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‘Be water, my friend.’ Bruce Lee’s famous words feel more relevant than ever. Across the world, we are having to adapt to new ways of living. It is a testing time, to say the least, but we are all learning to make the best of the situation we find ourselves in.

We have a habit of falling into patterns of behaviour. Once we begin creating a pattern, the grooves grow deeper and it becomes more difficult to make a change. Thankfully, humans have generally remained in the habit of innovating across the generations. This has led to today’s highly advanced civilisation, the likes of which only previously existed as science fiction. However, this pattern of productivity appears to be a double-edged sword. Our use of resources is destabilising the natural world, our world. Yet, innovation remains our most powerful tool. We must innovate with the goal of improving the health of ourselves and the planet. Carbon capture, electric vehicles and plastic-eating bacteria are just some examples of green innovation happening today; the possibilities for innovation tomorrow are endless.

At Traidhos, we are lucky to work in outdoor education, an area ripe for innovation. We have the flexibility to create camps and activities that cover pressing environmental and social issues. For example, in February we ran a new Clean Air For Our Future Camp for local and international students. This free camp aimed to educate and empower tomorrow’s leaders. Through innovation, we can create a better tomorrow.

In this issue of Traidhos Quarterly, we have articles detailing innovations in education, history, music, nature and sustainability. This wide selection of inspiring and enlightening stories come at a time when we need them most. I hope you enjoy.

Editor

Jacob Smith
Touching lives for twenty-five years

In the year of its silver anniversary, Head of Community Lynda Rolph looks back at the transformation of the Traidhos Barge Program and the difference it has made to lives of those it has educated.

“From its confluence at Nakhon Sawan, past the capitals of ancient Ayutthaya and modern Bangkok, before pouring into the Gulf of Thailand at Paknam, the Chao Phraya River touches the lives of millions of people”

—William Warren, 
Menam Chao Phraya: River of Life and Legend (1994)

“What do you think moving to an incorrect square was a mistake?”
Hands start to shoot up and are then pulled back down again. Smiles spread across faces as the group of teenagers think about this question in relation to the maze game that we had been playing. The game is quite simple. As a class, students have to identify a pre-chosen mystery pathway through the maze grid, one square at a time. If they select the square that corresponds to the facilitator’s map, they can continue. If they choose a square not in sequence, they must leave the maze and begin again.

We pondered this question of a mistake. If we never tried, we would not know what works. We need to step out into the unknown to be able to move forward and make progress. In our lives, we cannot innovate and explore new ideas and find new solutions, if we are not prepared to step out, learn from our failures when they occur and try again.

Stepping out is usually worth celebrating and this year the Traidhos Barge Program celebrates twenty-five years of innovative thinking that started as an idea by founder ML Tri Devakul and his good friend Tim Ellis. Imagine a quarter of a century ago, stepping out to create a floating classroom, a travelling learning laboratory on the Chao Phraya River with the aim of “raising consciousness and understanding about the issues of the Chao Phraya specifically but of country, region and planet as well.” – ML Tri, 1994.

The idea seemed ahead of its time and some people questioned if it would work. However, as with our favourite maze game, the Barge Program would never have got underway without that risk-taking attitude and the decision to step forward, along with the determination to try again when things did not instantly work out.

What started as a converted rice barge working its way up and down the river between Bangkok and Ayutthaya with a menu of a dozen or so activities, has developed into a rich watershed program encompassing much of Thailand. Today, we celebrate that students can travel to the North of Thailand with the Program to learn about the connection mountain people have with the land and the local wisdom that protects the forest; we revel in the days spent in Khao Yai National Park each year, learning about the role of water in this habitat and the abundance of life that we can glimpse; we interact in the lives of fisherfolk and observe the fragile habitats in Ranong and Chantaburi; and we continue to eulogise the Chao Phraya – River of Kings, where it all began.

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Perhaps today, the approach of the Barge Program is needed more than ever. Taking young people away from the classroom and their computers to see for themselves. To experience the hot, sweaty, beautiful and diverse reality of different parts of the watershed, and to work together to really get to grips with the environment for themselves.

What has changed in twenty-five years? Along the river itself, there have been huge developments. Where the stilts of small wooden houses were once washed by the Chao Phraya’s waters, now brick and concrete give a possibly false impression that modern-day construction is the way forward. We see less floating rubbish on the surface of the river but we have also witnessed the disappearance of the 30,000 strong breeding colony of Asian Open-Billed Storks which once filled the skies and trees at Wat Pai Lom. We have seen additional temples and statues constructed and a plethora of bridges have appeared. In National Parks, we have witnessed more awareness about the human impact on these wild spaces. But, we continue to meet students for whom the physical and personal journey away from the city opens their eyes to something new again and again.

Public awareness of the bigger picture of global climate change has also developed; the importance of limiting our consumption and the concept of sustainability, have been reframed in the language of today. The Barge Program is part of this effort and continues to take its place in the annual timetable of most of the international schools in Bangkok, as well as others from further afield. We challenge individuals to see for themselves and to take action, both through class projects in communities and long-lasting individual lifestyle changes.

ML Tri anticipated the Barge to be a laboratory for ideas. In 1995, we could not have imagined that one day, spreading out around the world there would be over 65,000 people who have participated or taught with the Program. People who have thought about their place in the world because of their field trip experience, developed independence, and amongst other things been challenged to rethink their showering habits with the three-minute shower challenge. We could not have envisioned facilitating trips in the wetlands of Nakorn Sawan, nor that past participants would one day be applying to work with the Program, while others cross our path while following careers in work connected to sustainability or the environment. It is good to hear their stories: “I remember when I was on the Barge...”. And, despite the passing of often many years, the memories, told with a smile, are bright and clear. Special memories, of a special Program, that started with a special idea. An innovation ahead of its time, one that was worth that first step. The words from the original rationale and mission are as true today as they were twenty-five years ago: “The river has stories to tell of our past; amongst the hustle of daily modern life, it speaks of today’s issues of environmental integrity and societal pressures; it flows with the promise to restore and preserve the river’s unique environment and atmosphere and to give a new meaning to young and old alike.”

The journey has not ended, we continue to step forward, ever conscious of the changing world around us, ready for the next opportunity that will spark another idea and lead to new growth; learning from our work and the people we meet, to discover tomorrow’s stories and the next chapter waiting to be experienced.

Happy 25th Birthday, Barge Program!

If you would like to know more about Traidhos Barge Program or are interested in an environmental education fieldtrip contact: barge@threegeneration.org or visit us online at barge.threegeneration.org

Lynda Rolph is Head of Community at Traidhos Three-Generation Community for Learning. She is the former director of the Three-Generation Barge Program. She is a highly respected environmental educator, with teaching experience in the United Kingdom and Thailand.

Photos: Traidhos, Prem
Our community has focused heavily on the issue of air quality over the last few years. This has led to major changes that have improved the health and wellbeing of all. Achim Haag, Chair of Prem’s Parents School Community (PSC), details how this was achieved.

We are all too well aware of the annual smoky season in Thailand and its impact on our health and wellbeing. Especially for schools in the region, managing the air quality inside the classrooms is a challenge and often seen purely as a risk or disturbance. It is a risk to students as younger children can be particularly vulnerable to respiratory illnesses. For teachers and staff members too, poor air quality is distressing, and many would prefer to move away from polluted locations as it is detrimental to their health. Families would understandably make the same consideration to protect themselves, slowly impeding the growth of schools in the region. Air pollution can badly affect the students’ learning environment and is especially harmful to students who are exposed to pollution while performing physical activities outside. Parents will also be concerned about their children’s health when they go to school, causing worry on their part as well.

Many schools and educational institutions consider air quality investment solely as a cost factor. There may be resistance to change as it is perceived as a burden that requires them to commit to significant investment and change long-established systems.

However, at Prem we decided to look beyond these negative factors and to use the issue of air pollution in Northern Thailand as an opportunity for positive change. This positive change has been manifested in different and innovative areas.

One of the first steps was the recognition that this difficult topic can only be tackled with a strong community of students, teachers, school administrators, parents and the Traidhos community. As a result, in September the Prem Air Quality Committee was formed. Comprising the Head of School, Operations Manager, Director of Boarding, Head of Traidhos Community, student, teacher and parent representatives, the committee is currently meeting weekly and coordinates all air quality activities of the school. A key driver of success is that the committee members keep their respective groups (e.g. students, parents, etc) informed about the activities and involves them in the decision making.

The holistic approach of the committee focuses on the following aspects: transparency, awareness and education leading to preparedness.

Transparency

It was very quickly recognised that as a first step, it is essential that Prem has detailed data about the air quality inside the classrooms as well as outside. This data can then be used to not only optimise the air quality in the indoor spaces but also to inform the community about the health exposures and thus improve awareness of the issue.

Recognising the issues the school faced in 2019, two Prem parents started designing and developing an air quality monitoring system called AirGradient which now employs nearly forty sensors in all homerooms, common areas and outside locations sending real-time data to a central server.
This system is now used by all teachers, staff and also delivers daily reports about the air quality to parents – thus providing full transparency and increasing awareness.

The charts and reports from this system allows the air quality committee to make meaningful decisions, for example, where to locate additional air purifiers.

One interesting aspect that was detected through the AirGradient sensors was that – besides the seasonal PM 2.5 exposure – many classrooms have quite high CO2 build-ups during the day.

CO2 is not as harmful as fine dust but elevated levels beyond 1500ppm can severely reduce cognitive performance and thus negatively impact how well our students can learn.

Awareness & Education

This transparency and communication increased the awareness of the whole community but was then further supported by the following activities:

**Roundtables**

The PSC (parent organisation of Prem) moderated four roundtables where parents and school representatives could discuss the issues of AQ reporting, remote learning during smoky season, holiday planning, and wider community activities. These roundtables had a very positive effect on aligning the expectations of different groups and finding good solutions.

**Fundraising**

In 2019, many parents donated money to support the dangerous work of local firefighters. This was then continued by the PSC who raised funds through specific events, like the Christmas on the Quad Celebration, a movie night and other events. This continuous fundraising helps to raise awareness.

**Student Camps**

Student camps are an excellent way for schools to encourage air quality initiatives outside of school semesters. Similar to STEAM week and extracurriculars, it would encourage students to have fun while learning about the importance of air quality. It is a great opportunity for schools to invite experts and even include students from other schools.

At the end of February, Prem & Traidhos organised a two day Clean Air For Our Future Camp with participants from four local Thai schools to increase the awareness of the local burning issue and also present solutions. A special thank you to our parent Ben Svasti for initiating this camp and being a major contributor.

**STEAM Week**

STEAM (which stands for Science, Technology, Engineering, Arts and Mathematics) is a fun and exciting way for students to create and present their projects to their parents, teachers, and students of all grades. In February, Prem put the STEAM week under the topic of air quality. Students were engaged in building PM 2.5 particle sensors and air purifiers that are now used as positive pressure systems in some of the classrooms.

**Parents and Staff Building Positive Pressure Systems**

In the smoky season, most outdoor exercise cannot take place as the AQI is too high. Therefore, providing purified air in the gym was high on the school’s list of priorities. However, the gym has approximately the volume of one hundred classrooms and Prem could not find professional systems that could be delivered before the smoky season. Therefore, a small team of Prem parent’s together with Ajarn Simon (Curriculum Leader in Science) and the Prem maintenance team built four large purifiers that are now used as positive pressure systems in the gym. These units pump filtered air into the gym at a rate of approximately 5000m3 per hour. Supported by additional purifiers inside the gym for internal circulation, the system can bring the gym to healthy AQI levels (<50 US AQI) even on heavily polluted days.

**A strong community leads to preparedness**

The increased knowledge of the whole community combined with the data available made it apparent that during the burning season, the professional positive pressure system is the best guarantee of healthy levels of both PM2.5 and also CO2 in all of the learning spaces.

Of course, it is also important to look beyond our school and also actively work with the local community and government agencies to reduce the burning in general. Our children’s camp is a good example in this respect and hopefully, more activities like this will be planned.

Overall, it was excellent to see the community come together to build air monitors and purifiers; it is a great example of Prem’s innovative approach to combining Transparency, Education and Awareness, and this has already led to a substantial improvement in air quality. As Henry Ford said, "Coming together is a beginning; keeping together is progress; working together is success".

**Achim Haag** is Chair of the PSC.

**Photos:** Prem, Susie Rungsinee
Samanea saman, commonly known as the rain tree, is a species of flowering tree in the pea family, Fabaceae. It is native to Central and South America but has since been brought to Southeast Asia and the Pacific Islands. Mr H. A. Slade, President of the Thai Forestry Department, first brought the rain tree to Chiang Mai over a hundred years ago.

The tree was soon used to cultivate lac insects, which thrive on its bark. Once harvested, the lac's resin can be used to produce natural dye, letter-sealing wax and food colouring. The processed resin, called shellac, became one of the largest sources of income for Chiang Mai. The tree’s seedpod fruit was also used to make tea in the past.

The tree is popular for many reasons today. Its large umbrella-shaped canopy provides shade for people and for slower-growing trees, which require protection from direct sunlight. Furthermore, at the peak of the dry season in Thailand, the tree’s leaves are healthy and green at a time when many other trees have lost their leaves completely. The rain tree also grows well in various environments and is, therefore, a good starter tree when trying to create a forested area from scratch. The rain tree was important in beginning the process of converting the Traidhos campus from a rice paddy to its current leafy-green state. It is
also very beautiful, with stunning pink flowers that attract pollinating bees from August. The seedpods attract animals with their glucose and can be fed to goats, cows and buffalo. When the leaves fall, they compost well and add nitrogen to the soil. They are used for composting by Traidhos Farm and make good soil for seed planting.

Rain trees are very hardy and will outcompete many native species. This means it should probably not be planted in a native forest that is already mature. It has light-sensitive leaves which are open in the daylight and begin to close at dusk. It is thought that this adaptation occurs so the tree can capture maximum sunlight in the day and then retain maximum moisture at night. The rain tree’s outer layer of bark is very thick, which protects the inside of the tree from insects. The outer layer is partially peeled off, creating a larger surface area to help retain moisture. This makes the tree a good home for various ferns, mosses and lichen. Its branches are weak and prone to falling. This means it can be hazardous if planted near buildings or walkways.

The rain tree has attained a certain level of cultural significance in Thailand. Despite being non-native, it is the provincial tree of Lamphun Province. Chulalongkorn University in Bangkok has many rain trees around its campus and the tree is said to represent the cycle of student life: its fresh green leaves at the beginning of term represent the freshman’s naiveté; the slimy pods and shed leaves later in the year make the ground slippery, thus warning students to prepare for their exams or risk slipping and failing.

The rain tree certainly has a lot of character and contributes greatly to the beauty of our campus. Look out for it next time you are out and about in Thailand, observe its ability to adapt to the light and flourish in this climate.

Information by Sompong Naruemmonnapakorn
Written by Jacob Smith

Photos: Jacob Smith
Carbon air capture technology and sustainable development in cities

The goal of the global Paris climate agreement in 2015, was to keep the world’s temperature from rising more than two degrees Celsius above pre-industrial times. To do that, nations have agreed to cut their emissions of carbon dioxide (CO2). This is no easy task for world leaders, with many economies relying on fossil fuels to power their energy. This is also a contentious matter for newly emerging countries, as they want to develop their economies just as the richer nations of the world did during the industrial revolution. We may ask whether it is fair to put huge pressure on developing countries who do not have the money to invest in sustainable technologies to reduce their CO2 emissions. Given this, and the fact that poorer nations are more susceptible to extreme weather-related events, should rich countries be shouldering the responsibility for climate mitigation efforts?

So while climate change talks have raised these concerns, the Intergovernmental Panel on Climate Change has proposed several actions that world leaders could take to combat the issue.

1. **Reforestation** - the effort of planting trees is a popular proposition. Restocking existing forests and woodlands that have been depleted through deforestation would help in eliminating CO2 globally. However, this cannot be relied upon completely. To significantly reduce atmospheric CO2, trees would have to be planted across at least half of the area of the planet. This is, of course, unrealistic at the current rate of deforestation and most of this land is needed for agriculture.

2. **Carbon tax** - A tax on carbon is an effective way to ensure that countries pay for the environmental damage that results from releasing carbon into the atmosphere. The tax is a monetary disincentive that will hopefully motivate transitions to clean energy across the economy. According to the World Bank, forty countries use carbon taxes and a total of eighty-eight intend to use them to meet their Paris Agreement goals. Still, the tax does face criticism. The main problem is that it is difficult to impose a worldwide carbon tax that is fair to everyone. The tax, which would increase energy prices, is unfair because it disproportionately affects lower-income households, who do not emit much CO2 in the first place due to their more basic living.

3. **Renewable energies** - Renewable energy sources have a large potential to displace greenhouse gases. If implemented properly, renewable energy sources can contribute to social and economic development, to a secure and sustainable energy supply, and a reduction of the negative impacts of energy provision on the environment and human health (IPCC, 2020). Iceland is an example of a country who has successfully converted its energy supply to one hundred per cent renewables. Despite the potential of these sources, with technologies ranging from solar, to wind, to hydro, to geothermal – many countries are unwilling to commit. Part of the reason why Iceland has been able to make such a shift is because the government subsidised the purchase of solar panels for its citizen’s homes. Without such financial policies in place, it is unlikely that countries will make the shift to self-sustaining technologies.

**Carbon air capture**

The best way to respond to the climate crisis is to stop emitting greenhouse gases; however, recent developments have been made to remove already-emitted CO2 from the atmosphere. Climeworks is the first commercial company claiming to be able to capture CO2 from the ambient air. Removing carbon directly at the source (power plants) will prevent it from polluting the atmosphere.
At the Hellisheidi geothermal power plant in Iceland, Climeworks repurposes CO2 by injecting it into basaltic rock formations where it reacts and forms solid carbonate. Their first power-generating waste incineration plant in Hinwil, Switzerland can capture nine hundred tonnes of CO2 every year. Carbon is captured through the following cyclic absorption process:

1. The plant captures atmospheric carbon with a filter, using low-grade heat as an energy source.
2. CO2 collectors draw in ambient air and CO2 molecules stick to filter material.
3. Once the filter is saturated with CO2, the collector is closed and is then heated to around one hundred degrees Celsius. The CO2 then unsticks.
4. The CO2 is syphoned off, leaving the filter free to collect again.

Although the CO2 can be turned into stone or stored underground, the core of the business model proposes to sell the gas to be reused. The CO2 can be sold to customers in several markets. In commercial agriculture, it can be used as fertiliser for plants and vegetables. In the food and beverage industry, the CO2 can be used in carbonated drinks. It can also be sold to the energy sector, as CO2 can be used to generate heat and electricity to run a facility.

Climeworks’ goal is to remove one per cent of annual CO2 emissions by 2025 (currently we emit more than thirty-six billion tonnes annually). To do that they will need to attract customers who want to eliminate their consumption of CO2. But to achieve the two degree warming target by 2050, it has been estimated that we would need to remove more than ten billion tonnes of CO2 from the atmosphere every year.

Of course, this seems unlikely. It is going to take all of human ingenuity to combat the climate crisis. New technology starts on a small scale which often means that it is expensive. Therefore, bringing down the costs of new technology is all important as it can then spread across the developed and developing world. If carbon capture technology can be used more widely, experts claim it could go a long way towards meeting international climate targets and limiting the worst effects of the climate crisis.

Therefore, the focus should be on getting policymakers to incentivise the adoption of green technologies. By making it more economically rewarding to move to non-carbon fuels, countries are more likely to meet their emission goals. Those who actively work towards cutting their CO2 emissions must be rewarded, and those who do not must be penalised. This will ensure that richer countries do not wriggle out of their carbon commitments and that they take their fair responsibility for their historic emissions. An effective way of helping developing countries adapt to extreme weather events is to assist with the funding and transfer of sustainable technologies. It is clear that direct air capture is not the only way to do this, but it certainly has a role to play. Carbon capture is an example of human ingenuity, a tool to be used among many when it comes to engineering a more sustainable world – one that is prepared to take on the challenges posed by the climate crisis.

Haaniah Akhtar is a Coordinator and Facilitator at Traidhos Camps Program. She is interested in finding positive stories about the climate crisis to inspire hope.

Photos: Climeworks
Diagram drawing: Haaniah Akhtar


Service learning in Chiang Dao

In January, Traidhos Visiting Schools Program welcomed Year 13 students from Bromsgrove International School Thailand. For the third successive year, they visited Pang Daeng Nok, a Dara-Ang community in Chiang Dao district. Each year, the students work directly with the villagers to build whatever the community needs at that time. Some of the Bromsgrove students tell us about their service-learning experience and what it taught them.

Looking back at my time helping this community, I can honestly say that this is the most meaningful and rewarding challenge week that I have ever been a part of. This trip to Chiang Mai was definitely challenging for all of us, and it has strengthened our teamwork skills and given us an insight into our true potential.

Our first few hours in Chiang Mai involved visiting the community we were helping, Pang Daeng Nok, to observe our work sites and identify the areas within the community that we were going to focus on. The locals also showed us some local skills like natural dyeing, weaving and peanut roasting. We then collectively figured out the necessary steps we had to take to achieve our goals. We planned to rebuild the playground at the school and construct a building, which would be used as a welcome house for guests of the village. In all honesty, with the plan we came up with, I didn't think we were going to finish it in time (I couldn't have been more wrong). In little more than a day, we had finished what I thought would take us right up to the deadline. This made the trip all the more rewarding for me. Being able to see my friends work together alongside the local community and seeing them develop a very strong bond in the short time we were there – these were unforgettable sights that make me proud to be the head boy of this school.

The trip was truly life-changing and I encourage anyone in the younger years to take part because I can assure you that it will give you a whole new outlook on life. The kids at Pang Daeng Nok barely have anything and yet they live lives filled with joy. We have air conditioning, Wi-Fi, laptops and we attend a school with all the resources we need to thrive. We have all the components in our lives to be the happiest version of ourselves possible, but why do I still hear my friends complaining about how life is treating them unfairly? If you go on this trip, you will certainly look differently at the world and your own life.

I asked the team to talk about their experience:

“Our residential trip to Chiang Mai has undoubtedly been one of the most rewarding moments of my seven years at this school. Not only did I develop a stronger bond with my classmates, but I was also able to learn a great deal about the country I am living in, through service work and interacting with the local community.”

Minjae

“It was my favourite trip that I’ve been on. It was eye-opening and helped me better understand how hard so many labourers work when we rarely acknowledge them.”

Tawfiq

“Going to a stateless village and being able to learn more about the struggles the people there have, while also being able to learn about their culture was rewarding. The bond formed in the short amount of time with the people who worked beside us and the kids in the village was life-changing. It is an experience that none of us will ever forget.”

Paulina

“I feel that we truly helped the local community during our trip. I admire the teamwork and problem-solving skills that each member showed. Overall, I believe that the trip was a success.”

Anastasiia

Rapee Limweshasin is head boy at Bromsgrove International School in Bangkok. Along with the head girl, he led the Year 13 students in the process of planning and building at Pang Daeng Nok.

Photos: Jacob Smith, Achara (Olin) Manasmanotham
The Dara-Ang, also known as the Palaung/Palong, are one of the seven officially recognised hill tribes of Thailand. They first arrived here in the 1980s and were given permission to stay in the country by Rama IX, though they were not granted full citizenship. There is an estimated five thousand ethnically Dara-Ang people in Thailand today. Dara-Ang people also live in Myanmar’s Shan State and China.

Each hill tribe has its own traditional dress; this clothing is often deeply symbolic. For the Dara-Ang, their clothing represents the story of their ancestors. They believe their ancestors were angels who came down to Earth from Heaven. They were playing in a river when a hunter came and trapped them. They lost their wings and were unable to leave Earth. And so began the story of the Dara-Ang.

Jacob Smith is a Coordinator for Traidhos Visiting Schools Program. He worked with the Makhampom Foundation to facilitate Bromsgrove’s visit to Pang Daeng Nok.

Painting by Haaniah Akhtar
Every school community should be a thriving hub of new ideas and experimentation. Precious Plastics Academy: Prem is a great example of the innovation that can occur under these conditions. Emma Shaw tells us how the project came to fruition.

The Global Issue

We all know that waste is bad, and by now we should all know that plastic is one of the worst waste problems there is around the globe. Whilst plastic is now the enemy of all, it remains an amazingly durable and inexpensive product that can be used for any number of purposes. There is more than one type of plastic – current classifications have the main list at seven – each with their special properties and potential applications. You might think this sounds great, but what about when we get bored of those things or they break? Then, this amazing material becomes a giant problem in terms of waste disposal. The flexibility of many types of plastic is also their major downfall when it comes to recycling, reusing and repurposing. Each has different melting points, rendering a multi-use plastic product, like the humble plastic bottle, a recycling nightmare that many people are not willing to tackle.

When you buy water, iced tea, a carbonated drink or any other liquid, the container you buy is made from up to three different types of plastic used for the bottle, the sleeve and the lid. These cannot all be easily recycled. The bottle is type 1 and is widely collected and recycled in Thailand, the lid is type 2 and there is currently no recycling program for this, and the sleeve is type 4, which is also not widely recycled.
The Community Issue

As a campus community, Prem Tinsulanonda International School and Traidhos Three-Generation for Learning are very conscious of our footprint on the environment. There is an attempt to deal with all of our waste in the most sustainable way possible. The fruit and vegetable waste goes to the farm for the pigs, the waste from the farm animals is made into fertiliser, and there is a wide-ranging recycling programme for used batteries to metals to paper. Despite this, the volume of plastic waste has always been an issue that we would like to change. But where do you start? Ban plastic on site and sell no products with plastic packaging in the campus shop? What alternatives could be sold? Juice boxes might seem like a good alternative but they are not recyclable either.

Knowing how important sustainability is, several members of our staff were independently trying to find viable solutions. One meeting of the Sustainability Committee resulted in a meeting of minds who had all stumbled across Precious Plastics.

Precious Plastics is an organisation which has developed machines and ideas to help deal with the plastic problem. Their machine blueprints are all freely available online, as are their ideas for products to make. Their idea is to spread the word in a way that small communities or businesses can start to create useful plastic products from their waste plastic.

Sometime after this great discovery, we held a Business Insight event for the Career Related-Program and in discussing plastic with the owner of Flying Squirrel Outfitters, it became clear that he was playing around with the Precious Plastics idea too. He had found an engineer who was willing to make the machines but had nowhere to house them – whereas we had the location but no engineer. And so began Precious Plastics Academy: Prem.

With machines, people, ideas and enthusiasm we set work on making this idea into a reality. An after-school activity was set up for the senior students to sign up and get involved, while the juniors were tasked with collecting plastic. This slowly progressed to a competition to design a new school medal which would be made from our plastic waste. To make sure that all the plastic on campus was collected and processed, we began raising awareness, making collection bins and running school competitions.

The grinding machine was present at our International Day celebrations, PYP Exhibition, STEAM Week and the Air Quality Camp. Students began to really support the collection of plastic and were enthusiastic about spreading the word. Collecting, washing, sorting and grinding was the focus of many hours of work. This all resulted in plenty of plastic that could be added to the injector, which uses compressed air to inject melted plastic into moulds.

The initial mould was a small hexagon shape and was followed by a larger hexagon shape, both perfect for creating pieces for a collage or mural. Once we had created the mould for the new school medal, production got underway, but due to the delicate design of the winning medal, we encountered some frustrating issues resulting in a simpler design being created. It has been an exciting process for all involved and hugely satisfying to make useful products from our own (previously) useless waste.

If you have a local business and would like to be a part of the solution, we can provide you with a Precious Plastics Academy: Prem bottle top bin. Currently, due to demand, we are only able to process type 2 plastic, which is usually the tops of drinks bottles.

To get in on the action, email Dr Emma Shaw – emmash@ptis.ac.th

Dr Emma Shaw is a Senior School Science teacher at Prem. She has a PhD and previously worked at universities in the UK and Thailand.

Photos: Emma Shaw, Susie Rungsinee
Authenticity and acceptance in a virtual world?

Day by day, technology plays an ever more prominent role in our lives. The human mind and our education system are playing catch up with this tidal wave of digital disruption. Joseph Holroyd ponders the need to innovate and find 2020-ready solutions.

“So, your kids must love the iPad?” I asked Mr. [Steve] Jobs, trying to change the subject. The company’s first tablet was just hitting the shelves. “They haven’t used it,” he told me. “We limit how much technology our kids use at home.”

— Nick Bilton (Nytimes article, Sept. 10, 2014)

“The reason we struggle with insecurity is because we compare our behind-the-scenes with everyone else’s highlight reel.”

— Steven Furtick

“Having expert, ‘Creative Practitioners’ coming from outside the campus, inputting their ideas and engaging with our young people, helps to cultivate student agency and diversifies learning outcomes. Working collaboratively with our in-house, expert educators and bringing authentic, real-world learning into our classrooms is just one of the ways we help ensure our students have maximum exposure to multiple ideas. After all, regular exposure to excellence fosters excellence and we are massively grateful to the voices and approaches that our practitioners bring into our classrooms.”

— Alex Soulsby, Creative Director for Artist Residency Thailand

The problem with teaching ‘Digital Literacy’ as a discrete subject is, of course, that the digital world is no longer a discrete domain. With researchers reporting that teenagers spend up to nine hours a day with digital technology, we might as well just call it ‘Digital Literacy’: their world is digital, so how do we help them to navigate it?

Through the kind of bold, interdisciplinary arts projects that allow students to authentically engage with this multifaceted world of theirs. Through an approach to arts education that helps them to bring a critical lens to their (digital) lives. And if the language of the arts and the human sciences is starting to blur here, it is only appropriate if we consider the work of Phil Borges, the remarkable interdisciplinary practitioner who recently worked with Prem students as part of the Artist Residency Thailand program.

With a background in fine arts and photography, Phil’s career has been characterised by a deep curiosity with the human mind – documenting indigenous and tribal cultures, exhibiting in museums and galleries globally and hosting television documentaries on Discovery and National Geographic. His most recent major project is Crazywise, a feature-length film exploration of shamanic traditional practices and beliefs that Western psychiatry would typically call ‘crazy’ in the DSM. Phil’s work strives to expand our wisdom through investigation of different cultural traditions.
The thing that immediately strikes you about this lifetime practitioner of the arts – from his remarkable photos through to his documentary film-making – is his patience, poise and humility. Phil wants to enter his subject’s world on their terms, and his work gives his audience access to these privileged pathways too.

Beginning with a screening of Crazywise, Phil took us deep into his process – the slow acceptance of the subject’s world that makes the authentic documentary-filmmaker’s endeavour indecipherable from that of the anthropologist. And as we learned of Phil’s work with individuals across the globe and their experiences with mental illness/difference, as we travelled not just geographically, but conceptually beyond the Anglo-American preoccupation with labelling and diagnosing difference, acceptance and its bedfellow authenticity became pervasive themes.

The documentary filmmaking that emerged from our student’s work with Phil saw the lens turned towards our own relationship with acceptance and authenticity. We started by deconstructing Crazywise’s process and content in class. Phil then interviewed adults from our community while our students acted as crew members – learning the practice and craft of a documentary-filmmaker. From here, Phil incrementally tightened the focus, as the students took turns to investigate their world – interviewing, being interviewed, finding subjects, filming ‘B-roll’, and then finally tying these elements together in the editing suite to navigate this landscape of acceptance and authenticity.

Such work takes time. Creating confidence, where interview subjects will talk authentically of their fears and vulnerabilities, alongside their hopes and dreams, takes more than a tweet. Inspiring trust, where we can share those shortcomings we may have struggled to accept – and how we might grow beyond these – takes more than a ‘like’ on Instagram. Letting someone know that they are authentically accepted takes more than a swipe of the screen.

As our students took the time to authentically engage with themselves and others, their understandings of what posed the biggest threat to acceptance emerged and deepened. The inescapability of social media was a recurrent theme. Anxiety about online identity was shared and understood. The spectre of cyber-bullying was intelligently discussed and analysed. And as they shared these fears and preoccupations – interviewing and being interviewed, listening and asking – their loads visibly lightened, the responses becoming more fluid, the smiles wider.

Perhaps the most striking story in Crazywise is that of Adam, a young man who takes Phil deep into his struggle with a diagnosis of Bipolar, and his journey beyond this labelling through a community’s sharing of life, love and the arts.

There is a very poignant moment in the film, where Adam thanks Phil for what he describes as his ‘honest curiosity’. And it was with precisely this disposition that Phil set about his work within the Artist Residency Thailand program at Prem.

A unifying element of virtually all models of wellness and therapeutic practice – from Freud’s talking cure to Maslow’s search for value – is taking the time and care to listen, to share and show understanding for one another. We need rich, complex human interaction to understand and to feel understood in life, love and learning. We need to set aside the iPads (or, at times, to set them up – and aside – on a tripod to film!). We need to step away from the highlight-reel of social media, and into each other’s authentic world while being accepting of what we find there. This is particularly needed in a world where it is not the smile but the screen that so often greets our young people in their loneliest moments. The arts should work to create a more literate and media-critical world in

**Joseph Holroyd** is Curriculum Leader for Language A at Prem. Something of a globetrotter, Joseph comes from London, his wife Nicole from California, and their son Bobby was born in France. A passionate advocate of lifelong learning, Joe has pursued postgraduate qualifications in Education, Literature, Philosophy, Creative Writing and Counselling. He is currently in the midst of doctoral studies exploring innovation in education and industry at Paris Dauphine University.

**Photos:** Prem, Phil Borges
Early Humans: Fire

Grade 6 set out on a journey through time to learn more about our ancestors. They looked to explain why early hominids evolved in physical form by examining the resources they utilised and the new skills they acquired. Benjamin, Kate and Thaam tell us what they discovered about the importance of fire to early humans.

The discovery of fire was revolutionary. By discovering fire daytime was extended. Also, warmth meant people could move to colder climates for hunting. Homo Erectus was the first hominid group to use fire. Early humans first domesticated fire about 400,000 – 750,000 years ago in different places in Africa. Cooking became important in human life, it influenced our evolution, leading to changes in digestion, tooth and jaw size, body function and muscle size.

Burnt wood shows evidence of the usage of fire. It suggests that people used wood to make fires for cooking and warmth. It helps us to learn about the kinds of environments early humans lived in. Burnt wood was often found in fire pits. These show evidence of the usage of fire by having leftover piles of burnt animal bones and wood. The fire pit was a very useful tool as it provided warmth in the cold weather, a light source in the dark and made food (especially meat) tastier.

The fire pit was also a very important source for scientists to study the evidence of how early humans used fire.

The use of fire is an important part of cooking because it makes food easy to digest and it increases the calories gained from a portion of food. Because cooked food contains more calories than raw food people didn't have to scavenge for as much food. Also, as we got more energy our brains grew.

When hunting early humans would ‘heat treat’ or ‘fire harden’ weapons as they believed that this would keep them together longer.

Benjamin (Ben) Vanni, Gyua (Kate) Kim and Thaam Pilaisomboon are ‘late human’ Grade 6 students at Prem Tinsulanonda International School.

Fire model by Grade 6
Views of History

**Whig**
Progress is inevitable, and society tends towards ever-greater enlightenment, culminating in liberal democracy.

**Marxist**
History is defined by class struggle. The proletariat will overthrow capitalism and create a classless society.

**Postmodern**
Historical truth is inaccessible. Grand narratives and theories of history only distort our understanding of the past.

**Transhumanist**
Artificial intelligence will soon surpass human intelligence, triggering rapid technological growth.

**Anarcho-Primitivist**
All levels of society beyond the Stone Age are unsustainable, and an ecological crisis will lead to the collapse of civilisation.

From *Weapons of Reason: Power*. Design by Jacob Smith
Innovation, New Music and the Chiang Mai New Music Ensemble

Chiang Mai is a hotbed of creative talent and activity. Gina Ryan tells us about the ‘New Music’ genre and the newest musical innovators on the Chiang Mai scene: The Chiang Mai New Music Ensemble.

I was not always so open-minded or interested. I clearly remember a particular lesson during a survey class of the Western canon that was part of my Bachelors of Music degree program. We had finally reached the twentieth century and contemporary music. We were studying atonal music (music without a tonal centre) and the professor played some of Schoenberg’s music. I couldn’t help asking: “Do people actually sit at home and listen to this music for enjoyment? I don’t believe it.” At that time, I couldn’t understand why anyone would listen to atonal music and I couldn’t hear the beauty that I hear in it today. I expected music to work a certain way, and this music wasn’t behaving accordingly.

A lot has changed since then. It took a very deliberate decision on my part to learn more about new music, to enable me to gain a fulfilling appreciation of it. But it is a point that I like to remind myself of – that even as a musician, new music was challenging for me. Therefore, I write this article in a spirit of sharing what I have gained from making the choice to open my ears to new ways of hearing.

Innovation: New Ways of Hearing

I have heard it said that we like what we know. In other words, we are more likely to like what is familiar to us. That’s a scary thought, if left unexamined. That thought became a strong motivator for me to push myself out of my musical comfort zone and to extend my understanding of new music. This ultimately led to my appreciation of it.

New Music

I really enjoy going to concerts but I especially look forward to new music concerts. New music, also known as contemporary music, is a particular kind of music that is rooted in Western classical traditions while actively branching away from it. Of course, new music exists in other genres, such as pop or jazz, because essentially any recent music is new; but for this article, I am referring to contemporary Western classical music. It should also be noted that the word ‘new’ in this context can mean anytime from 1910 to yesterday! It is also worth pointing out that many people consider new music to be challenging to listen to because the use of musical elements are either unexpected, unusual or simply not firmly established in our collective ears.

When I go to a new music concert, I am not expecting the same kind of experience as when I go to a pop concert, a rave, or even a classical music concert of ‘the tried and true’ repertoire from the past three hundred years. Perhaps because of these altered expectations, I am able to enjoy a different kind of experience. I am intrigued to hear what today’s composers are exploring and how they might be adding an unexpected twist to something familiar. I go to enjoy innovation.
To put this into perspective, a lot of today’s music, across all genres, shares many commonalities: the same three chords, the same 4/4 meter – try counting 1, 2, 3, 4 and see if your counting matches up – and the same tonality. Despite these similarities, there is a surprising amount of variety and these shared elements in no way diminish the music. On the other hand, music wasn’t always so conventional or similar, and I think that’s a point worth noting.

Earlier, I mentioned the words **tonal** and **atonal**. Think of **tonality** as being music that wants to go somewhere, where there is a home or centre. For example, try singing “do, re, mi, fa, sol, la, ti…” and stop there. When I do this in my classes, there is always at least one student who can’t help but sing “do!” to end the scale. This is because almost all of the music that we listen to today, whether pop, classical, jazz, or traditional, has a tonal centre. As a result, music that doesn’t have a tonal centre (aka **atonality**) can feel unsettling.

This unfamiliar, unsettling musical exploration also lets us hear and discover new relationships, or lack thereof, between pitches. Additionally, someone had to **imagine** a new way of thinking, of hearing. For me, this act of imagination has tremendous value in itself. When you fundamentally question one set of relationships, other relationships can be discovered or conceived differently. Composers have to pursue these ideas despite their lack of popularity. It is also not popular to point out that not all innovation leads to fame and fortune, but this doesn’t diminish from its intrinsic value.

When you think about it, music is used in many ways: as entertainment, for cultural, moral and political ends, and even in advertising. Another use is for pure aesthetics, not to entertain, not to sell, but simply for aural exploration – for the music itself. This is not a judgement statement, as I believe all music has value whatever the context. I also think it is worth pointing out that everything has a context.

But where is there room then for music that is sometimes unfamiliar, uncomfortable, questioning and challenging? For music that is written so we can experience new ways of hearing? I believe innovation is essential in all art forms, and as a teacher, composer, and performer, I believe it all the more.

**The Chiang Mai New Music Ensemble**

When I moved to Thailand nine years ago, I was immediately struck by the vibrant contemporary visual art scene in Bangkok and Chiang Mai. I was thrilled that it was supported by the government and received royal patronage. I was also glad to see many students in the art galleries. I felt very optimistic about my choice to move here, having just left a very vibrant new music scene in Montreal, Canada.
In Chiang Mai and Bangkok, there are musicians who regularly perform new music. The American pianist, Bennett Lerner, comes to mind. Bennett is a strong supporter of new music, one highpoint of his career was premiering two piano works by Aaron Copland in New York. Lerner moved to Thailand about thirty years ago and immediately began to work with Thai composers, commissioning a number of new works. Additionally, Narong Prangcharoen, now the Dean of the Music College of Mahidol University in Bangkok, started the Thailand International Composition Festival that takes place in Bangkok every August.

I felt that I could add something to support new music in Thailand and specifically in Chiang Mai, where I now live and teach at the Prem Tinsulanonda International School. Therefore, with Ajarn Chaipruck Mekara, I co-founded the Chiang Mai New Music Ensemble, which is an ensemble dedicated to performing new music. Originally, we had no intention to form the group; we came together in preparation for a new music concert that I organised, featuring all-new music from Canadian composers. From this simple event, the ensemble formed. It is comprised of musicians from Chiang Mai including Chaipruck Mekara (clarinetist); myself, Gina Ryan (percussionist); Annette George (flutist); Krit Mekara (violinist); Viwantanee Punprapa (violinist); Nattavut Janpong (violinist); Wisaruth Tawino (cellist); Jakaphan Chaiya (trumpeter); Norrasate Udakarn (trombonist); Remi Namtep (pianist); and Judith Utley (harpist). It is a very exciting project and, I believe, essential for a city like Chiang Mai.

**Final thoughts**

I believe in new music and what it has to offer. As a teacher, I want my students to see know that there are ensembles that will play their compositions. As a composer, I find great joy in imagining what could be. And as a performer, I like to be challenged as to how I might interpret something new; it’s a great adventure to be the first person to interpret a new piece.

But it’s tough. Classical music already has a relatively limited audience and new music does not always appeal to classical music audiences. Performers and composers have to expect that there will be small audiences for new music. Listeners are often moved out of their comfort zones. Even if they are open to it, the audience must accept that the music is not “tried and true” and that there will be pieces that may not speak to them.

Our daily lives can be challenging. In the hustle and bustle of full-time employment or education, lives that include the care of others, daily chores, and the chaos of the world we live in, we aren’t always looking to be challenged in our downtime. Many of us seek relaxation and, sometimes, escape. Nonetheless, I encourage everyone to extend their comfort zones to allow the unfamiliar to become more familiar. In doing so, you might find there is quite a lot more to life than you knew.

Dr Gina Ryan has been teaching at Prem since 2011 and has recently joined Payap University as the Honorary Professor for Percussion. She teaches strings, band, vocal & choral, music appreciation, composition and technology and is one of the founders of the International Schools of Chiang Mai Concert Band Music Festival, as well as the director of the Prem Symphonic Band. Gina received her PhD in music education from McGill University. As a passionate advocate for new music, Gina has commissioned, composed and performed music for stages around the world.

**Photos:** Gina Ryan
Guest curator Jacob Smith presents two birds that can be found on the waterways of Thailand.

**Little egret** (*Egretta garzetta*) is a small heron in the Ardeidae family. It has colonised wetlands in temperate and tropical climates across the world. Its success has seen the species expand as far north as the United Kingdom, where there is now a stable self-sustaining population. Northern populations, like those in Europe, migrate south in the winter; in warmer locations, they remain permanent residents. The birds prefer to live in open environments, though they can inhabit any watered habitat. Little egrets are social birds often seen in small flocks, however, they will only tolerate other birds on their feeding site if prey is abundant. The species almost went extinct in Europe when the plume trade exploded in the nineteenth century. Its plumes were a popular decoration for hats but, today, the little egret is thankfully listed as a species of "least concern". You can spot these birds around the Traidhos Three-Generation campus.

**White-collared Kingfisher** (*Todiramphus chloris*) belongs to the subfamily Halcyoninae, the tree kingfishers. It is usually found in coastal areas and mangrove swamps, though it can inhabit farmland, woodland and grassland too. Its repeated calls are described as loud, harsh and metallic, and can vary geographically. When hunting, the kingfisher perches almost motionless for long periods waiting for prey. When it spots something it glides down to catch it and then returns to its perch. Females will lay two to seven eggs in a hole, often twice a year. The species is found from the Red Sea across southern Asia to Polynesia. Though rare, you can spot this kingfisher on the Traidhos campus.
A joyful and effective learning environment that encourages curiosity and creativity among students.