



Annual Report 2018



"Education is the most powerful weapon which you can use to change the world"



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AWAKE Water for Kids collaborated with the Udayana University to organize the Astika Dharma Community Centre Project.

We want to thank Bottles for Earth for their kind donation of reusable water bottles, WMNSurfMag for the support in spreading our message to the world and Bali Green Surf School for providing their space for our events.



1. INTRODUCTION

AWAKE stands for Awareness for Kids Education and is a community we founded in April 2016. The name AWAKE summarizes our vision and mission. We want to create awareness of children's' lives worldwide. Our goal is to inspire as many people as possible, to help us provide children with the essential resources for their individual development.



Figure 1: First visit of the Astika Dharma Community Center. Direction: JCQ5+99 Besakih, Pempatan, Karangasem Regency, Bali, Indonesia.



2. THE ASTIKA DHARMA COMMUNITY CENTRE

In April 2018, our project manager Alina Bollow touched ground in Bali to start our AWAKE project at the Astika Dharma Community center in Bali, Indonesia. During this initial visit, the AWAKE team gathered information on the Astika Dharma Community Centre's work, such as the geographic location and organizational setup. The results are summarized in the following paragraphs.

The spacious Astika Dharma Community Centre is an orphanage, nursery, (and) a dancing and martial arts school. Additionally, due to its location serves the function of an evacuation Center in case of a volcanic eruption of Mount Agung. The Astika Dharma Community Centre offers room for about 350 people.

The Community Center in East Bali is far away from the central tourist regions located in the southwest. Consequently, the country's east shows a much lower economic development, for it does not benefit from tourism and its income. In addition, the region lacks basic infrastructure, housing, sanitary installations, schools, and waste management.

Alina and a team of AWAKE volunteers (Picture 1) first visited the center on the 1st of May 2018 to meet with the village kids and the Astika Dharma Community Centre's management.

The pictures below (**Figure 2 - Figure 7**) provide an impression of the *Astika Dharma Community Center* architecture, infrastructure, and geographic region.



Figure 2: View of the entrance of the Astika Dharma Community Center

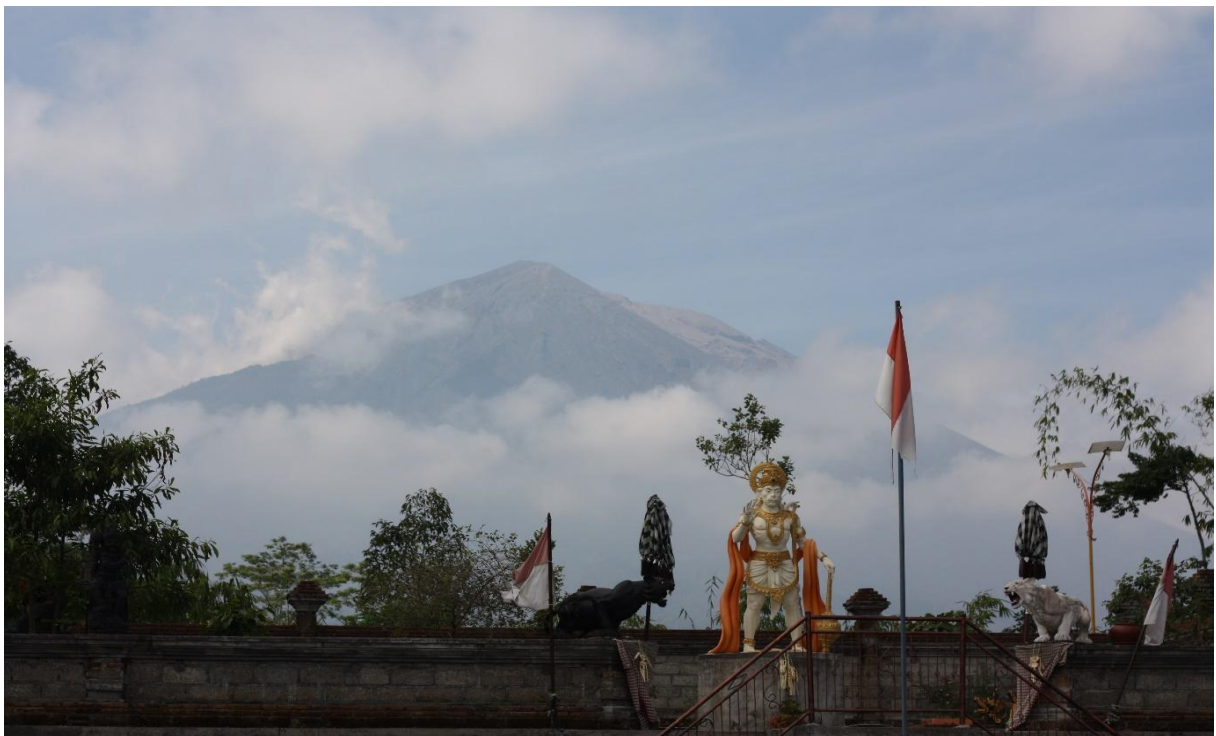


Figure 3: The Center's wall with a panoramic view of the Volcano Mt. Agung



Figure 4: Water Tanks



Figure 5: Water Resorts for Rainwater



Figure 6: Construction site



Figure 7: Construction site



3. IMPLEMENTATION PHASE

The Udayana University, where Alina was spending her semester abroad, established a collaboration with the Center of Astika Dharma to support their work in creating a space for the community to strengthen collective work and relationships.

The Astika Dharma Community Centre's management introduced us to their plans to restructure the building and open a primary school. After our first visit, it made even more sense to collaborate with the Udayana University and support the Astika Dharma Community Centre's in their plans to build a school

During the following three months, the AWAKE Team Indonesia visited the kids continuously to provide English lessons, workshops on recycling, and exchange cultural habits. Furthermore, the team equipped the school with classroom material, chairs, tables, a water purification filter, and reusable water bottles to avoid the use of single-use plastic bottles.

3.1. WORKSHOPS AND CULTURAL EXCHANGE

The AWAKE Team visited the *Astika Dharma Community Center* three times, providing English classes and playfully teaching the kids about waste sorting systems.

On Friday 8th of June 2018, the AWAKE Team had their first school session. Seventeen children of very different ages, between 5 and 12 years, participated in the English lesson. Although initially, the students had hardly any knowledge of the English language, they were highly motivated, so we ended up giving a three-hour class. They learned how to introduce themselves, have basic conversations, and memorize numbers and weekdays. We incorporated rhymes, music, and games into the teaching method, as most Indonesians are very musical and love to sing. Also, learning words by singing makes it easier to remember them, as the song functions as a memory hook.

Furthermore, we played some simple games to educate the children on sorting waste properly. For example, we used big cards labeled with the words Plastik (Engl.: plastic), Kertas (Engl.: paper), and Organik (Engl.: organic) and placed them in a big circle around a pile of (clean) waste. Then, the kids had to stand up, introduce themselves, pick a material, name it in English and place the garbage in front of the right card.



On Thursday 14th of June, two members from the School Team and our Team visited the Astika Dharma Community Center. After a short get-together with the community and the kids, the preparation for the next English lesson started. At the beginning of this session, we focused on revising the first lesson. We continued with cardinal numbers and months, as well as body parts. Then, the kids held dialogues in pairs of two in front of the rest of the class to get used to the pronunciation—this practical approach helped the kids to speak a new language without any fears and worries.

On Friday 29th of June, after two weeks of public holidays, the team went to the Astika Dharma Community Center again. Some of the kids had already been waiting for us and were excited about the next lesson. This day's class focused on strengthening the kids' knowledge about the vocabulary and phrases learned so far, by practicing basic conversation in dialogues.



Figure 8: First session 08.06.2018

As most of the kids had never had English lessons before, it was vital that the kids memorize the essential words and phrases and understand how valuable the exercises are. Therefore, we then concentrated on cardinal numbers. Thereby, we randomly picked numbers between 100 – 15.000 to check if the kids could apply the acquired knowledge.

At the end of the third lesson, we handed over reusable water bottles to the children, which had been donated by *Bottles for Earth*, to prevent the future consumption of plastic bottles and thus the production of much unnecessary waste.



Figure 9: Second session 14.06.2018



Figure 10: Second session 14.06.2018



Figure 11: Third session 29.07.2018



Figure 12: Kids completing English sentences



Figure 13: Kids performing a traditional Balinese dance

3.2. CLASSROOM INSTALLATIONS

At the beginning finding trustworthy and qualified suppliers was much more challenging than expected. In addition, the excellent quality of the craftsmanship was important to guarantee higher durability of the furniture.



Figure 14: Kids with donated school supplies



Figure 15: Classroom facilities, which are hand made by local carpenters

Table 1: Cost calculation for school materials

MATERIAL	UNIT	PRICE/UNIT	TOTAL PRICE
Table + Chair	20	1.200.000	24.000.000
Whiteboard	2	820.000	1.640.000
Pen for Whiteboard	20	9.000	180.000
Globe	1	660.000	660.000
Map	2	130.000	260.000
Ball	2	300.000	600.000
Notebook (á 10 units)	8	56.250	450.000
Pen (á 12 units)	10	20.000	200.000
Pencil (á 12 units)	10	40.000	400.000
			28.390.000



3.3. WATER PURIFICATION FILTER

The initial idea was to provide a water purification system to the Astika Dharma Community Center and the children to drink water provided by the government through pipelines. With this, they would be independent of water delivery by tanks or bottles, as they used to have.

During our first visit to the Astika Dharma Community Center, we found that there are indeed pipelines for water supply from the government, but no water flow.

The school director Mr. Kadek told us this is due to the low power of the pumping station at the water spring around 7 km away. As a result, the pumping station does not pump enough water to the nearby tank station from where the water would flow to the Astika Dharma Community Centre.

The Engineering Team tried to contact the institution responsible for the water supply in Indonesia, the Perusahaan Daerah Air Minum (PDAM). Unfortunately, we could not reach anyone who would help us or would be able to provide any additional information. Furthermore, since this involves the government, we felt that getting a new pump was not realizable during our project time as the bureaucratic processes of governments are prolonged. Also, we encountered significant language barriers. For example, the homepage of PDAM was only in Bahasa Indonesia. Without a proper connection to a responsible person on a higher level, it seemed unrealistic to us to achieve anything going this path. Hence, we decided to concentrate on a water purification system that would filter the water currently coming from their local water tank but could also easily be used to purify the water coming from the government pipeline once the government installs a pumping station with good power. The Astika Dharma Community Centre fills its local tanks twice a week with about 12.000 liters of water by buying it from a supplier that brings it with a water truck. They pay about 12 IDR per liter. In comparison, water provided by the government would be one-third cheaper, around 4 IDR per Litre.

In the beginning, we tried to find local producers or suppliers of water filters/purification systems. Although we did not find any local producers, we were able to find some local suppliers and companies that do custom builds. One of these



companies is Smart Bali Pure Water. After some contact difficulties initially, Smart Bali Pure Water recommended testing the water before choosing a water filter system. So, the Engineering Team searched for organizations that could help us test water. We assigned the diagnostic center Quantum Sarana Medik with the task. The water test was taken from the water tank at the Astika Dharma Community Centre.

The diagnostic center tested for impurities such as suspended particles, metals, bacteria, and viruses. The test costs were 960.000 IDR. While the Engineering Team waited for test results, they intensively researched and informed themselves about water filter and purification systems' different kinds and work principles. The water test result shows that the amount of lead in the water sample was four times higher than recommended. All other values are not alarming. Lead is a heavy metal that can be a serious toxin for the human body when consumed too much. This is especially dangerous for children as lead can negatively affect the development of their brain, damage their nervous system and cause cancer. Furthermore, lead is not minimized by cooking/boiling the water, as is currently practiced by the children at the Astika Dharma Community Centre to purify their water!

Before installing a filter, the Engineering Team recommends further investigation about the possible cause of the high value in the lead. Many times, this is due to old lead pipes. Alternately the reason could be the water supplier. Maybe there are used pipes or parts (for example, soldering tin) made from or containing lead. Water that gets in contact with it for some time may be contaminated. Removing those pipes/parts would be a simple and less expensive measure to ensure the water is safe to drink in the future. Therefore doing additional water tests with the water coming directly from the spring and not from the water supplier should be considered.

If the source of lead cannot be located or the spring water itself is contaminated with lead, the Engineering Team would recommend installing a Carbon Filtration System at the point of use (under the sink). Although this is a cartridge system where the cartridges need to be changed regularly (approximately every 6 months), this would still be the best option compared to a distillation with high energy costs or reverse osmosis that removes all valuable minerals. Moreover, a Carbon Filter System is



recommended because other filter modules like Ultra-Filtration or an Ultraviolet Unit for reducing/killing Bacteria and viruses can easily be added in the future. This can be important as there might be water coming through the government water pipes at some time in the future. This water will most likely be of lesser quality than the current water and need more filtering.

After a thorough investigation of the existing sanitary infrastructure, the most practical solution to provide the center with drinking water was the water purification system called the NAZAVA water filters. These filters work manually: the water is poured into the top part, then runs through filters and turns into fresh, clean drinking water.



Figure 16: Water Filtration System NAZAVA



Figure 17: Kids using water filter



Figure 18: Kids with reusable bottles, donated by Bottles of Earth

4. COSTS

In the following tables, the cost calculation is shown.

Table 2: Expenditure costs

No.	TYPE	CALCULATION	AMOUNT (IDR)
1	Driving costs		284.000
1.1	By Scooter	((50+60+70+25+15+10) km x 2) x 0,04 l/km 10.000 Rp/l = 144.000 IDR	184.000
1.2	By Grab	-	100.000
2	Gravity Light	-	-
3	Waste Management	-	-
4	Reusable Bottles	0	0
5	Booklets	-	-
6	Water testing	-	960.000
Total costs spend			1.244.000

Table 3: Possible future costs

No.	TYPE	CALCULATION	AMOUNT (IDR)
7	One more water test	-	960.000
8	carbon filter system	-	2.500.000
9	installation of filter	-	1.000.000
10	Regularly change of filter cartridge	500.000 every 6 months	1.000.000
Possible future costs			5.460.000



5. CONCLUSION

The AWAKE Water for Kids Team Indonesia took four months to carry out the project with the Astika Dharma Center. In the first step, the research phase, the focus was on building relationships with the Udayana University and local businesses. In the next step, we started organizing workshops with the kids, while at the same time, events around Seminyak were arranged to communicate our message on sustainability and education. Finally, the last step included installing the classrooms, equipping the school with school material and providing water purification filters and reusable bottles.

In summary, the Engineering Team was able to find a trustworthy company in Bali providing water filter systems named Smart Bali Pure Water. We led the diagnostic center Quantum Sarana Medik test water from the Astika Dharma Community Center water tanks for impurities such as suspended particles, metals, bacteria, and viruses. The results show a very high amount of lead. The Engineering Team recommends finding the cause for this high value before investing in a water filter system. If the lead source cannot be found, we would recommend a filter with activated carbon, as this can significantly reduce the amount of lead. Our recommendation is based on broad research regarding this topic.

A water filtering system has been installed to provide fresh and clean drinking water for Astika Dharma Community Center students and teachers. In addition, the team was able to get 50 reusable water flasks donated for the children to reduce the use of plastic bottles.

The Engineering Team has gathered one lesson during the project: Everything takes more time in Bali. This is mainly due to many holidays, uncertain or nonspecific answers, and non-reliable digital communication (for example, email is barely used). Therefore, the best way to go is always face-to-face communication.

In the future, AWAKE Water for Kids will continue working with the Astika Dharma Community Center to support their goal of expanding their local school. In Summer 2019, the center will open a nursery school and more classrooms.

Our AWAKE Water for Kids team is grateful for this cultural exchange and the experience of working with the Balinese community.



Astika Dharma Community Centre



Thank You!



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