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REGIONAL CENTRE OF EXPERTISE  
ON EDUCATION FOR  
SUSTAINABLE DEVELOPMENT

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# ESD Activities for Rehabilitating Mangrove Forests in Cooperation with Local Communities at Merbok Mangrove Reserve Kedah

## CAMP BAKAU 1.0



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## INTRODUCTION

Merbok Forest Reserve consists of 32 species of trees exclusive to the mangrove ecosystem and has been considered as one of the most floristically diverse mangrove sites in the world. The FR also harbors a diverse array of fauna, most prominent are its bird communities where about 80 species have been recorded including migratory species. Other inhabitants include several species of primates, reptiles and a high number of commercially-important aquatic species occupy the estuarine river ecosystem.

In the area, the mangrove and river ecosystems play an important role in providing livelihood for fishermen and the surrounding village communities. Some parts of mangrove forests have been degrading in effect of urbanization and development in the area and it has been big concern on sustainability of ecosystem and biodiversity in the future.

With the discussion with the experts of RCE Penang, we started to make a joint project to develop the ESD for sustainable rehabilitation program of mangrove forests at Merbok with experts of RCE Penang, Universiti Sains Malaysia (USM) and Japan Malaysia Association (JMA). In line with this joint project, we conducted a program name “Camp Bakau 1.0” and the program was held to promote ESD via mangrove ecosystem education to the children and how protection of the mangrove ecosystem is important to conserve fisheries resources and community well-being. This knowledge is crucial as they will be more aware and act to protect their own environment.

***“Look deep into nature and you will understand everything  
better ~Albert Einstein”***

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## **PROGRAMME**

The program was held to promote ESD via mangrove ecosystem education to the children and how protection of the mangrove ecosystem is important to conserve fisheries resources and community well-being. At the same time the importance of education was, and knowledge was stressed to the children. This knowledge is crucial as they will be more aware and act to protect their own environment.

## **OBJECTIVES**

- a) Introducing the concept of ESD (Education for Sustainable Development) through learning mangrove ecosystem.
- b) Introducing environmental elements and features in the context of STREAM through learning mangrove ecosystem.
- c) Linking the relationship of various elements of the environment and its relationship with humans.

## **ORGANISERS**

This programme was organized by the Regional Centre of Expertise on Education for Sustainable Development (RCE ESD) Penang, Universiti Sains Malaysia (USM) co organized with Japan Malaysia Association (JMA).

## **PLACE, DATE & TIME**

Venue: Kampung Sungai Batu Besi, Merbok Kedah

Date: 23-25 November 2019

Time: 7.00 am – 10.30 pm

## **PARTICIPANTS**

Participants comprise of 35 students from age 7 to 16 from several villages such as Kg. Bujang and Kg. Sungai Batu Besi Merbok, Kedah. All activities for the duration of the camp was conducted and facilitated by five RCE fellows, and assisted by eight RCE Sejahtera Youth (RSY) volunteers.

## TENTATIVE PROGRAMME

Date: 23-25 November 2018, Kg Sungai Batu Besi, Merbok Kedah

Time/Date	Program/Activities
<b>23 November 2018 (Friday)</b>	
3.00 pm	Registration
3.45 pm	Program Briefing by Dr Nurul Salmi Abd Latip Safety Briefing by Pak Su
4.15 pm	Ice breaking session
5.15 pm	Asar Prayer & Tea Time
5.45 pm	<i>PART 1: GETTING TO KNOW YOU</i>
6.45 pm	Maghrib Prayer & Dinner
8.45 pm	<i>PART 1: GETTING TO KNOW YOU</i>
10.45 pm	Isyak Prayer & Sleep
<b>24 November 2018 (Saturday)</b>	
6.00 am	Subuh Prayer
7.00 am	Exercise - Tai Chi
8.00 am	Breakfast
8.30 am	<i>PART II – MANGROVE AND I</i>
10.40 am	<i>PART III – MANGROVE AND OTHERS</i>
12.30 pm	Lunch & Zohor Prayer
2.00 pm	<i>PART III – Continue, MANGROVE AND OTHERS</i>
4.45 pm	Asar Prayer & Tea Time
5.30 pm	River clean-up with kayaks
6.30 pm	Dinner & Maghrib Prayer
8.00 pm	<i>PART IV - HOW DO I CARE?</i>
10.15 pm	Briefing on Mangrove replanting activity
10.30 pm	Isyak Prayer & Sleep
<b>25 November 2018 (Sunday)</b>	
6.00 am	Subuh Prayer
7.00 am	Exercise -Tai Chi
7.30 am	Breakfast

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8.00 am	Mangrove replanting activity
11.45 am	Reflections for Mangrove Plantation
12.30 pm	Lunch & Zohor Prayer
2.00 pm	<i>PART IV – Continue, HOW DO I CARE? via short plays and skits by all groups</i>
4.00 pm	Reflections
4.45 pm	Closing Ceremony & Photo Session
5.15 pm	Asar Prayer & Tea time
6.00 pm	Dismiss

## OUTCOME OF THE STUDY CONDUCTED DURING CAMP BAKAU 1.0

The participants in this Camp comprise of school-going children from nearby villages that are of mixed ages:

- Level 1 : 6-9 years of age
- Level 2 : 10-12 years of age
- Level 3: 13 years of age and above (oldest group was 16)

Throughout the workshop, we conducted two analyses. The **first** was to distribute a set of questionnaires to analyse students' background and connectedness to nature. The **second** was to find out the level of students' initial knowledge about mangrove ecosystems, understanding acquired on mangrove ecosystem during the camp, and knowledge acquired at the end of the camp.

For the **first analysis**, the questionnaires had three sections as the following:

- Section A consists of 43 questions on experience with nature
- Section B with 28 questions on relationship with nature
- Section C contains of 22 questions on natural elements at home

Finding from the analysis on **section A**, showed that the participants from the different age groups had mixed experience and relationship with nature as well as natural elements at home. All age groups had

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members who has had experiences with nature, such as, climbing trees, swim in rivers, fishing, catching insects, and planting trees, some more than others. For **section B**, findings showed that all age groups had high level relationship with nature. This revealed that a large number of the participants thinks that nature is important to them because they have a relationship with nature, that they are a part of nature, they enjoy going to natural places such as waterfalls, rivers, beaches, forests and that they will protect nature from harm, among others. For **section C**, a large number of the participants had diverse natural elements at home such as trees, flowers, insects, birds, fishes, goats, vegetable patches, fruits, sand, rocks, and others. In summary of all three sections, most of the participants have had exposure to nature on a daily basis , thus, have a good connection to nature and their natural surroundings.

For the **second analysis**, we found that there was an evidence of developmental learning among the respondents. The respondents could identify the physical features and functions of the mangrove tree, and the threats faced by them. For example, Respondent 31 said that the mangrove tree has several types of roots such as, stilt roots . They also knew some of the functions of the mangrove. Respondent 22 claimed that it functions as a natural wall, respondent 33 wrote that it is a habitat for animals and respondent 37 added that the trees could be produced as charcoals. Apart from that, the respondents also knew about the threats faced by the mangrove trees. For example, Respondent 4 realized that tsunami could kill the trees, respondent 10 claimed that illegal logging could cause the trees to die and oil spills from ships could also threaten the survival of the trees, said respondent 12. The data concludes that the primary respondents' prior knowledge on mangrove trees are quite diverse.

The next part of the second analysis revealed that activity succeeded in arousing the respondents inquisitiveness about the mangrove trees and ecosystem. Apart from additional information on features, functions and threats observed in this part, two more themes have emerged i.e. habitat and solutions to threats. Respondents made many inquiries and asked questions. Under the threat to mangrove trees, the respondents expressed their concerns. For example, respondent 10 asked why people log illegally, respondent 4 queried why people throw rubbish into the river and respondent 12 pointed out why ships spill oil into the river. The respondents also asked about the habitat for the mangrove as well as the animals. Respondent 59 was interested to know why and how mangrove trees grow in swamps, respondent 9 asked why do vipers live in the mangrove trees and respondent 12 asked where would the animals go when there

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is forest fire. Interestingly, the respondents also questioned about the measures in solving the threats to mangroves. For example, respondent 11 and 12 asked about the ways to curb pollution, while respondent 9 was intrigued to know how mangrove trees could be protected. From the activities conducted, it can be concluded that they trigger the participants in various ways and resulted in respondents having many questions in their minds. Some in fact appeared to be higher order thinking questions and concerns, which showed us that these activities can be further developed and shaped via integration with other forms of activities.

The last part of the second analysis, illumined what the respondents have learnt by the end of the camp. The respondents emphasized more on the functions and concerns on the threats to the mangrove ecosystems. The theme that emerged clearly from this part was responsibility. The respondents understood specifically about the functions of the mangrove trees. For example, respondent 12 comprehended that the roots of the mangrove trees are very strong to protect the area. Whilst respondent 9 learnt that the leaves are food for the animals. Respondent 30 realized that the root clutches the soil to prevent it from eroding. Respondent 9 said that the mangrove trees provide oxygen. As for the threats, respondent 12 wrote that he learnt a lot about the threats, respondent 50 revealed that she/he learnt about the effects of the threats towards mangrove trees. Respondent 11 observed the effects of natural disasters, while respondent 9 learnt about the effects from human doings and lastly, respondent 61 learnt that the toxic waste could cause water pollution and would destroy the soil. Interestingly, the respondents have come to a state where they became aware that they should take care of the environment – specifically mangrove trees and ecosystem to protect the quality of river, its water and living organisms - as mentioned by respondent 53 and 9 respectively. This self-actualization on the responsibility that should be shouldered by them proved that Camp Bakau 1.0 has achieved its objectives.

## **CONCLUSION**

To sum up, the data collected and analysed indicated that the respondents have improved not only their general knowledge about the mangrove trees but the activities conducted throughout the camp have succeeded in inculcating the values of caring and protecting mangrove trees and ecosystems. Participants

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have realized that the destruction of the mangrove trees would be disastrous not only for the fauna and flora but also for mankind.

In addition to the finding from the study, this program received positive feedback from the children and their parents. Post-camp, parents reported that the children showed encouraging change in behavior with more interest in learning and attending classes. The children are also excited and looking forward for the next program, Camp Bakau 2.0. For the next program we will retain some of the approaches used but include more hands-on activities and hoped that activities promoted during this program will continue to nurture, promote empowerment and responsibility towards caring and conserving the mangrove ecosystem, and nature in general. May this effort have the support of all parties and provide benefits to all communities and specifically to the students.



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## **ORGANISING COMMITTEE CAMP BAKAU 1.0**

### **CAMP LEADER**

Dr. Nurul Salmi Abd Latip  
*Fellow, RCE Penang*

### **CAMP FACILITATORS**

Assoc. Professor Dr Aswati Hamzah  
Dr Rohaya Abdullah  
Dr. Nurul Salmi Abd Latip  
Dr Nooraida Yakob  
Dr Rabiatal-adawiah Ahmad Rashid  
Assoc. Professor Dr Mohammad Zohir Ahmad@Shaari  
*Fellows, RCE Penang*

### **SECRETARY**

Ms. Wan Sharipahmira Mohd Zain  
RCE Penang  
Mdm Nur Syazwana Hamzah  
*RCE Penang*

### **TREASURY**

Mdm Kamsiah Kamarudin  
*RCE Penang*

### **FACILITATORS**

Khairunisha Binti Rosidi  
Muhammad Amir Ikhwan Bin Rosli  
Nur Fazlin Bt Ramli  
Noor Amirah Binti Norizan  
Nurin Athirah Bt Mat Azam  
Nurul Amirah Binti Ramli  
Siti Nor Anis Binti Amran  
*RCE Sejahtera Youth (RSY)*