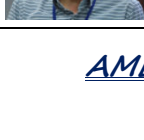


Effects of Copper Sulfate Pentahydrate as an Antifouling Agent

Raphael Ian F. Tan, Welver Neil Roxas, Junel Kristian Semaña, Rico Loren S. Dangaran*

The researcher would like to prove that Copper Sulfate Pentahydrate could be used as a cost-effective antifouling agent. Since Copper Sulfate Pentahydrate is readily available and has a lot of properties related to antifouling like being an algacide, molluscicide, fungicide, and pesticide, there is a need, therefore, to test this chemical in order to find out its antifouling properties. In this experiment, the researchers used an experimental approach to determine the toxicity of Copper Sulfate Pentahydrate to brine shrimps and barnacle larva by using Probit Analysis to determine its LD50. Using the data gathered from the experiment, the researchers concluded that in order to eliminate 50% of the population (LD50) of the brine shrimps and barnacle larva, a concentration of 125.97 ppm and 104.77 respectively should be utilized.

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