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Editorial

To people of an earlier age, technology was a simple thing: a wheel, a lever, a sharpened stick to dig holes for the planting of seeds. Not so very much later it started to get more complicated and complex. An Archimedean screw would have seemed an impossibility to Java Man (see page 18), and the exquisite drawings of the fifteenth century Leonardo da Vinci showed his designs for parachutes, submarines and even hot air balloons (see story on page 20).

Technology – the theme of this edition of the Traidhos Quarterly magazine – is an ever-developing arena. Renowned American inventor and visionary Buckminster Fuller estimated that until the start of last century, human knowledge doubled approximately every century, but that by the end of World War II it was doubling every twenty-five years. Today, different areas of mankind’s endeavour develop at different rates, but on average the bulk of knowledge available is doubling every thirteen months. IBM has estimated that in the near future it may even double every twelve hours.

Sixty years ago classrooms had “blackboards” and students used “slates” to learn their letters. Thirty years ago teachers had access to some of the first classroom computers – machines the size of small suitcases that required considerable physical effort to lug home. Today the mobile telephone found in almost every student’s pocket may have a gigabyte of physical memory – far more computing ability than the 64Kb computer on the first landing module to reach the moon in 1969. That computer also weighed thirty kilograms while the modern mobile phone weights just a few grams.

This issue looks at how technology is applied inside and outside the classroom – and the effect it is having on students, remote hilltribe villagers, children suffering from cleft palates (page 8) and visionary home designers (page 12). An ancient Greek philosopher is said to have remarked, “Give me a place to stand and with a lever I will move the world.”

Today’s students and teachers have that place to stand and those levers – and they are indeed moving the world very slightly.

1 http://www.itpro.co.uk

The Three-Generation Community is a unique educational centre. It offers Prem Tinsulanonda International School (an IB World day and boarding school), several sporting academies, a dynamic Visiting Schools Program, the exciting Traidhos Camps, an artists’ residency program, an educational farm, and a converted rice barge used for environmental educational studies of the Chao Phraya River in and around Bangkok.

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October Camps | Age
---|---
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17 Oct - 24 Oct | English or Sport Elective | THB 18,900 | 10-13
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Mountaintops and Laptops

Sitting around the fire we reflected on the day. What had surprised us after time in the hill villages of northern Thailand?

“The satellite dish.”
“When the farmer pulled out his smart phone.”
“The kids learning to dance from YouTube.”

These are just some of the things that an international group of students came up with on a recent visit. They are things our visiting students often comment about after they hike through or spend time in northern villages. The reality they discover is just not the same as the images of minority groups so often portrayed in the media, where a frozen-in-time picture is more common. Recognising the frequency of use and then considering the impact of technology is an important first step for many of our visiting students as they consider the impact of globalisation, in their quest to develop as Global Citizens.

As Internet connections have become more universal, and dispensable income from community-based tourism projects or new farming products more readily available, the numbers of people outside cities and towns, using Internet and social media have increased.

Our students discover an awareness of brand names, a shared knowledge of pop music and an excitement about the same football heroes by young people who have never been further from home than a few hours’ drive. Homes and occupations may be different but visiting students find things in common with the young people in mountain villages more and more - thanks to their exposure to the Internet and television.

Data from We Are Social Singapore 2014, suggests that 96% of Internet users in Thailand use Facebook, with an average of 3 hours 39 minutes being spent on some form of social media each day per person, but before we shake our heads at the negative possibilities of this, it is worth considering the positive aspects suggested by Visiting Schools Program (VSP) staff member Korn, who grew up in an Akha village in Chiang Rai.

The importance of social media

Social media, Internet and the more widespread use of phones enables young people like him to keep in touch with family despite working in the city or in a different province. Previously, if family members worked away from the village, the family could easily lose touch, but with increased technology this is no longer the case. Korn also sees the benefits of electricity in his village. As he grew up, fifteen or twenty years ago, the elderly would boil water to take a warm shower in the cool season but today, many bathrooms are fitted with water heaters. He even sees the positives of TV, suggesting that the elderly now understand much more Thai language because they watch programs where Thai is spoken.
Lynda Rolph is President of the Traidhos Three-Generation Community for Learning and has been working with the company for over fifteen years. She is a highly respected environmental educator, with teaching experience in United Kingdom and Thailand. She is former Director of the Traidhos Three-Generation Barge Program.

Lynda Rolph

Technology is one of the greatest drivers of change. When I moved to Rwanda twenty years ago, the tiny landlocked country had one radio station, no television, and a single newspaper. People were more provincial because the exchange of ideas had been paltry. Everywhere I went recently I saw young people with computers and MP3 players talking about international politics and thinking about a different kind of future.

Considering issues surrounding globalisation, our students visiting northern Thailand consider how villages may look in another ten years and how everyday life of the families who live there may change.

The increase in the availability, affordability and reliability of technology is creating new jobs, new innovations and new possibilities for connections across every continent. Social media has become a key player in the political scene with the power of blogs and tweets rallying a whole new army of protesters, opening minds to events that may previously have been unknown. Few places are exempt from the developments technology has brought and, as those students reflecting by the light of the campfire illustrate, isolated villages around Chiang Mai are no exception.

For further information: wearesocial.org, mmphototours.files.wordpress.com, goshen.edu

Lynda Rolph

Consumerism reaches the hills

The quality of satellite TV has also improved and since most people have electricity, the villagers keenly follow the progress of world football competitions. But of course, as our visiting students soon discover, it is not just football that they are exposed to but the advertising of food and clothing and the politics that surrounds each team. It is a story being repeated not just across northern Thailand but across the world, as Jacqueline Novogratz reflects in the book The Blue Sweater:

Robert commented, "In the last year or so I have found more and more of my village friends connecting to me through Facebook. When I go home, people ask questions about the things they have seen on my posts – suddenly they are aware of and interested in things beyond the village."

The Traidhos Quarterly

Technology does not only benefit the tourist sector. The village school also makes use of new innovations: twice a week, students tune in for a special lesson, connecting them to a class at Chiang Mai Demonstration School through the Distance Learning Foundation project. On a separate visit, young girls on Doi Inthanon were perfecting a traditional Thai dance as they replayed a YouTube video of the dance. Their proud teacher explained that before the access to the Internet it was difficult for students to learn the moves in the limited practice time available, but that with the presence of YouTube they can practise as often as they like.

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Technology Surprises

What is technology?

Many people, in replying to such a question, will speak about computers and laptops and perhaps even think about including electronic books or digital SLR cameras or smart phones. But the world relies on and is able to take advantage of technology in so many other ways, some of which may be a little unexpected.

For sports people committed to improving their game, commitment to practice is no longer enough. Today the technical aspects of the game can be analysed thoroughly using specialist programs to improve technique.

Traidhos Three-Generation Golf Academy uses the V1 Professional HD software for golf swing analysis. The system provides immediate feedback to students through High-Speed Dual Camera Capture allowing the coach and student to analyse biomechanical movements along with swing plane and impact alignments. For over sixteen years, V1 Pro has remained the most preferred video analysis of coaches, instructors and training facilities worldwide solidifying its standing as the most popular video analysis software in sports.

Team Elite golfer Fedele enjoys the way this technology enhances his game, commenting, “Regardless of people’s golf game level, all players can benefit from using the V1 system. It allows for teachers to use the slow-motion technology and drawing tools to clarify swing plane faults and allows problem areas to be identified quickly resulting in fast improvement. This technology has really helped me improve my golf game.”

Apps are also used in analysing the game of visiting and Elite players at the Traidhos Tennis Academy. By using Coach’s Eye, students are able to see for themselves the positioning of the racket in relation to the ball and the rest of their body. Once they view the captured images, the program allows them to view each movement in slow motion that informs them visually about how to adjust their movements.

In other areas, too, technology brings surprises

It is always pleasing to see how students enjoy using technology in their own time as well as in school. Whilst many are engrossed in Facebook, Instagram or other social media outlets, we must not forget the creativity that some students display, using modern technology to produce their own media to share with the world. Prem Grade 7 student Ruby produced an acapella version of Cup Song (originally by Pitch Perfect) for her digital design project. It was created with Adobe Premiere Pro and edited through GarageBand with Ruby doing the final recording at a music studio. Her work, which can be viewed on YouTube (youtube.com/watch?v=sq0Y9GuSNHk) was well received by the whole school when it was shown at the Semester-end Senior School Music Concert.

Tennis, music, golf, the electronic memory technology of theatre lighting control in the auditorium and even in the school vans where modern GPS technology allows the Director of Operations to monitor the vans’ speed, direction and location: these are just some of the unexpected areas where modern technology pops up.

Staff Writers
Dr William Magee, Co-Founder and Chief Executive Officer of Operation Smile, said, "There are so many problems in this world that don’t have solutions, but this is a problem, we know how to fix this."

Operation Smile is an international medical charity that aims to provide safe surgery across the globe for underprivileged children born with facial deformities. In Thailand, one in every 700 babies is born with a cleft lip or a cleft palate. Children with untreated cleft lips or cleft palates experience difficulty in breathing, drinking, eating and speaking. There is also a high risk of infection, and 12% of these children die under the age of five. This type of facial deformity can lower the child’s self esteem and cause other psychosocial suffering such as isolation and hopelessness. Restorative surgery and treatment for these children brings hope.

My interest in this charity began with an email to Operation Smile Thailand, asking them for advice in starting a ‘Smile Club’ at Prem. The three days I later spent in Sappasitiprasong Hospital, with other student volunteers from various international schools in Bangkok, was one of the most valuable experiences in my life. The opportunity to interact with the children and their families, some who had had to travel long distances, and the chance to observe surgery performed by doctor volunteers are things that I will never forget.

With advanced technology and experienced doctors, over eighty operations were performed in the three days. Our role as student volunteers was to create a better atmosphere in the hospital through interaction with the children, most of whom were six to twelve months of age. We played games as well as helping in anyway we could. The experience - along with my interest in studying dentistry - made me reflect on the importance of this issue and inspired me to start making a difference in my school.

Operation Smile Prem’s goal was not only to support the cause of Operation Smile, but also to give meaningful, creative and fun events to the school community. Our first events were weekly “Minutetowint” challenges during break times, to make the charity more widely-known. We sold T-shirts, badge pins and hosted some bake sales, because everyone loves cookies! Our biggest event and the one that raised a substantial amount of interest and funds was the ‘Pi Day’ Event (note that 3.14=pi!). In this event, students, staff and teachers could vote (by donating money) for the teachers they wanted to see get pied in the face. If the total amount of donation reached THB 3,000, the Senior School Vice Principal would get “pied”. The feedback from the school community exceeded our expectations, and we raised THB 8,495 on the day. We were glad that students, staff and teachers enjoyed the event, and we realised that we were actually making a difference. Our parents were also kind and donated the same amount of money we raised, and even more. The total amount we have raised, including donations from parents, staff and the whole Prem community came to over THB 119,800.

We are very thankful for the overwhelming support from the Prem community and we are very proud of our accomplishments. The experience gained through this activity has taught us to believe in ourselves and, as one of our teachers told us, to “dream bigger”. We are glad to know that we have made a difference, whether big or small, in the world, and would like to give very special thanks to our teachers for their assistance and guidance with Operation Smile Prem and the CAS program.

We have helped a few more children smile happily.

Nannapat (Grace) Siraboriphantakul
Grade 12 student,
Prem Tinsulanonda International School
Environmental Technology

The sound of turning a light on and off. A sound made possible by technology - the technology of a switch linked to wires linked to a grid that is linked to a power plant that is linked to a fuel source that is linked, originally, to the earth itself as a source of the fuel, such as oil, gas or coal buried underground. And someday soon, all this distribution switch technology may be wireless, as we move into digital electricity and the so-called Internet of Things, which means that all objects we have taken for granted up until now will be run, or run themselves, through the Internet. Technology is all around us, simple and complex. But, despite technology used in steps to a process, there is no escaping the original source - natural resources.

Environmental technologies are those that enable or improve the use of the natural resources that underpin our daily lives and economies. Increasingly the mission of environmental technology is to improve efficiency, so that we waste less energy, water and other rare resources in the course of our daily lives. Environmental technologies are also a booming business and the source of countless new job opportunities in virtually all fields of endeavour. In fact, developing and manufacturing of environmental technologies is one of the few sources of new job growth in the manufacturing sectors. New forms of water or air filters, lighter spare parts for automobiles, smotherer-running engines, hybrid cars, new kinds of lighting panels, solar heat, water purification, less toxic computer chips, thermal glass to save heat and keep out cold, “smart” materials that reset temperatures automatically - and on and on – are all critical to our future well-being.

Yet, environmental technology at times does not seem glamorous at all.

For example, inventing a frost-free membrane for a refrigerator sounds much less exciting than the invention of a digital app that a driver can swipe to locate the nearest parking place to save driving around in circles searching. The parking app is highly promoted and advertised as good for the environment because it saves mileage and fuel. True enough. But the frost-free membrane prevents ice build-up in all kinds of cooling machines, with the result that motors run more efficiently and use less fuel.

Despite such positive gains, the membrane remains invisible even though it has a much larger benefit for the environment. An IT software designer can write the app for the parking fairly easily - but the membrane might take years of testing and investment, and then need a large corporate system to sell and distribute that technology in new appliances of all kinds, worldwide, so that that little membrane can have its full effect and benefit. Additionally, we never see the membrane inside the appliance, but the parking app might be right upfront on the start screen of our mobile telephones.

Such membrane technology exists, and is constantly being improved, because reducing energy use is absolutely vital to holding-off the worst effects of climate change and global warming.

A cornucopia of information

Water technologies are also expanding rapidly as a professional field. In January an international conference on new water technologies was held in Bangkok. Countless companies and global policy entities were involved. There were over a hundred exhibitions, seventy presentations, and sixty-two training courses on such topics as Water Treatment, Membrane (there it is!) Technology, Waste to Energy, Filtration and Separation, Boiling, Cooling, Testing, Certification and Regulation: nothing that sounds at all glamorous, and yet there was a cornucopia of information and new products linked to an entirely new professional field in water technology alone.

However, implementing new technologies still faces a major economic obstacle.

In many cases, it is still less expensive to waste and to be inefficient than to maximise efficiency, because our economies do not yet value, or price, natural resources in true relationship to the cost we face as those resources are exhausted,
contaminated or depleted. This is especially true with regard to energy use: it is still cheaper to buy fuel and burn it freely, than to use it as efficiently as possible. And, of course, burning of fossil fuels such as oil, gas and coal, also means that gases such as carbon dioxide pour up into our very thin and scarce atmosphere on which we depend for breathing, protection from the sun, and balance between heat, wind and clouds.

There is strong scientific consensus that the increase in emission of such gases, called greenhouse gases, is clogging up the atmosphere and trapping heat, causing an overall rise in temperature worldwide and also unpredictable and unusual weather, such as extreme rainstorms, in turn causing the flooding that occurs now regularly in Thailand. Using the atmosphere, truly a rare and precious resource, to dump the by-product gases of energy waste is as ridiculous as using a beautiful beach house to store old car tyres.

Because we do not charge any price for using space in the atmosphere for those gases, it is still not cost-efficient to be energy efficient. We know how to price the beach house, but we do not know how to price the atmosphere. This is now changing, with the development of “carbon markets” that attempt to put a price on using the atmosphere, a price on the priceless so to speak. Gradually, as it costs more to pollute, financial incentives should be created to pollute less and, ultimately, pollution should decline.

And, in theory, the need to pollute less should drive the demand for new environmental technologies, the simple and the glamorous, and a whole new wave of innovation that will help people worldwide prosper without continuing to wastes and spoil natural resources.

Paula DiPerna

Paula DiPerna is a writer and frequent media and conference speaker on a variety of subjects. She was a Traidhos Artist-in-Residence in 2014 and 2015. She has served as President of the Joyce Foundation, as well as Vice President for Recruitment and Public Policy at the Chicago Climate Exchange, which pioneered emissions trading and environmental markets worldwide, as well as President of CCX International. Prior to these positions, she served as writer and Vice President for International Affairs for the Cousteau Society.
Grade 8 students at Prem have been learning about biomes in their geography classes and were tasked with creating RSA-style animations to give a general overview of their biome (including location, climate and biodiversity) and to describe what impacts humans are having on the biome.

RSA-style animations have become a popular method of presenting information in a fun and informative visual form. The RSA Animate series was conceived as an innovative, accessible and unique way of illustrating and sharing the world-changing ideas from the RSA’s free public events program. With millions of views and thousands of comments, fans and subscribers, RSA Animates have revolutionised the field of knowledge visualisation whilst spreading the most important ideas of our time.

Students worked together in small groups and took on roles such as a botanist (plant expert), zoologist (animal expert), and meteorologist (weather expert), geographer (map and area expert), cartoonist, camera operators and narrator.

Noah Bellier 2011
Noah visited the school in January shortly before returning to the USA where he entered an internship with Gig Harbour Historical Museum (Washington State). He will graduate in May 2015 from the University of Puget Sound with a BA in economics and business management. He has been a keen rugby player for the university and has hit the high notes as a DJ at sorority and fraternity events as well as being on one occasion the front man for the well-known American performer Sir Mix-a-Lot. Noah says that his IB Diploma experience at Prem really helped him with his work at university by giving him experience in writing extended essays with coherent structures. His recent thesis on economic policies in Thailand was awarded an "A".

Viritpol (Sun) Sunprugksin 2014
My impressions of the University of Massachusetts Amherst this semester have improved: I feel more at home, and the place has become less intimidating - it seems to have got smaller although it’s still the size of at least six Prem campuses. At the the end of last semester, I applied for positions as a Residential Assistant (RA) or Peer Mentor but I now have to keep my fingers crossed until they notify me whether I get accepted for either position. I am competing with hundreds of other students and this makes me a bit nervous. Winter here has been fun with lots of snow – so very different from Thailand!
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Building a Sustainable Life in Chiang Mai

We have been designing and constructing the Phi Suea House since early 2013. This eighteen-rai plot of land on the outskirts of Chiang Mai is being shaped into a small green residential housing complex, called Phi Suea House, and developed on the principles of sustainable design and technologies.

We have energy-efficient buildings, organic gardens, an extensive water drainage, collection and treatment system that reuses irrigation and grey water. Perhaps most importantly, we have designed and implemented a 100% clean, renewable-power photovoltaic and hydrogen hybrid energy system. We have realised around 65% of our ideas so far, having constructed two of the four residential houses and several of the supporting buildings, including the heart of our energy system: the power distribution and energy storage units located in a dedicated energy building.

Renewable power and energy storage

When discussing how to protect the environment and allow for a sustainable future for our planet, we undoubtedly have to talk about renewable energies such as wind and solar power. Possibly the most advanced and widely used of these technologies is solar energy through the use of photovoltaics. Photovoltaic panels already produce a significant amount of the world’s electricity and are often the only source of power available in some rural areas.

The overall electricity demand of the Phi Suea House will average about 6,000 kilowatt-hours (kWh) per month, comparable to approximately four American households. We have installed 65 kW of photovoltaic panels that will yield an average of about 250 kWh every day - enough power to supply all electrical needs including water pumps, household appliances and lighting. However, power from photovoltaics is limited to a maximum of about ten hours of sunshine every day, which meant we were faced with the same dilemma that has been one of the biggest limiting factors in the widespread adoption of such power systems:

How can we efficiently store energy from plentiful but intermittent renewable energy supplies?

Unfortunately, the answers have been quite disappointing. When not feeding back into the power grid, people have had to rely solely on batteries for storage. These are not only expensive and have to be replaced frequently, but also contain toxic materials and are difficult to dispose of in a safe manner. The real innovation in the Phi Suea House energy system lies in its energy storage. We combined traditional battery storage with a self-recharging hydrogen energy storage system to maximise the advantages and lifetimes of each. During the day, power is generated from solar panels mounted on the roofs. Part of the electricity generated is used to supply all loads directly. The excess electricity is used to fill the energy storage by simultaneously charging the batteries and running electrolysers to generate hydrogen gas that is then stored in tanks. When night falls, or bad weather reduces the output from the photovoltaic panels, the hydrogen can then be used in a fuel cell to generate electricity again. The only by-products of this energy storage process are oxygen and water. The fuel cells supply enough power to cover most loads switched on at night. Should the power from the fuel cell not be sufficient to supply all loads at any time, the battery storage will instantaneously cover
the peak in demand. This system minimises the stress on the battery storage by keeping the discharging current and operating temperature low, which greatly extends battery life.

This kind of system, which is scalable to any size, is a small step towards solving the problems arising from the world’s growing energy demand and lowering the harmful impact we have on our world.

**First of its kind in Asia**

We have recently signed an agreement with the Energy Research Institute at Nanyang Technological University (NTU) in Singapore to conduct research with them in the field of renewables and energy storage. University representatives have told us that the Phi Suea House is the first project of its kind in Asia, and is possibly the most advanced residential project of its kind in the world.

**Permaculture Garden**

Our natural and organic garden, developed following the ideas of permaculture, was the first part of the project to be started and will also be the last to be finished. Although our garden already produces more vegetables than ten people can consume during lunch every day, we will continue to improve the garden and the soil.

Permaculture gardening requires us not just to look at each element separately, but also to consider and balance the relationships between all the elements as a whole. To date we have already planted various trees to provide shelter and to improve the environment. We are collecting all of our organic household and garden waste, we are making compost, producing fertiliser with the bokashi method, and trying to improve our soil as much as we can. Our natural clay pond biological filter system produces plenty of sediments for the garden.

We are not alone with our ideas in Chiang Mai as we have been helped immensely by a very good local company specialising in organic fertiliser, soil additives and mulch.

We will take time to observe and develop our garden, and are working towards a no-plough garden that can feed our animals and us, and serve as a recreational area over the coming years.

**Water collection systems**

One of our most important goals is to not waste water. It is a matter of fact that only one per cent of the earth’s water is drinkable and many people do not have access to it. In Northern Thailand, we have several months of nearly daily heavy rains – but also long periods of dry heat, when water can become a precious rarity.

We have designed an extensive water collection system that begins with a surface drainage to collect rain and irrigation water unused by vegetation. This water then flows through an underground system of water pipes to a large water storage and treatment tank, which can hold enough reserve water for several days of full garden irrigation. We also reuse any wastewater - also called grey water - from washing machines, showers or sinks. This water may look “dirty” and contain traces of dirt, food, grease, hair and certain household cleaning products, but it is a safe and beneficial source of irrigation water if treated correctly.

We use a constructed wetland system - one of many simple and economical ways to safely reuse grey water. After passing through a mechanical filter, the resulting sodium- and phosphorus-rich water provides a perfect environment for reeds and marshland plants to thrive. These plants are biologically able to break down all pathogens, allowing us to reuse the water again in the garden.

Every long journey starts with a small step

We have already built most of the infrastructure and we plan to complete the construction of all houses this year. The energy system and the innovative hydrogen storage will officially enter the testing stage and will supply the first houses in mid-March.

The Phi Suea House is not changing the world, but it is one part in lowering carbon dioxide emissions, preserving the environment and solving the problems arising from the world’s ever-increasing energy demand. We know that every long journey starts with a small step and we want to be a part of it. We want to contribute to improving the world with the knowledge that we have today, and with the knowledge we will gain over the course of time.

**Erika and Sebastian Schmidt**

Erika and Sebastian Schmidt are a Prem family with a child in Grade 8. Their two other children finished school in Chiang Mai and went on to university in the UK. The family moved from Germany to Chiang Mai in the beginning of 2004 as Sebastian wanted to be closer to his business activities in Asia. They aim to live sustainably and educate their children as global citizens.

For more information please see www.cnxconstruction.com or email Jan on jan@cnxconstruction.com
Technology has the capacity to empower students to research, create, connect, and collaborate. When technology use is heavily restricted and locked down, it loses the power to innovate. Outside school, students are programming, creating and editing videos, sharing, collaborating and more. At Prem we are endeavouring to make technology a vehicle for empowerment, and as a result we are giving students the flexibility and opportunity to create, communicate and innovate.

Allowing the children to work in this manner has shifted the learning from teacher-centred to child-centred. Children can work at their own pace and are highly engaged in their learning. They can tackle problems independently and creatively. There are numerous opportunities for devices to be used in the classroom as an educational tool that allows for research, presentation, innovation and collaboration. We can allow our students to communicate, create and be flexible in a myriad of ways.

This academic year, we have been maximising the use of technology in all areas of the curriculum. The potential for enhancing teaching and learning through technology has been a particularly interesting journey: we have employed a range of apps using iPads and MacBooks to engage, motivate and inspire pupils’ learning in the classroom.

We use iPads to film, take photographs and create iMovies. We have taken into account that an individual learner’s ability to film and edit, either to learn or reflect on learning, is such an important tool and that the device must be able to be used as such. It’s not only the resulting photos and films that come from devices, but that the learners can be on the move so easily during the process of learning. This extra flexibility offers our students the capacity to move from inside to outside as they need, often on the spur of the moment.

Augmented reality applications allow children to supplant images or otherwise alter their physical world in a fun way. This computer-generated technology allows for more interactive, experiential and creative educational interaction. At Prem we have been using Augmented Reality Technology in the classroom with the aid of our iPads.
The children are demonstrating their understandings and the connections that they have made with the texts they have been interacting with during their Guided Reading times. This is a really exciting and creative use of technology and we are really thrilled to be sharing our work with all of the stakeholders in our community.

One interesting way that we are applying technology at Prem is by App Smashing. The general concept of App Smashing is merging content from a variety of apps. Another title for this concept is App Synergy. The key to App Smashing is the camera roll. We use apps that can save to camera roll or take screen captures and bring them in. What’s important is that content is created, but it doesn’t have to be digital. Students create in the real world, take a picture or video, bring it into a product, and publish to the web. The idea is creation and publishing without limits. While the concept is to create content, get it into a central location and make something with it.

What can you do? What can you prompt students to create? We have been applying these ideas through the use of a variety of apps such as Book Creator and Thinglink as a vehicle for hosting media-rich content.

Using QR codes has also been an exciting way of applying technology in the Junior School. QR, or Quick Response codes, are two-dimensional barcodes that can be read using smartphones, tablets, laptops and dedicated QR reading devices. They link directly to articles, emails, websites, phone numbers, videos, social media pages and more. All you need is a camera lens on your device and a QR code-scanning program, which can be downloaded online for free.

The children created iMovies and then hosted these onto Vimeo online. They then created a QR code and attached the link to their video to the QR code. The children password-protected their videos to protect them online. The students could then share their work by posting their QR codes to the Class Blog and email, and they also created posters with their QR codes printed on them and posted them around the school.

QR codes are used in student portfolios as part of reflecting on their learning.

The children have also had the opportunity to enjoy kid-friendly code learning. There is an international push to have all students learning this craft that forms such a central part of everyone’s lives these days. We have used the courses teaching code that are available online at code.org. The students took part in activities designed for students who can read and have no prior programming experience. Throughout these activities, students created programs to solve problems and developed interactive games and stories they can share. Some students have delved deeper into programming topics to more complex problems.

Students of all ages generally find learning on a tablet more personal and accessible than being chained to a desktop. They also respond well to animation-driven apps, which make lessons more interactive and entertaining than linear modules delivered on a desktop. As computers have become more portable, so has education.

Many people who grew up in the digital age were first introduced to computing via video games. In an effort to make learning more fun and engaging, we have introduced elements of games into the curriculum. This is causing a shift in the way people learn, with active emotional engagement replacing dry periods of concentration. Learning becomes less an abstract, theoretical exercise and more of an emotional and highly engaging activity. The result is higher motivation levels as students are challenged to show and share what they know in creative and innovative ways.

Patrick McCallum

Patrick McCallum is a Grade 4 classroom teacher at Prem Tinsulanonda International School. He has also taught various grade levels in Australia and Year 5 and Year 6 in the UAE and in the Sultanate of Oman.
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Man and Technology

What’s the connection between monuments, Java Man, Creative Cities and batik?

People want to know about the past as much as the present. It is a mystery why some monuments look alike and have the same purpose, even when completely isolated. It is amazing how smart we were thousands of years ago, even without technology. How does technology shape how humans live and think?

Rebuilding a lost urban civilization is a challenge, especially when you have to respect religion. Sometimes when people discover something they can’t explain, they can trace it in religion. All religions are similar because they have the same purpose: to explain the unexplainable. The discovery of Java Man questioned the origin of man. Christian religion put Earth as the centre of the universe, and states that God made the world, the landscape, animals and a man then a woman. But are humans as important as we think we are?

Monuments

The most important monuments on Java Island, Indonesia, are Borobudur and Prambanan. Angkor Wat, Cambodia, is similar to Borobudur in style and the way it’s built - without foundations. Both were built on rice terraces requiring sophisticated drainage systems – an early form of water control technology - to prevent the collapse or sinking of the structures.

How is Borobudur in Indonesia connected to Angkor Wat in Cambodia?

The earliest settlers in Indonesia were Hindu and Buddhist, while some time later, Islamic people also came to the country. In Yogyakarta there was a volcanic eruption and the destruction of the environment caused the Hindus to go East, and the Buddhist scattered to the East, West and North, where they probably built Angkor Wat using the same knowledge and ancient technology that had been employed three hundred years earlier in the construction of Borobudur.

Legend has it that Prambanan was built by a man who wanted to marry a woman. Her challenge to him was to build one hundred stupas in one night. He built only ninety-nine stupas so he didn’t get married. Today the temple is for monks’ prayers, not worship. When UNESCO found Prambanan they said, “You can’t treat a monument like this.” So the Dutch rebuilt Prambanan and put concrete in the shrines. Today they are still rebuilding Prambanan because an earthquake happened ten years ago.

Java Man

It is important to know how we came to be because it helps us understand the problems in our bodies and why our bodies are how they are. We can also learn about the animals and the climate. In Sangiran, Java, the climate is very humid and there is a lot of rainfall. The water leads to erosion, messing up the stratigraphy dating of fossils. Scientists use stratigraphy or argon dating technology but the problem is that when fossils are touched by the contaminated water, the fossils are also contaminated.
There are approximately 200,000 people living in the archaeological site. Problems arose with poor farmers, some of whom littered and dug in the ground to collect and to sell the fossils that they find. Fossils are mega fauna and Java Man (Homo Erectus). With four museums on the site, the site management plan is making more problems than solutions.

**Creative Cities**

Creative Cities is a UNESCO program designed to promote a city with health, social economic and cultural development. Each city works on the rate of their creative economy based on creative products. UNESCO's mission in the network is to protect cultural diversity by integrating cultural and creative industries into local development plans. The network transfers knowledge and the diversity of urban practices so they can share and exchange local resources and practices. An important aspect is the creation, production, distribution and enjoyment of cultural goods and services at the local level of development.

Cooperating programs have initiatives to support cities in need of assistance. Training requires exchange of interns, trainees and educational modules. Policy initiatives are linked to local and/or national development plans. There are sixty-nine cities in the creative cities network and seven creative industry fields: Literature, Cinema, Design, Media Arts, Gastronomy, Music, and Crafts and Folk Arts. Each city chose the field of creative industries they wanted. Indonesia, for example, chose batik.

**Batik**

With the world changing, culture and people have to keep up with the world. Batik uses ancient technology of dying cloth using dye and waxes to hold the dyes in one place to prevent mixing. After the dyes are put in they are thrown in chemical to make the dyes show their true colours. They then pour boiling water on the wax to remove it, leaving a thin line.

Sometimes the people layer the dyes, changing the style. The dyes they use mostly now are chemical but they still use natural dyes. The style has changed into modern fashion but they still use traditional styles. Modern fashion is flashy with many colours and the pictures are big and have less detail. The tradition style is patterned and made into clothes, with the tradition style being shirts and sarongs, and the modern fashion of shirt and pants. Batik is also used to upholster all sorts of furniture.

**Technology and Man**

Nowadays when average tourists go anywhere they take ‘selfies’ and walk all over things without caring. The monument’s significance is forgotten, and the technology is unseen. This is why understanding past technology is important for our future.

**Pakorn (Om) Arjpothi**

Pakorn (Om) Arjpothi is a Grade 7 student at Prem. Om accompanied his father on an UN/UNESCO mission to Indonesia in December. He visited World Heritage sites, batik studios, and was fortunate to attend a UN meeting negotiating development interests, indigenous rights, and illegal trafficking in ASEAN.

*Photographs by Richard Engelhardt, Christopher Hall and will-on-board.com*
In recent years, Chiang Mai has enjoyed several hot air balloon ‘spectaculars’. Hot air balloons, dating back to 1783, are the oldest form of human-carrying flight technology. More balloon festivals followed in successive years, drawing ever-larger crowds. The next major balloon bonanza will happen in December 2015. Watch out for details!

If you have experienced a hot air balloon ride, the memory is likely to stay with you for life. The sensation of floating above our miraculous planet is magical. Only the bursts of propane gas remind you that heat causes air molecules to expand. This makes it less dense than the surrounding atmosphere. Like lighter gases such as helium, it rises. If you trap hot air in enough volume, and attach yourself to it, you will fly!

It is just before dawn, dark and cold. A giant envelope of strong, lightweight nylon webbing lies stretched out on the dew-soaked grass. Tony the balloon pilot checks other essential equipment. In the half-light, the ground crew’s expressions and rapid movements show a slight nervousness. The three waiting middle-aged couples, all first-time passengers, share this. The wide wicker passenger basket carrying the propane cylinders lies on its side, attached to the envelope. Crew members hold the maw open. Giant fans blow air in until it is semi-inflated. Bursts of orange-blue flame follow. The huge balloon comes to life. It rises, tilting the basket to an upright position underneath the canopy. In the gloom, it presents a compelling, giant image.

Tony climbs into the basket and measures short bursts of flame. The towering balloon responds, and tugs at the tethers. The six passengers clamber aboard, silly jokes hiding their nervousness. Tethers drop. Gas roars. The basket creaks as it rises. As they ascend, the horizon appears. Emotions intensify with the sheer beauty of the emerging dawn. Heads turn, cameras click, fingers point, punctuated with strident calls of “Oh, look!”

Wonder prevails

A hundred feet beneath them, the ground crew jump into the chase vehicle, headlamps bright. They will follow the balloon to the landing site that will be dictated only by the wind. Balloons usually fly at dawn when breezes are gentle, and the weather forecast perfect. Tony releases a long burst of fiery gas. The balloon takes ten or more seconds to respond, then rises faster, treetops now receding far below. He consults his instruments, and reports to local Air Traffic Control. Hot air balloons enjoy priority over all other aircraft: modern technology giving way to the old.

There was no air traffic control when the first manned balloon flight happened in 1783. Two intrepid Frenchmen flew 500 feet above Paris, and landed in a vineyard half an hour later. When such flights continued, local farmers began to object to things landing on them from nowhere! It then became customary for pilots to carry a bottle of champagne to placate grumpy landowners - a nice tradition which still survives today.

Tony, chatty and relaxed, automatically scans the terrain below for possible landing sites in case of an emergency. That is not likely. Ballooning is one of the safest ways of flying. In most countries, equipment is scrupulously maintained and pilots rigorously trained. Even in the rare event of running out of gas, the balloon itself acts as a huge parachute.

A memorable hour later, Tony selects a suitable open landing site. Tony pulls a cord that releases hot air from the top of the balloon. The descent quickens, slowed by short bursts of flame. Finally, the huge craft hovers, majestic and impressive, just a few feet above the field. Tethers are secured. The basket bends and flexes as it meets the earth. The burners lapse into silence. The adrenalin-soaked passengers cheer.

“I’d do that all over again!” says one, as they make their way to the welcoming breakfast table, already set up by the crew. And on the white cloth, amid the goodies and the coffee, a bottle of French champagne awaits.

Ramlah Jafri and Basil McCall
Hot air balloon enthusiasts

Photographs by Ashkan Sharifi, 6Corners.net © 2014 Earth Wind and Fire Co Ltd
Clocks, computers and piano chords

The IB MYP Design Cycle is a project development system that is the basis for all Design classes at Prem. The Design department expands the creative areas covered in the Design curriculum, and immerses and exposes students to as many areas of the Design curriculum as possible. Prem has two separate design programs: Digital Design and Product Design. Digital Design uses computer technology to develop a variety of design projects and Product Design uses computer technology in conjunction with construction materials design tools. The students are encouraged to personalise their project choices, offering a more student-initiated and student-centred learning experience.

Some students have made wooden puppets, using Google Sketch up to design their own houses, Lego Digital Designer to make vehicles and even completing a Minecraft Challenge. Others designed Pizza Restaurants, made use of the Traidhos Farm kitchen to cook their own pizzas and constructed their own wooden boxes using traditional hand tools and workshop machinery. They also developed their musical talents by exploring a variety of music software, researching online art and intellectual property theft and composing a piece using Noteflight software.

Older students designed and made recycling units to be placed around the campus to refine and simplify the recycling that occurs within the school. They were also introduced to spreadsheets, programming and computer graphics. With the spreadsheet project, students used various formulas to construct a profit/loss spreadsheet. They used Scratch and a variety of programming strategies to develop a game for younger children. A selection of graphic manipulation programs was used to create an effective montage with a message.

Others followed the MYP design cycle to design and manufacture Asian clocks and Smart Phone Speakers for Product Design. For Digital Design, students chose between four elective courses: creating a website using an online creator site of their choice, editing Creative Commons audio/video to produce a five-minute production using iMovie or any editor program of their choice, designing an app using coding in conjunction with an online creator programme or developing a social entrepreneurial venture, where students designed a self-sustaining business model around a significant social issue.

Each course was designed so students would have a high degree of project ownership, developing each design stage of their projects for a specified client. As you can see, students have a vast range of stimulating and engaging projects that allow them to discover and develop some amazing design skills. The students witnessed some big changes in the department this year and hopefully these changes will provide the students with inspiring, exciting projects that will carry the Prem Design department forward.

Steve Service and Mark Bosworth
Steve Service is the CAS Coordinator and a Digital Design and English teacher at Prem Tinsulanonda International School, and Mark Bosworth is the Digital and Product Design teacher at the same school.
Promenada Resort Mall Chiang Mai is home to the flagship branch of Rimping Supermarket. Something extraordinary - not only the finest choice of local and imported foods. This is an award-winning masterpiece of retail shopping design. Above eye level, a model Thai village surrounds the whole, with doors, windows and balconies. Hand-painted murals and artistic objects frame the network of counters and shelves. A life-sized tree at the entrance stands as a striking centrepiece. Soft lighting and a tranquil ambiance make browsing a pleasure.

Beyond the design and shopping choices is a line-up of unusual extra facilities. These include a Bistro, a Japanese restaurant, Seafood and Oyster Bar, Wine Bar, Sandwich Bar, Thom Coffee Corner, 'Oven' Bakery, and 'The Epicure' kitchenware department. Shopping, dining or entertaining can therefore be done in one single elegant setting. Rimping Promenada customers also enjoy a pick up service. Supermarket purchases are left in safe keeping at the car park entrance, and picked later at your convenience, when staff will happily help to load it in your car.
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