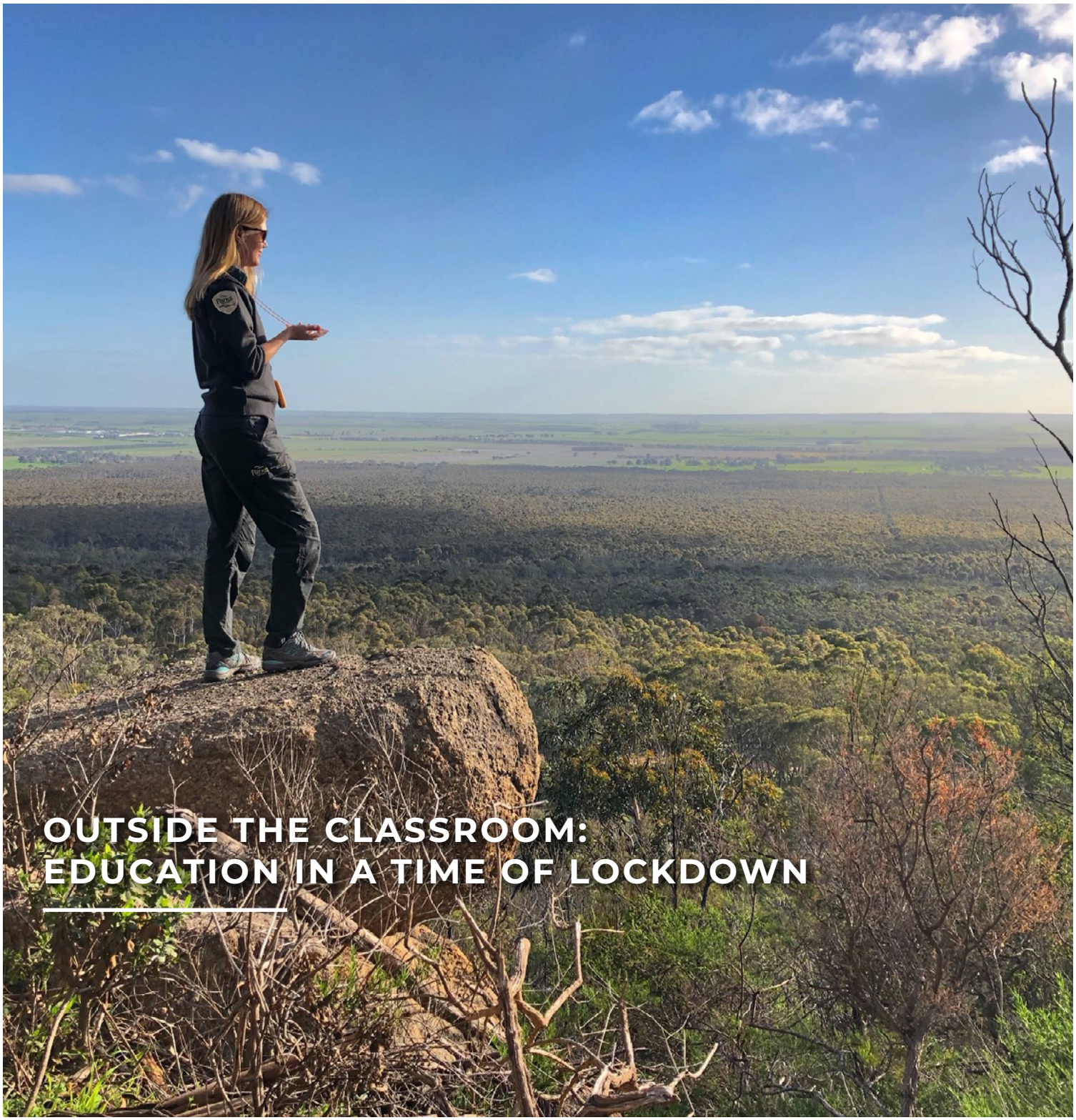
EINGANA

The Journal of Environment Education Victoria



OUTSIDE THE CLASSROOM: EDUCATION IN A TIME OF LOCKDOWN

ENVIRONMENT EDUCATION VICTORIA

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ENVIRONMENT EDUCATION VICTORIA

OFFICE HOURS

Monday–Friday 10am–4pm
Please direct all communications to EEV at:
Level 2, 60 Leicester Street, Carlton, Victoria, Australia 3053
Phone: + 61 448 285 311
Email: admin@eev.vic.edu.au
Website: www.eev.vic.edu.au

Environment Education Victoria (EEV) is a not-for-profit membership-driven incorporated association. EEV provides leadership and a voice for the environmental education sector within Victoria. *Eingana* is the journal of the Victorian Association of Environmental Education Inc., trading as Environment Education Victoria.

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Joint membership for the Australian Association for Environmental Education (AAEE) and EEV is also available.

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The editors thank all those who have contributed articles, illustrations and photographs for this issue of *Eingana*.

We welcome contributions and advertising. Please contact the EEV office if you are interested in writing for or contributing to *Eingana*.

Front cover: *Vanessa Wiggenraad in the You Yangs Regional Park when she and a colleague were developing a Geography excursion on the East West Walk.* ***Photography:*** *Ebonee Cook*

Back cover: *A student's sand art at the beach inspired by Lowy Hunter.* ***Photography:*** *Alison Tonion*

EDITORIAL

FEATURES

COMMUNITY

NEWS & RESOURCES

Environment Education Victoria acknowledges the Traditional Custodians and Elders of the lands on which we live and work. We extend our respect to Elders past, present and emerging of all First Nations peoples. We respect and uphold Aboriginal and Torres Strait Islander Peoples' vital and continuing connection to the land, air, waters, culture and all living things.

FROM THE EDITORS

*By **Jacquie Rynn** and **Margie Beilharz***

The articles in this issue of *Eingana* celebrate the effort and imagination teachers have put into their classes in this year of lockdown and remote teaching. The many ways that teachers and organisations have adapted is amazing. Our authors also acknowledge the obstacles inherent in teaching environmental science remotely – not all students had access to good devices and broadband data. EEV President Angela Andrews notes that 2020 has been a tough year generally but also suggests that outdoor learning – a key plank of environmental education – may be seen as doubly valuable in COVID-normal teaching.

Shabanum Buksh explores how, more than ever during this pandemic, we need to remember how children can only learn if they have their basic needs met first. She outlines two important theories in psychology which relate to teaching, which state, 'You must Maslow before you can Bloom'.

Not surprisingly during this lockdown, many educators turned their usually face-to-face offerings into webinars, Zoom training and virtual experiences. Dominique Dybala describes EEV's 'Stories of sustainability' resource that shares school case studies of innovative teaching. Members of the Climate Change Education Network provide two examples of how they adapted to online education: Jorja McKinnon, Monica Green and Peta White turned their professional development workshop on climate change education into a webinar and were able to service a much broader audience than initially intended; and Bronwyn Sutton, Gen Blades, Meg Upton and Peta White collaborated to create and run two online workshops, in the process discovering generative and regenerative practices that sustain their work.

The education teams at Zoos Victoria, Melbourne Water and Parks Victoria's Serendip Sanctuary adapted their programs to a remote audience, developing virtual excursions and augmented reality experiences that met their teaching objectives in a new way. Being accessed remotely also opened up the experience to more students than ever as geography was no longer a factor.

Sarah Moore and Jorja McKinnon describe the rollercoaster ride that was teaching Year 12 in 2020. They foresee that some innovative resources and practices will be retained in future Environmental Science teaching, even post COVID-19.

Janine Dissegna also highlights these positives, after the empowering experience of teaching her first year of VCE Environmental Science in an innovative and more environmentally friendly way.

Many teachers focused on how their students could experience nature when learning under lockdown conditions. Emily Hui explains how she used many online resources as well as activities such as scavenger hunts, guided meditation and learning about local Indigenous culture to connect her primary students to nature and maintain wellbeing. At another primary school, Loretta Leary encouraged her students to explore their neighbourhood and 'hug a tree' to keep them in touch with nature in person, rather than on a screen. Andrea Savage set her Year 9 and 10 students the task of exploring the biodiversity in their back yards, while Harriet Deans explored the many positive digital learning opportunites that were presented to her early learning students through video, web and guided parent lessons.

Teachers and their students undertook a variety of lockdown projects. Heather-May Buzza's students enthusiastically embraced the idea of a virtual science fair, creating mini videos of science experiments. Cristy Herron wanted an activity that would encourage environmental responsibility, so she involved her students in an isobrick project as a practical way of re-using soft plastics. Year 12 student Lucy Skelton, the subject of our student profile, with a team of fellow students organised a virtual student conference on climate change.

Our science educator this month is science communicator Andrew Geschke from the Arthur Rylah Institute for Environmental Research, Department of Environment Land Water and Planning. Even before COVID-19 made teaching technology so important, he was developing augmented reality experiences to tell science stories and connect people with research.

It's testament to the enthusiasm and resilience that our educators have shown during this year, that we have had more contributors for this edition than ever before. Through sharing their journeys, the wins and the challenges, this edition highlights the collaborative nature and strength of this community. Congratulations to our educators on not just 'surviving' 2020 but innovating in it!

Happy reading!

FROM THE EXECUTIVE OFFICER

***Grant Fenton** celebrates the amazing efforts of teachers and the EEV team over this difficult year.*

Being married to an educator has meant that I've seen first-hand the passion and commitment teachers have for their profession. I have learnt that one can hardly call it a 'job'. It's really a calling. However, just when I thought 'we all know that' and that my appreciation for the work of teachers in the early learning, primary and secondary settings was at its highest point, along comes 2020.

My own personal experience this year has been one of homeschooling my Grade 1 daughter, Poppy, supported by my highly experienced wife, Ghiran, who has a leadership role in Catholic Education. While I rate myself as a fairly resilient individual, I, like many other parents, found the prospect of homeschooling daunting and stressful (and that's me with one child and a wife with incredible experience in education). So, when we found ourselves able to send Poppy back to school for Term 4, along with a great sense of relief, came a heightened appreciation and respect for the teachers. To be honest, I felt as though I could lie at their feet and call, "I'm not worthy" – such is my respect.

Teachers have been amazingly agile. They have had to discover new ways of engaging with their students and work in an environment which has been, and may continue to be for some time, unpredictable. More importantly, teachers have done what teachers always do. They have been dedicated to their roles, above and beyond the working hours of the day.

So to you, our members who work in the education sector, I say thank you. You have been and always are quite simply amazing.

EEV ADAPTS

Like many organisations, we at EEV had to embrace using technology in all that we do. I, along with all the EEV team, have worked from home since March 2020 and will most likely continue to do so well into 2021. We've not been able to visit schools or have face-to-face meetings with our stakeholders. We've been unable to host face-to-face workshops or other events. However, for all its challenges, this

year has brought out the very best of the EEV team and Committee of Management. We have experienced an increase in membership, we've hosted very successful online workshops and our engagement with schools has never been better. In addition, we've been able to collaborate with organisations on projects where, prior to 2020, we may not have. When in June I proposed the option of moving or cancelling EEV's annual Environmental Educator of the Year Award, the EEV team were of one voice: we *should* hold the event online. Their belief was that we owed it to our members and to those environmental educators who deserve recognition. This attitude is what has carried us through this year. Like each of our members, we have had to discover a new 'business as usual' and forge ahead with our ideas.

We'll need more of the same attitude going into 2021, and I know that our organisation will continue to innovate and grow, regardless of the challenges. I know that each of you, our members who are so committed to sustainability and environmental education, will do the same and EEV will be your greatest advocate.

grant@eev.vic.edu.au

FROM THE COMMITTEE

*By **Angela Andrews**, President, Committee of Management*

This year was tough. The changing lockdown rules we were forced to endure meant that teachers, educators and lecturers, as well as students and their parents, had to do their best to hold on tight throughout this strange and surreal rollercoaster ride.

Regular routines, familiar comforts, and face-to-face connection and companionship were snatched away from us. Our lives became uncertain and unpredictable, and all this disruption created an underlying, and sometimes unacknowledged, fog of unease, anxiety and stress.

Teachers and educators had it particularly hard – they had to rapidly adapt to new ways of communicating, interacting, teaching and supporting their students. Traditional classroom teaching models had to be abandoned at short notice, and new student learning methods devised in record time. Those who deliver hands-on programs based in kitchen gardens, native bushland and outdoor learning spaces, or those whose lessons rely on practical tasks and equipment, tools and specialist materials, faced much greater challenges.

Many teachers and educators – including me – also struggled because we are inherently social creatures. Many years ago, when considering our career options, we chose a classroom over a corner office.

And then, we were lost. We found ourselves trapped behind a screen unable to fully engage with the people we loved working with. We missed the visceral energy of our students – their curiosity, spontaneous laughter and joie de vivre. We yearned for the social banter and human connection that working directly with others provides, that feeds our soul, and makes our professional lives so meaningful.

School principals, in particular, had unprecedented pressures: navigating sensitive meetings with empathy and care, and often having to make hard, and sometimes unpopular, decisions in the best interests of their students, teachers and communities.

Zoom? MS Teams? Skype?
Cameras on or off?
But I haven't brushed my hair yet …
Dang! Am I still on mute?
How do I unmute myself?
Synchronous teaching?
Or asynchronous learning?
What's a breakout room?
D'urrgh …
Not a breakdance room.
C'mon … just how old are you??
No. Not a break room either.
Breakout. Breakout.
Oh, I see. I get it now.
Great! We're back at school. Phew!
No! What?
Wait …
More announcements.
Back home again.
8pm curfews.
Really?
5km travel limits.
You've gotta be kidding!
Back to school.
Things are easing.
Nope.
Restrictions remain in force.
Whaaaat?
What now?
Back at home.
Back at school.
Or are we?
Wait.
Hurry Up.
Wait.
What?
What now?

Much of this anecdotal distress was supported by a recent report from consulting firm, PWC.[1] They outlined some of the challenges facing our sector, including:

- reduced one-to-one engagement between teachers and students
- difficulty in ascertaining engagement levels of students
- restricted ability to monitor individual student progress
- increased level of oversight required from parents and carers (particularly for younger children)
- increased social isolation (for both teachers and students) and reduced ability to support student wellbeing
- interruption to learning support for those children with additional needs
- differential levels of access to technology, including internet and devices, to support learning.

There were no ready-made solutions on hand. We all had to make things up as we went along. It took incredible collaboration and creativity to invent new ways of being, knowing and doing.

However, one of the positives that seems to have emerged from this crisis was the new-found level of respect and admiration that has graced the teaching profession. This was a new recognition of the inventive, thoughtful, conscientious and dedicated efforts of teachers and educators who went above and beyond, giving so much of themselves to support their students academically, practically, emotionally and psychologically. They provided stability, instilled confidence and ensured the continuity of education for students of all ages and stages of learning.

AND WHAT ABOUT CLIMATE CHANGE IN THE MIDST OF THE COVID CHAOS?

"People everywhere are still hyper-focused on the pandemic right now. Meanwhile, the slower burning crisis of climate change remains."[2]

Patricia Espinosa, executive secretary of the United Nations Framework Convention on Climate Change says in a radio interview "that the climate crisis is 'the biggest threat to humanity now and into the future,' and adds that 'the climate crisis was there before COVID-19 started' and has not 'taken a break because of COVID-19.'"[2]

She argues "that 'humanity needs to address these two fundamental, existential crises together,' and that a COVID recovery needs to include and integrate climate change in all decision-making and policy decisions."[2]

So, what could her comments offer us, as environmental educators?

I believe we should use this opportunity to advance the long-standing argument of our profession, that the deepest and most profound learning experiences often lie outside the confines of the traditional four-walled classroom.

We should explain, as we have been doing for decades, that student learning can be reimagined – that meaningful education experiences can look, feel, and sound very different to the mainstream norm.

We should explain that a return to school-based learning, which incorporates greater use of outdoor learning spaces, could lower the risk of covid transmission.

We should share the extensive research that demonstrates the power of outdoor learning experiences.[3] The benefits, of course, include improvements in:

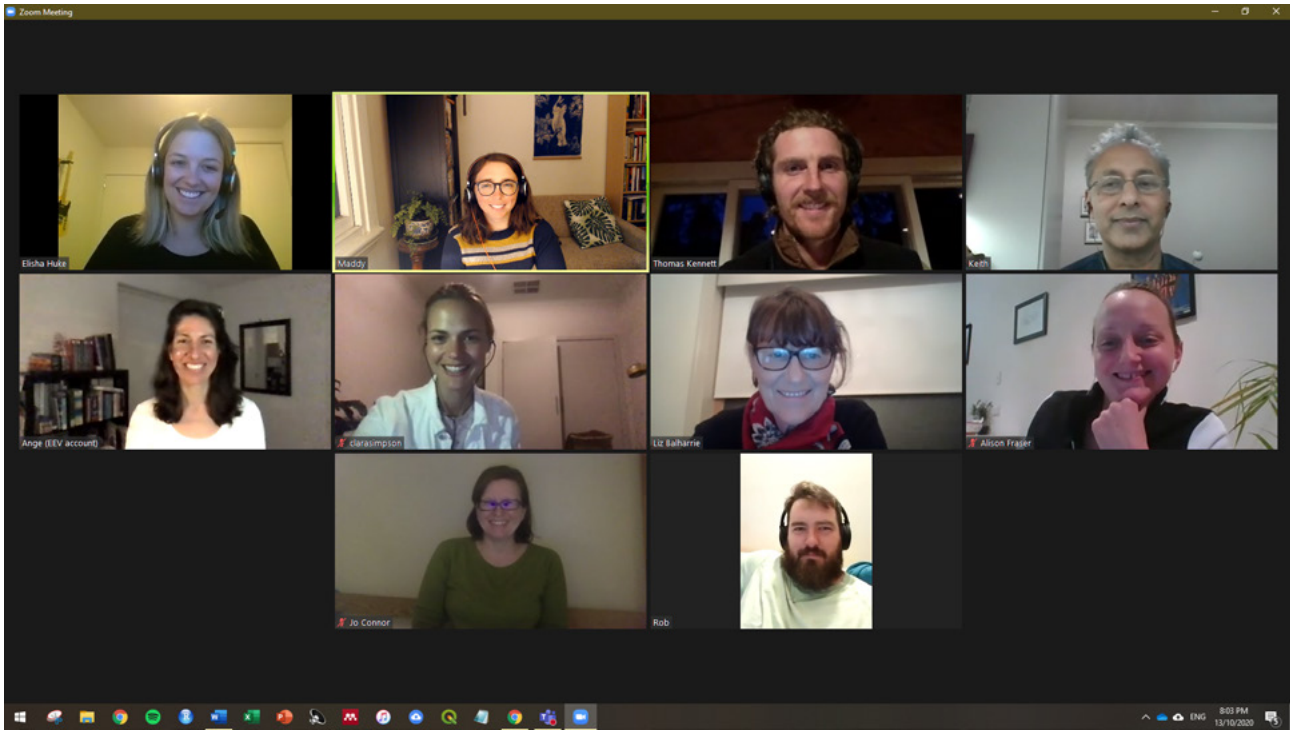
- physical health and development
- mental health and wellbeing
- emotional intelligence, resilience and grit
- attention and engagement in learning
- cognition and problem-solving skills.

And we should remind our colleagues and collaborators across the education sector that reconnecting with nature is a powerful panacea for the anxiety and fear generated by COVID-19.

[1] *https://www.pwc.com.au/government/government-matters/covid-19-education-how-australian-schools-are-responding.html*

[2] *https://www.pri.org/stories/2020-07-29/un-climate-chief-coronavirus-and-climate-change-we-must-address-these-two*

[3] *https://treeday.planetark.org/research/*



Above: *The EEV Committee of Management continued to hold their monthly meetings during the recent pandemic restrictions, by taking the format online.* ***Photography:*** *Maddy Yewers*

Spending time in nature helps all of us, including our students, develop a greater knowledge, understanding and love for the world in which we live. And this will make us more deliberate in the choices we make and the actions we take to work together and collaborate to address the climate crisis. Perhaps this notion is stated most elegantly by Richard Louv in his much-loved quote: "We cannot protect something we do not love, we cannot love what we do not know, and we cannot know what we do not see. And touch. And hear."

This edition of *Eingana* invites you to read, share and learn from others about the many innovative and engaging practices that teachers and educators across Victoria have introduced, experimented with and implemented during this year of lockdown. We hope it is a conversation that continues on our Facebook page, where you can continue to share your stories with us and with each other.

I conclude this message by acknowledging all of the staff at EEV who have remained steadfast during these incredibly challenging times. Their composure and commitment to our purpose is inspiring. Thank you, Dominique, Grant, Jacquie, Jorja, Mark and Nicole.

And thank you to all of you, our members, for your ongoing support of our work. Your membership contributions are not only a financial lifeline for EEV, but your support also helps us create a web of connections, communications and collaborations among educators to foster an appreciation for the majesty of nature, and inspiration to address the climate crisis.

FURTHER INFORMATION

Angela Andrews, *Director of The fourth R, has served on the EEV committee for the past four years. She previously worked as a university academic and secondary teacher in the field of economics, and subsequently transitioned to working as a climate change and sustainability educator in local government, the not-for-profit sector and at CSIRO.*

president@eev.vic.edu.au

TURNING SCREEN TIME INTO GREEN TIME

Emily Hui *connected her young students to nature to inspire creativity, mindfulness, emotional literacy and wellbeing. Many activities she describes also built awareness of First Nations peoples and their cultures, especially the Wurundjeri on whose land the school is sited.*

Remote learning – a world of Zoom, Seesaw and screens. We all know the effects of screen time, and with our young minds developing, we, as educators, were keen to ensure our young learners had more green time!

For context, Auburn South Primary School is an International Baccalaureate school with a focus on inquiry learning. It is a Positive Education school that is part of the Visible Wellbeing program, and is a ResourceSmart school with the Stephanie Alexander Kitchen Garden Program.

With wellbeing playing such a big part in our school culture and operations, a connection to nature has evolved organically within the program as our students have explored their relationships with others, their emotions, and their own sense of self.

CREATING AWARENESS

Our Prep inquiry investigated the idea that 'an appreciation of nature can inspire creativity', which provided the perfect opportunity to engage with nature as a form of inspiration, connection and expression during remote learning. Launching with a mindful practice to create awareness, students were invited to find a special place in or around their home (such as their garden) before embarking on a guided practice helping them focus on each of their different senses. Afterwards, they created drawings and labelled things they discovered when connecting with their different senses. Each of our online learning engagements also provided options to 'go further' and a 'super challenge' for students and families who were inspired to do more. So to aid a

deeper awareness and mindfulness practice, students could also start a nature journal and observe and record in detail what they noticed.

2020 has been a big year of awareness, including the Black Lives Matter movement and the momentum here with our own First Nations peoples, Aboriginals and Torres Strait Islanders. We are so fortunate to be on these lands and living among people with the oldest living culture. So we have made a big effort to ensure it was part of our teaching and learning. We have been reading, listening and learning to First Nations voices, truth and perspectives, which included Neil Morris's presentation on 'First Nations' Green Past, Green Futures' at the Zero Waste Festival and three of the Prep team members completing the Koorie Heritage Trust 'Building Aboriginal cultural competency' training.

We are living, learning and playing on Wurundjeri Country, so it was important to us to acknowledge the First Australian's 65,000+ years of knowing, doing and being. This was a common thread throughout our learning, not just an 'Acknowledgment of Country' that students heard once a week at assembly.

VIRTUAL EXPERIENCES: NATURE PLAY THE WURUNDJERI WAY

There were so many incredible opportunities popping up as organisations digitised and created new experiences online, often offering them for free. The perfect match was Zoo's Victoria's 'Nature Play the Wurundjeri Way', which introduced the students to the words for some local flora and fauna in Woiwurrung, the language of the Wurundjeri peoples, as well as Aboriginal symbols for these animals. The program was a beautiful mixture of storytelling, exploring and connecting with the natural world. We kept this going throughout remote learning, with a weekly feature of animals with the Woiwurrung name we had learnt on our morning greeting slides as a reminder of this experience. Students had agency in how they could respond to this learning. There was a wide variety of creative responses, such as taking photos of local flora they spotted, making videos sharing their animal soft toys and what they had learnt from the incursion, creating a bird's nest with natural materials, drawing and labelling the animals with their Woiwurrung names, and exploring the mark making with Aboriginal symbols.

HOW CAN NATURE CONNECT US TO OUR EMOTIONS?

Continuing our inquiry, we created an opportunity for students to explore the power of natural sounds through a guided meditation focusing on breathing and listening to water flowing in a creek with birds in the background. Using picture prompts of water (a still lake, a flowing creek, a rushing river, a waterfall, a giant wave crashing and a frozen iceberg), students picked one that represented how they were feeling before and how they were feeling after the mindful practice. During the check-in, emotions were mixed with students picking a variety of the water images to share how it represented their feelings. After the mindfulness practice, students shared a response on how they were feeling, what they visualised during the mindfulness practice or something that connected them to the experience. It was beautiful to see and hear students share memories of holidays at the beach, drawings of their flowing rivers in the forest, and many sharing that they felt calm and relaxed after this experience.

As Yorta Yorta musician Allara sings, 'Wala is life' ('wala' is water in Yorta Yorta), and we used this

Left: *A student's bird's nest inspired by the story of Bunjil, a wedge-tailed eagle, the Creator and one of the Kulin Nation's moiety ancestors.* ***Photography:*** *McGregor Coad-Vardy* ***Right:*** *A student's sand art inspired by Lowey Hunter.* ***Photography:*** *Alison Tonion* ***Previous page:*** *Granny's garden – using natural materials to share a memory.* ***Photography:*** *Prep student*

opportunity for students to connect to the power and sacredness of water ('baan' in Woiwurrung). We explored the importance of water as a source of life as students contemplated where they use and connect with water in their daily lives, and the flora and fauna that depend on it. We spoke about our local water way – Kooyongkoot/Gardiner's Creek that connects to the Birrarung/Yarra River and out to Naarm/Port Phillip Bay. An option for the students to go further was to listen to the 'Connection to Country' meditation by Sue-Anne Hunter, a Wurundjeri woman and Djirri Djirri dancer. If you would like to dive deeper, Djirri Djirri is an Aboriginal women's dance group in Naarm/Melbourne who sing in the Woiwurrung language. They have a great song and dance exploring the six layers of Country (biik) with Mandy Nicolson explaining the six interconnected layers.

COLOURS AND FEELINGS

As our inquiry focused on the transdisciplinary theme of 'how we express ourselves', the next layer focused on the use of colours to explore words that go beyond the basic responses of 'good', 'happy', 'bad', 'sad' and 'angry'. Developing emotional literacy helps people better identify and express their feelings through a wider vocabulary and emotional understanding. We read Dr Seuss's *My many coloured days* to introduce the concept of colour as a way to express emotions. We wanted to provide the permission to feel by sharing that 'it's ok to feel what you're feeling today' as we noticed our Preps were beginning to feel really big emotions. For more on this, *Permission to feel* by Marc Backett is a great read.

This brought together the skills and knowledge from visual arts, where students had learnt how to draw expressive cartoon faces and explored the colour wheels. Our students created a piece using colours to share how they were currently feeling, and were asked to reflect on why they think they might be feeling this way. They could go further to create their own 'feelings thermometer' as a visual display and communication tool. Alternatively, students could explore how colours could evoke memories and connections, like the way a certain lush vibrant green reminded me of the beautiful Tarkine Forest in Lutruwita/Tasmania. Even just seeing the colour and connecting it to the memory brings a sense of calm and peace. Try it for yourself!

CREATIVE CASE STUDIES

We continued exploring nature through noticing with scavenger hunts and case studies of artists and creators. Some of the creatives works we explored were from Jill Bliss's earlier line work, Ghostpatrol's street art murals, Indigenous sand art by Lowy Hunter (otherwise known as the Salty One), Belinda Evans' photographs and stop motion animations of her nature collections and arrangements, Aly de Groot's fibre art, Helen Ahpornsiri's dried flora animal illustrations and even one of our teachers' own floral wreaths. It was also the opportunity to look at architecture inspired by nature and even biomimicry – do you know where the idea of velcro came from?

Inspired by these sessions, students explored, created and shared their own nature-inspired creations, wonderings and research. We wove wellbeing in with First Nations' perspectives and culture, as well as inspiring kids to head out to connect with nature. Our assistant principal Ben Zonca once said something that has strongly resonated with me: "We become us through our interactions." So how can you create opportunities for your students, staff, community and yourself to connect with our incredible natural world?

FURTHER INFORMATION

Emily Hui *is a primary- and secondary-trained educator and facilitator who is teaching Prep/Foundation at Auburn South Primary School on Wurundjeri Country. She is the school's sustainability coordinator and often referred to as the school's sustainability conscience – as staff stand at the photocopier deliberating whether they really need to print something. Emily is passionate about empowering changemakers, and is a member of the school's Green Team of students, staff and parents taking action towards a flourishing planet.*

emily.hui@education.vic.gov.au

Nature Play the Wurundjeri Way: https://www.zoo.org.au/education/zoo-education-online/virtual-excursions/virtual-excursions-program-pages/virtual-excursion-nature-play-the-wurundjeri-way/

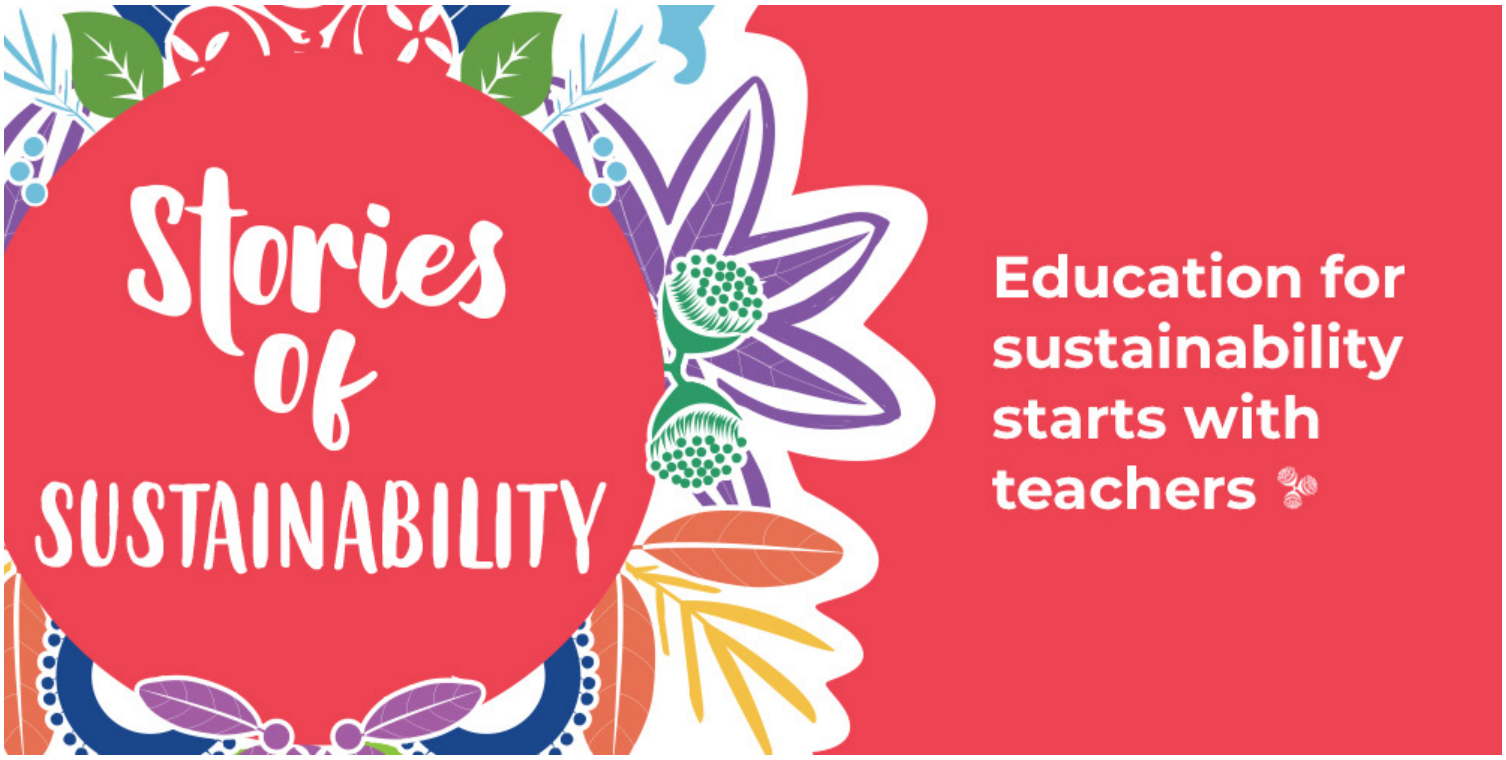
Allara's 'Wala is life' song: https://allara.bandcamp.com/track/wala-is-life

'Connection to Country' meditation by Sue-Anne Hunter, a Wurundjeri woman: https://www.youtube.com/watch?v=bfdJP6we0eQ

Djirri Djirri: https://djirri-djirri.com.au/

Zero Waste Festival: First Nation's Green Past, Green Futures – Neil Morris aka DRMGNOW:https://www.youtube.com/watch?v=zJCcGG964ck

Above: *A student's flower crown creation inspired by Philip Treacy's nature-inspired hats.* ***Photography:*** *Elaine Pratley*



STORIES OF SUSTAINABILITY

Dominique Dybala *introduces EEV's online professional development presentations 'Stories of sustainability', which were developed for 2020 but have produced resources for ongoing use.*

WHAT IS 'STORIES OF SUSTAINABILITY'?

In 2020, EEV was faced with the challenge of engaging with teachers without being able to visit them. Ordinarily we would be out working with teachers delivering a full-day professional development program across Victoria. This year, being anything but ordinary, the learning experience we offered moved online and became 'Stories of sustainability', a series of one-hour Zoom presentations delivered by teachers and students from schools across Victoria.

WHAT IS THE LEARNING?

Teachers love hearing from the experience and learning of other teachers. Environment Education Victoria have always used case studies as a way to share these experiences, and they are a feature of our professional development. Highlighting the experience of teachers and schools in addressing the sustainability curriculum is key to helping others understand the variety of approaches to teaching and learning. 'Stories of sustainability' gave us the forum to share many more school experiences than we have before, and in more detail.

'Stories of sustainability' is an opportunity to share school case studies in an innovative way. Shifting online allowed us to invite a range of teachers to present what they have achieved in their school. The challenges of distance, time, cost and availability disappeared as the presenting teachers were able to share what they were doing from their own homes (or schools) after the formal school day ended. This was the same for the attending teachers. There was no need to leave school early or apply for a professional learning day to attend the session. This was an unexpected advantage of everyone working remotely.

COVID-19 forced us to come up with new ways to engage with each other as professionals. The rapid transition to web-based meetings meant we all quickly learned a new technology and new format for communication. The constraints of the online format had two distinct advantages. The audio on most computers was relatively high quality and filming took place in a controlled environment, a quiet room, with a few other noises in the background. Planning for this type of filming in the locations we ordinarily use – classrooms, halls, or meeting rooms – is much more challenging. 'Stories of sustainability' has enabled us to create a number

of useful resources that can be shared with teachers beyond the experience of living and working during COVID-19.

The stories have become valuable resources for teacher professional development. At the conclusion of each weekly session, the recording was uploaded to the EEV YouTube channel and shared with attendees and all those who registered. The predictable session format means they are easily accessible and understood.

THE FUTURE

Digital resources like this will continue to be part of Environment Education Victoria's suite of offerings. However, the online format cannot replace the experience of a full day of face-to-face professional development. The interactions between participants and the facilitator are critical in shaping the day and the 'real life' experience is much more nuanced than an online session. Elements of each of the recordings will be used as prompts for discussion in the face-to-face professional learning that should return in 2021.

'Stories of sustainability' has been well received by attendees and those who watched the recordings afterwards. It will continue to be a great way to share the stories of sustainability.

This project is funded by the Department of Education and Training's Strategic Partnerships Program (SPP).

FURTHER INFORMATION

Dominique Dybala *is the Senior Education Manager at Environment Education Victoria. Dominique works with teachers throughout Victoria. She is looking forward to getting out into regional Victoria in 2021.*

dominique@eev.vic.edu.au

Stories of Sustainability: https://www.youtube.com/playlist?list=PLvGDzk9OTdcCulKzdV8-jyKR0K-phBnIa

Above: *Some of the initiatives in sustainability education that have been explored at Footscray High School, as outlined during a session of 'Stories of Sustainability.* ***Photography:*** *Jak Dunstan* ***Previous Page:*** *Stories of Sustainability branding* ***Created by:*** *EEV*

MASLOW BEFORE BLOOM

Shabanum Buksh *outlines how children can only learn and thrive if they have their basic needs met first, as explored through two highly regarded theories of psychology by Maslow and Bloom. Shab believes that, in the midst of lockdown learning, this concept is more relevant than ever for students.*

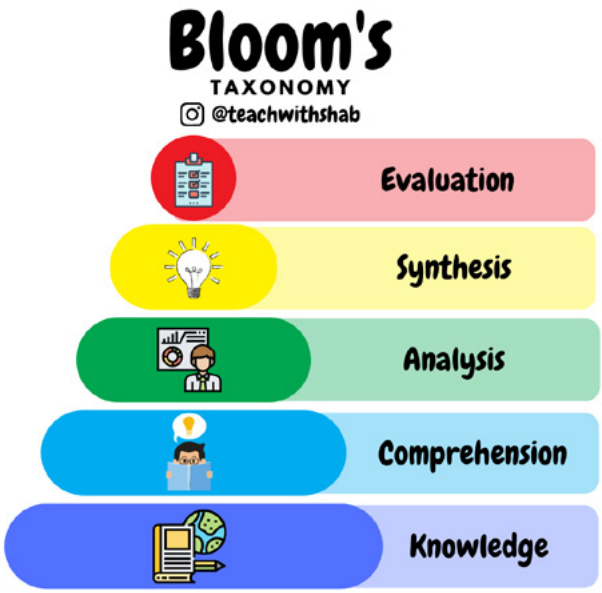
In teaching there is a great saying, 'You must Maslow before you can Bloom.' It's a wonderful play on words that brings together two important theories in psychology; one is Abraham Maslow's Hierarchy of Needs and the other Benjamin Bloom's Taxonomy. It's a saying that we need to remember now more than ever during the COVID-19 crisis.

Bloom's theory is a hierarchy of learning objectives increasing in complexity as the pyramid rises. It is a fantastic tool used by educators across the world to plan their units of work and assessments. You can plan for the basic levels of knowledge and comprehension to be reached, before expecting students to apply, analyse, synthesis and evaluate information. Of course when students are able to achieve success at these higher levels of the taxonomy, they are 'blooming' into their full potential. It is a wonderful achievement for the students and their teachers to see this level of success. But there is a lot of work to be done before such accomplishments, and that work is even harder during a global pandemic.

The COVID-19 crisis has changed the world as we know it. It has especially changed one of the most important parts of the modern world and that is the formal education system. Students and teachers across the world have been forced to leave their classrooms behind and retreat to their homes for their own safety. Once at home, they were then expected to continue their teaching and learning. Students may have been expected to bloom, as they did in the classroom, but now at home. Before you continue teaching, however, remember that students must Maslow before they can Bloom.

One of the basic tenets of education is that a learner has to be ready to learn. The theory of Maslow's Hierarchy of Needs argues that people, such as our students, will be unable to reach their full potential, also known as 'self-actualisation', until they have

satisfied their needs at the other four levels in the hierarchy. Many teachers are excellent at ensuring all their students' needs are being met when they are at school, so they can get on with the job of teaching and learning. However, the COVID-19 crisis has turned our practices on its head, and it's time to think again about how we can ensure our students are ready to learn before teaching them.



Above: *Bloom's theory is a hierarchy of learning objectives increasing in complexity as the pyramid rises.* ***Image****: Shab Buksh* ***Previous page:*** *The COVID-19 crisis has changed the formal education system.* ***Photography****: torwaiphoto*

PHYSIOLOGICAL

The foundational level of the hierarchy is the all-important physiological needs. It seems obvious that our students will need their basic human needs met before they can be educated. They must have access to food, water, shelter and adequate amounts of sleep. Unfortunately, some families have lost their main source of income due to the mass closures and lay-offs during these tumultuous times. These families may be struggling to put food on the table. It is important to be mindful of these very real and scary challenges that our students and families are experiencing during the COVID-19 crisis before relaying any learning expectations. Ensure that all your suggested learning activities and resources are accessible by your students or provide alternatives to ensure equity. Be flexible in your demands on families doing it especially tough during the crisis. Even those families that are well stocked with resources would have felt concern for their personal safety during this crisis, and this brings us to the next level in the hierarchy.

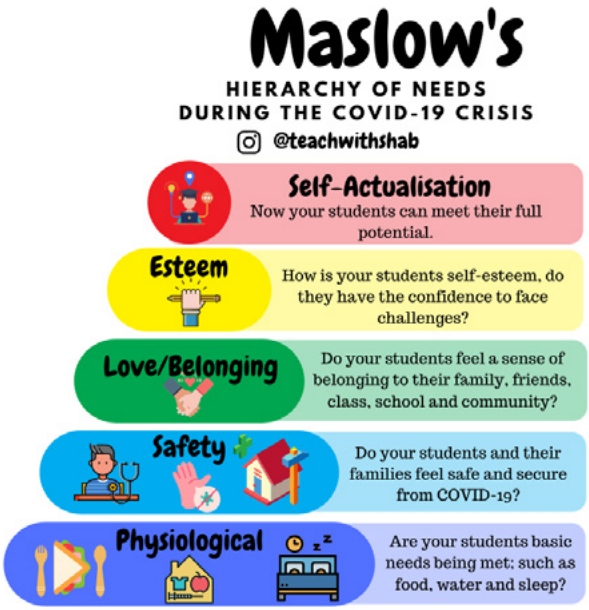
SAFETY

The global pandemic – COVID-19 – is an invisible, fast spreading and deadly disease. No one is 100% safe. Safety is a need that is second only to physiological needs in Maslow's hierarchy. If students don't feel safe and secure during this time they will be unable to learn. Creating a safe and secure classroom for your students now seems like a walk in the park compared to ensuring their safety during a global pandemic. But there are things you can do. Ensure your students and their families are armed with up-to-date accurate information about the pandemic and how to stay safe. Teach your students skills and strategies, such as washing their hands correctly and social-distancing when in public, to give them tools to stay safe. There's no need to cause panic, but a calm, caring and informed teacher can help many students and families through this crisis. Self-isolating at home has been one of the best ways to ensure the safety and security of families during the pandemic. However, human beings were not made for isolation and this has posed a whole new set of challenges, which brings us to the next level in Maslow's hierarchy.

BELONGING

Love and belonging. Students usually belong to a class. As soon as they walk in the doors of their classroom, even if they don't participate, just by being there, they belong to that class. Great teachers foster amazing class cultures behind their classroom doors and students can even feel a sense of loyalty and pride for being part of their class. Remote learning during the COVID-19 crisis has taken that sense of belonging away from our students. Students, who once learnt collaboratively together in their classrooms, are now alone in their homes learning by themselves. Now it has become your job, as the teacher, to recreate that same sense of belonging for your students through remote learning. All students are different. Some will be fine during this crisis and still find ways to connect with their teachers, friends and family, while others will become completely isolated and lose their sense of belonging and connection to their school community. However, all students need to feel they are valued class members before they can really reach their full potential in their learning. You can help

students achieve this sense of belonging by finding ways to connect with each one of your students in a more personalised way. Some students are very lucky and will have access to great technology; they will be able to participate in Zoom class meetings and have Google classrooms set up online. However, we mustn't forget those who do not have access to such technology. A phone call or a letter home will remind them that they still belong to this group too. Another one of my favourite sayings in teaching, is 'Students don't care how much you know, until they know how much you care.' This is the perfect time to show them that you care about them as humans and not just as students and check in on their wellbeing. This may be harder for teachers who teach across multiple classes and may have hundreds of students. Here it's important to work as a team and ensure that there is at least one teacher in your team, checking on the wellbeing of each group of students. Where there is a will there is always a way. During this pandemic, if the only thing you are able to achieve as a teacher is fostering a sense of belonging with your students, it is the most important thing you could have done during this crisis. They will forever remember the name of their teacher during the COVID-19 crisis because you made them feel like they belonged.



Above: *The theory of Maslow's Hierarchy of Needs argues that people will be unable to reach their full potential until they have satisfied their needs at the other four levels in the hierarchy.* ***Image****: Shab Buksh*

Once students are fed and safe and feel they belong, it is all the easier for them to learn. They will be able to reach their esteem needs and gain the confidence to face these challenging times. Only then can we reach the top of the hierarchy. Of course students can learn during these times; however, if we ensure they Maslow before they Bloom, they will be able to strive to reach their full potential and thrive in these testing times. So check in with your students to see if their needs are being met before placing any educational expectations on them. If they aren't being met, change your expectations and see what you can do to help. This is a time for flexibility for everyone and especially for teachers.

FURTHER INFORMATION

Shab *is an Australian primary school teacher with experience across all grades, K–6. She is passionate about maximising teacher impact, while also taking care of teacher and student wellbeing. Shab is currently completing a Masters in Evidence-Based Teaching through the University of Melbourne with a special interest in how recent developments in psychology, neuroscience and education can be used by teachers in their classrooms every day.*

s.buksh2020@gmail.com

Instagram: @teachwithshab

FURTHER READING

Milheim, K 2012, Toward a better experience: examining student needs in the online classroom through Maslow's Hierarchy of Needs model. MERLOT *Journal of Online Learning and Teaching* 8(2), 159–171. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.892.4995&rep=rep1&type=pdf

A STORYLINE: DEEPENING THE COMMITMENT TO OUR WORLD THROUGH COLLABORATIVE PRACTICE DURING COVID-19

Bronwyn Sutton, Gen Blades, Meg Upton *and* ***Peta White*** *of the Climate Change Education Network describe how the pandemic has influenced their environmental education practice, which has included developing two new online workshops.*

The COVID-19 global pandemic has altered worlds and shifted the ways we interact with each other and in our communities. Members of the Climate Change Education Network (CCEN) have continued to build and enact a platform for climate change education through professional action during Melbourne's extended COVID-19-related 'lockdown'. Our shared and ongoing commitment to engaging people in connecting to place via natural worlds is a thread that has sustained our work during these times.

In this article we share insights into how our environmental education practice flourished in online spaces during the pandemic. We reflect on our collaborative processes of designing and enacting two professional development workshops that narrated storylines of place. These processes became the generative and regenerative practices which sustained us during these times. We share insights into the tensions and surprises we faced along the way as we engaged audiences in embodied, place-based and relational pedagogies in online spaces.

ENVIRONMENTAL LEARNING IN AN ONLINE WORLD

Two professional development workshops (described below) offered opportunities to engage with audiences outside environmental education through conferences which had shifted online as a result of COVID-19. Our aim was to draw on embodied, relational, arts- and place-based concepts and practices to engage our audiences in ways that would help them connect to the living world during the disruptive, dislocating times of COVID-19. Ideas, theories, strategies and themes intersected and

crossed over between the two workshops as they were collaboratively designed and enacted. Information about both workshops, including the co-created outputs, is available on the CCEN website.

WORKSHOP 1: A COMMITMENT TO OUR WORLD

The first workshop, 'A commitment to our world', was delivered at Drama Victoria's annual state conference on 12 September 2020. Our audience members were drama educators across Victoria and nationally.

At the core of the design was our adaptation of a deep ecology workshop called the 'Council of All Beings', a communal ritual based on Joanna Macy's 'Work that Reconnects', that invites participants to step aside from human identity to speak through the voice of other life forms and/or natural elements. The processes of the Council engage the heart and the senses which are as relevant in drama education they are in environmental learning. Guided visualisations and embodied remembering of environmental issues and concerns were used to complement drama education pedagogies.

Each of us chose a life form – fire, air, moss, the owlet nightjar – to develop into a model prior to, and then share during, the workshop. Workshop participants were invited to similarly embody more-than-human elements to create a life form and draw on this to collaboratively generate a 'Statement to Humanity'. We encouraged participants to use elements of drama such as sound, movement and voice as they reflected, imagined, physicalised, shared, collaborated and created their chosen life form and 'Statement to Humanity'.

Remaining committed to the processes of ritual and imaginative thinking provided a sound basis for encouraging participant engagement in the workshop and helped us honour Macy and Brown's (2008) established, embodied Council process in a short timeframe. The workshop participants eagerly engaged and, working collaboratively, found surprising and creative ways to (re)connect with the natural world. These were strategies and processes they could take away and use with their students.

WORKSHOP 2: LEARNING ABOUT LOCATION IN A CLIMATE OF CHANGE

The second workshop, 'Learning about location in a climate of change', was presented on 1 October 2020 as part of the Public Pedagogies Institute's online seminar series. Our audience members were educators, academics and others with an interest in in learning that occurs in beyond school spaces and places.

The workshop involved foregrounding memories and experiences of being with/in natural environments and noticing how our interactions with locations can inform our understandings of them. Before the workshop, participants were invited to take 10 minutes to explore the natural or ecological features of their local area, on a short walk near

Left: *Rock and water; moving through time.* ***Photography:*** *Gen Blades* ***Right:*** *Musing on a gum blossom, January 2019.* ***Photography:*** *Bronwyn Sutton* ***Previous Page:*** *An owlet nightjar, one of the life forms that was explored during the workshop.* ***Photography:*** *J.J.Harrison (Creative Commons)*

Left: *Hairy curtain fungi, Otway National Park, 17 September 2017.* ***Photography:*** *Meg Upton* ***Right:*** *Storyline of a tree.* ***Photography:*** *Peta White*

their home or in their yard, and to capture their experience in a photo, video or audio recording. We offered guidance for this activity in a video on our website that described a way of relating with the natural world through mindful presence involving beholding, immersion, reflection and imagination.

During the online workshop we scaffolded participants to draw on these experiences as they co-created storylines. Each of us modelled a storyline of location to support this – storyline of a tree, musing on a gum blossom, a pedagogy of moving in stillness and storyline of fire. We then drew on embodied practices, including guided visualisation, to support participants to reflect on the experience of location they captured earlier. In breakout rooms, we used strategies to facilitate a generative space for dialogue in which participants shared their locations and co-created collective storylines.

Participants from around the world embraced the dialogic process, eagerly sharing and relating with the natural world and each other. The storylines were expressed as poetry, visual collage and digital montage. Shared themes emerged which acknowledged the importance of connecting to natural worlds and each other during these disruptive times. Participant reflections on the process highlighted the power of collaborating and connecting through sharing of personal experiences of location.

INSIDE/OUTSIDE TENSIONS AND SURPRISES IN ONLINE ENVIRONMENTAL LEARNING

The outside space of environmental education is alive with natural elements, humans, and more-than-humans and the lively interactions between these. An inevitable challenge in bringing our workshops online involved thinking about how we would connect participants with such aspects of the natural world when we were inside, situated in front of computer in a virtual space during the online workshops. We responded by drawing on embodied and relational pedagogies in designing learning strategies for both workshops. Garrett and MacGill (2019, p. 3) tell us that:

> the concept of physicality is central to an embodied notion of pedagogy. Far from being an obstacle to learning, the body can be seen as a vehicle for human understanding (Bordo 1993) with sensory abilities that provide a rich source for understanding.

Our intention to 'design in' embodied experiences during online workshops involved using imaginative, reflective and participatory strategies including cycles of action, reflection, and dialogue. Shifting our education practice online required us to trust that our familiar embodied strategies would 'translate' into the decentred blurred inside/outside virtual/physical learning space.

Integrating embodied, relational, imaginative ways of knowing and experiencing into

environmental learning can feel risky, and at times we were uncertain as to how some of the tasks and experiences would be received by our participants. Our trust in the processes, and in ourselves as facilitators, grew as we modelled and enacted the experiential and experimental practices of embodying a life form and creating a storyline of location during the design process. The 'new knowing' about how to engage audiences outside traditional environmental education in an inside online environment became clear as we experienced the processes and practices for ourselves in preparation for working with our participants.

The significance of exploring these connections became part of a nurturing practice for us as educators. Exploring and sharing aspects of our own connections to all beings, natural worlds and places was a common thread throughout our regular preparation meetings, which occurred mostly during Melbourne's stage 4 lockdown between July and October 2020. Our conversations featured the plant species, ecologies, elements, humans, and non-human others we live with – cats, dogs, bees, butterflies, bagworms, trees, indoor and outside plants, endemic and introduced species. We shared joys and challenges, explored ideas, and allowed ourselves to be distracted and then, to come back to focus on co-creating a shared experience for our participants.

While the blurring of life, work, practice, and public and private spaces may seem inevitable in an enforced work-from-home scenario, our way of collaborating created a space/place of trust for us to share and explore the professional and personal challenges we were facing as we continued to enact our commitment to environmental and climate change education during a global health pandemic. Cycles of acting, imagining, sharing, reflecting, creating and learning became our collaborative practice through which we built trust, in each other and the processes we were designing; acceptance to take risks in our practice; and the ability to manage the many possibilities that may have resulted.

CREATING OPENINGS THROUGH EMBODIED, CONNECTED, COLLABORATIVE PRACTICES

The collaborative, creative, connective process we have described enabled the design of two workshops, and it became a supportive undercurrent which carried through the complexities and challenges we have faced as educators during COVID-19. What began as four CCEN members coming together to design and enact two workshops for online environments became far more. The emergent storyline was of generative and regenerative practices: connection and collaboration, learning and sharing, and recognition of what we need to sustain us in our work and our commitment to our world during an unprecedented 2020. It was explorative and creative, and perhaps, an opening and a beginning. As our debrief conversations have reiterated, we're "looking forward to the next adventure". The adventure continues in late November when we present 'A commitment to our world' at the Science Teachers' Association of Victoria conference (STAVCON) and broaden our considerations to science educators.

FURTHER INFORMATION

Bronwyn Sutton, Gen Blades, Meg Upton *and* ***Peta White*** *are members of the Climate Change Education Network.*

ccen@climatechangeeducation.net.au

Climate Change Education Network (CCEN): www.climatechangeeducation.net.au

Information on the CCEN workshops, including participants statements to humanity and the collective storylines of location: www.climatechangeeducation.net.au/resource-by-ccen

Work that Reconnects Network: https://workthatreconnects.org

'Council of All Beings' web page: https://workthatreconnects.org/resource/council-of-all-beings

REFERENCES

Garrett, R & MacGill, B 2019, Fostering inclusion in school through creative and body-based learning, *International Journal of Inclusive Education*, DOI: 10.1080/13603116.2019.1606349

Macy, J & Brown, MY 2008, *Coming back to life: practices to reconnect our lives, our world*, New Society Publishers, Gabriola Island, Canada.

THE 2020 DOHERTYS CREEK COLLEGE VIRTUAL SCIENCE FAIR

***Heather-May Buzza** had a win with enthusiastic participation by students and their families in a virtual science fair at Dohertys Creek College, Truganina.*

Engaging P-6 students in Science and Sustainability is never hard! They come in bouncing through my door ready to learn more about their world – to discover something they haven't thought about yet or haven't been exposed to. To many of our students, COVID-19 was just another thing to learn about, until the way they interact in society, with their friends, families, sporting activities and freedom changed with the Melbourne lockdown. In unprecedented times, not only did students have to change their way of life, but teachers had to become even more innovative in the way we delivered curriculum to our students online. Teaching Science and Sustainability face to face is what I know how to do; I love it! Being with my students, watching their faces light up with new knowledge and wonderings, having interactive real-life experiences with them. STOP. How do I do this from my loungeroom to their loungerooms? How do I engage families who don't understand the technology that we are using? What about the parents who are still at work? ESL? I innovate. I create something new within our school community to make Science and Sustainability interactive, engaging and possible: the 2020 Dohertys Creek College Virtual Science Fair.

Innovation and a change in the way we teach has become a top priority for educators all around the world throughout 2020. When we became teachers, we knew that it meant having our students in front of us, actively engaging with them and providing hands-on activities to teach curriculum content. In Science and Sustainability this means having hands-on experiments ready to go in every class from Foundation to Year 6, having resources that can be used to demonstrate concepts and are age-appropriate for all students. I can't bring the outside inside, so I take my students outside to explore their environment. We have vegetable gardens, flower beds, native trees, an orchard, deciduous and evergreen trees, shrubs, bugs in the ground, a nearby creek flowing with pond-dipping activities, and a sky filled with different types of weather every time we poke our heads out the door.

During Remote Learning 1.0 educators all around Victoria upskilled, went to professional

development online, thought about how they could teach differently while also looking after the social and emotional needs of our students. For myself, as a Specialist Science and Sustainability Teacher, with 460 students to continue teaching, it meant deconstructing my two curriculums to ensure that I could provide purposeful and meaningful tasks for all year levels. Yikes! How was I going to do this? What if students didn't engage with the online way of learning? I'm being honest in saying that the task looked monumental, but there was no way that I would let my students down by not providing the best online educational experiences that I could.

The use of technology is a consistent part of my day-to-day teaching. I use apps for recording student data while in the classroom and later to assess student work. I work collaboratively with other specialist teachers in my school and across our network, as well as organisations outside the Department of Education, to build stronger community networks and provide rich learning tasks. At Dohertys Creek College (DCC) our students use the app Seesaw, an online learning platform where I can post work for them and they

Above: *Azra presenting her germ experiment for the science fair.* ***Photography:*** *Selime Shabani* ***Previous Page:*** *Noogah having lots of fun with static electricity!* ***Photography:*** *Manisha Manandhar*

can complete and upload their work. We started to use live Webex classes – which parents had to learn to navigate as well. Reaching our school community was so important to us and we had the real challenge of getting everyone upskilled to learn in a different way and for parents to learn how to support their children's learning full-time.

Along the way, during Remote Learning 2.0, I had the most inspiring win. My students were engaged in their work, I was speaking to parents, running live Science classes through Webex each week and I wanted to engage our community even more. I began thinking about a virtual science fair! How would it work, how long would it go for, how many families would take up the challenge of participating, where would families source resources for experiments with the current retail shut down? I designed and distributed a flyer and conditions of entry to all of our DCC families through Compass and our Seesaw app. In the flyer I added YouTube links and websites where families could research experiments.

Students were asked to research, practise and then film a 30-second recording of their experiment and post it to the 'Virtual Science Fair' folder on Seesaw. I would then go onto Seesaw and view students' work. Did the 30-second rule work? No way!! Some students were still talking five minutes later, so I would send it back to them and ask them to repeat the experiment cutting it down to 30 seconds to one minute. Nearly all students were obliging. Overall, 150 students participated in the event! That's one-third of our school! Students from Prep right through to Year 6 being were now science presenters. From egg experiments, to sundials, swirly milk experiments to tea bag rockets to gravity and the earth's rotation to explanations of how hail is formed. On a funny point: one of our families recorded the tea bag rocket experiment – it was made even funnier as they didn't all know what was going to happen and got the fright of their lives when the tea bag took off to the ceiling! It was the best example of a whole family participating in the event and the science bond that formed for them. There was so much laughter in their home!

Not every student or family knew what to do or how to do it, so I was on the other side of Webex chatting away with families, giving them assistance and making suggestions. As I planned my Science and Sustainability classes every week, I made sure to add a few 'this could be used for the science fair' activities – making sure that curriculum was being

covered but that all students had the opportunity to participate.

Without a doubt, our Preps took centre stage! One of their Sustainability tasks was to go outside and record the weather every day for one week. This gave students a great connection with the outdoors. They then had to follow it up with a 'live weather report'. Preps are always cute but seeing their development and understanding of the weather was really fulfilling. Students spoke clearly and used their hands to point to things outside, such as the sun, trees blowing in the wind, hair blowing in the wind, rain, puddles from last night's rain, the use of umbrellas and sunhats.

Azra from Prep D and her mum Selina filmed an experiment where Azra taught us about germs and the importance of washing our hands regularly – which we had already been teaching throughout Term 1 in every classroom as per the government guidelines for a COVID-safe school. Azra and Selina first sent in the experiment and it was about two minutes long – so it was way too long! I sent a message back to Selina asking her to practise with Azra in cutting the time down to 30 seconds – now that's a big ask when you are a chatty six-year-old with a big experiment in front of you! But guess what? After around eight practices they came up with a 38-second video of a very polished Azra talking us through the experiment! She used a bowl of water and sprinkled the top with pepper (the germ). Then dipped her finger into the bowl and it came out covered in pepper. Azra then added dishwashing soap to the centre of the bowl – which sent the pepper flying to the edges – demonstrating how soap can eliminate germs on your skin. She spoke so well and with all the confidence of TV presenter, with a lot of cuteness added in. She quickly became the headline act for the DCC 2020 Virtual Science Fair. When I speak to Selina on the phone now, she comments on how she never thought her daughter would love Science so much, but she is smitten!

Our Virtual Science Fair ended up going for just over one and a half hours! My daughter Kiera helped me move all of the individual experiments into iMovie as a part of her Gold Duke of Edinburgh Award for community service (thus also helping a 17-year-old with the frustration of remote learning in Year 11, being locked down and having a completely different life). It was too long (the file size too big) to send out via Compass, Seesaw or YouTube so we had a 'live screening' at 2pm on Sunday 13 September 2020. We sent out a Webex invite to all families and staff and we had an amazing turnout! Students are back at school this week talking about seeing their friends on the screen! I took some great screenshots of the session – families sitting on couches together watching, preschoolers watching with wide eyes, Grandparents sitting with their grandchildren and lots of smiles when students saw themselves on the screen. Seeing it all come together at the end was a huge achievement.

Next year we plan to hold our annual science fair back at school, but that's what we planned last year, and we have proven that with a little bit of initiative, the ability to think outside the box and a lot of passion, anything can be achieved. Heading into the future I know that the way I teach and the way students learn has changed forever, as has our ability to be adaptable, to listen to new ideas and to face *any* challenge thrown at us and shine. This year has been history making in our world, and our classrooms will continue to grow, adapt and learn what's important in life. Most of all – we'll get though everything together.

FURTHER INFORMATION

Heather-May Buzza *graduated with a Masters of Primary Teaching in 2008. Her first five years were spent as a classroom teacher, enjoying the Inquiry Model of Teaching. When a Specialist Science position was announced at her second school, she jumped at the chance to engage students with the world around them and how it works. In Heather's position at Dohertys Creek College, she focuses on both Science and Sustainability – teaching students Biology and Earth and Space Sciences. Engaging students with their local community, understanding the environment both locally and globally and exuding her passion for students to take on a love for all things Science and Sustainability is Heather's goal. With the support of the Leadership team and parents at home, students are becoming as passionate as Heather!*

Heather-May.Buzza@education.vic.gov.au

Above: *Atalay explained how he made a volcano and then made it erupt!* ***Photography:*** *Sinem Ozturk*

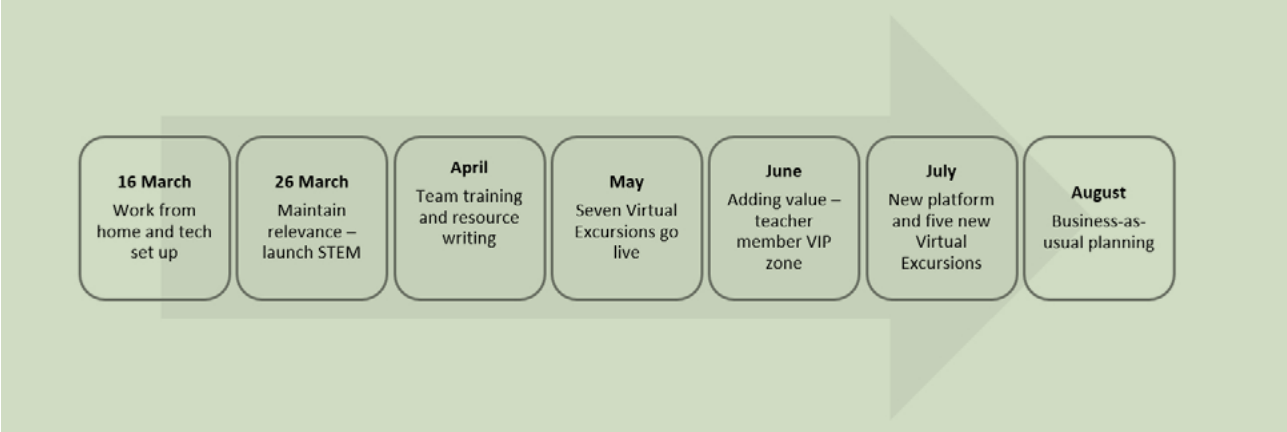
ZOOS VICTORIA'S PIVOT TO DIGITAL PROGRAMS

***Mel Wyatt** and other educators at Zoos Victoria created virtual zoo experiences that met their education and wildlife conservation goals.*

2020 has been a year of education transformation. As teachers and students adapted to changing environments, so did education at Zoos Victoria. At warp speed, the Education Team dug deep into the innovation skills required to continue to support teachers and provide quality learning experiences to students. A series of online and interactive Virtual Excursion programs connected young people to wildlife and animals. This unique offering supported teachers in their work and connected students to wildlife during remote learning. This article shares how Zoos Victoria adapted its programs in order to deliver education online, the strategies employed to reach and connect with existing and new audiences, the pedagogy involved, and what was learnt along the way.

It was mid-March 2020 when the announcement was made that many parts of Australia would go into restrictions to tackle the global spread of COVID-19. In Victoria, these restrictions included schools moving into remote learning, with some teachers delivering learning online for the very first time. Zoos Victoria closed its gates and zoo educators were moved offsite into a work-from-home set-up. Except for a brief few weeks of reopening in June, working from home has continued as the standard operation.

Zoos Victoria has played a significant role in the education of young Victorians for more than 50 years. The learning experiences delivered by our three zoos has traditionally relied on a face-to-face delivery model. We've recruited teachers



Above: *Zoos Victoria set up a timeline to guide them through the transition to a digital program delivery.* ***Image:*** *Zoos Victoria*
Previous page: *Students engaged in Zoos Victoria's digital programs.* ***Photography:*** *Cormac Hanrahan*

who can deliver education in challenging outdoor environments. The tools of engagement used in this model include the profound and sensory connection experienced by students near living animals. Zoo educators have an incredible skill set and are capable of regularly sparking new relationships with groups of students, interpreting the real-life learning happening in the students' surroundings, and teaching curriculum outcomes in a dynamic environment. Using remote learning technology, and the skills associated with online learning design, had not been a consistent part of the Zoos Victoria's education skill set-up until 2020.

We quickly established the guiding principles for our digital programs in order to continue to service Victorian schools and continue Zoos Victoria's wildlife conservation mission. The guiding principles, created to support teachers and students from day one of Term 2, were to continue a living human connection with teachers and students, provide support to engage and understand, and motivate students and teachers to act for conservation.

Zoos Victoria's education model was used to structure our virtual offerings:

- **Connect:** powerful experiences that engage and inspire learners to want to know more about their world.
- **Understand:** repeated practice that transforms new skills and knowledge from working memory to long-term memory.
- **Act:** consolidating what has been learnt by applying skills and knowledge in real-world contexts.

CONNECT

We strategically took advantage of the instant community engagement with the 'Animals at Home' livestream cameras to create the first online offering: STEM Design Challenge. Using the resources at our fingertips allowed us to launch in the first week of Term 2 and provide an immediate offering to schools across from Foundation to Year 10. The free 30-minute webinars ran on a weekly timetable. If teachers or students missed the webinar, they were able to easily book into another session using an online form and automated email system.

To maintain a powerful human connection between zoo staff, we put in place an in-house online training program and support group so that our Education Team could work together to learn how to use videoconferencing technology as well as the teaching techniques needed for online delivery. We explored a range of online engagement tools such as set-up, lighting, storytelling, and tone and movement in front of the camera. These tools were fundamental to giving the Education Team the confidence they needed. Our support group chat provided the opportunity to troubleshoot together, such as how to manage student behaviour in an online environment, and it also helped us celebrate our daily wins.

Zoos Victoria continued to listen to what teachers needed through the Victorian Teachers Going Online 2020 Facebook group. This incredible initiative, run by classroom teachers, allowed us to stay close to our customers during this time and adjust what they needed from us as we developed. In addition to Zoos Victoria's school customer database that has developed over the years, we used our individual and collective formal and social networks to build awareness and engagement.

UNDERSTAND

We created our Virtual Excursions to be much more than just a webinar. Each program was supported by:

- teaching guides: instructions, activities and links to additional Zoos Victoria resources
- narrated PowerPoints: interactive student activities guided by the voice of a Zoo teacher to provide the opportunity for guided or student-led learning while working remotely
- student worksheets: activity templates to help students apply their learning
- instructional videos: specifically developed to guide the Design Thinking process for STEM
- Virtual Excursion FAQs: continuously improved to provide guidance and support for teachers.

Each of the Virtual Excursion webinars was led in part by the Zoo teacher and in part by the students. Interactivity was added through the use of powerful video and questioning activities as well as direct communication between student and Zoo teacher through the Q&A function.

ACT

Guided instruction was provided in each of the teaching guides and student workbooks to help students apply their learning. Zoos Victoria's Education Team had to consider what actions students could realistically take during remote learning and lockdown in Melbourne. We included options like online citizen science, activities for a garden or courtyard and the exploration of local environments that were close to home. We used Microsoft's Flipgrid platform to provide a safe space for students to showcase their learning through short videos. Each video received a thank you and personalised message from a one of our staff.

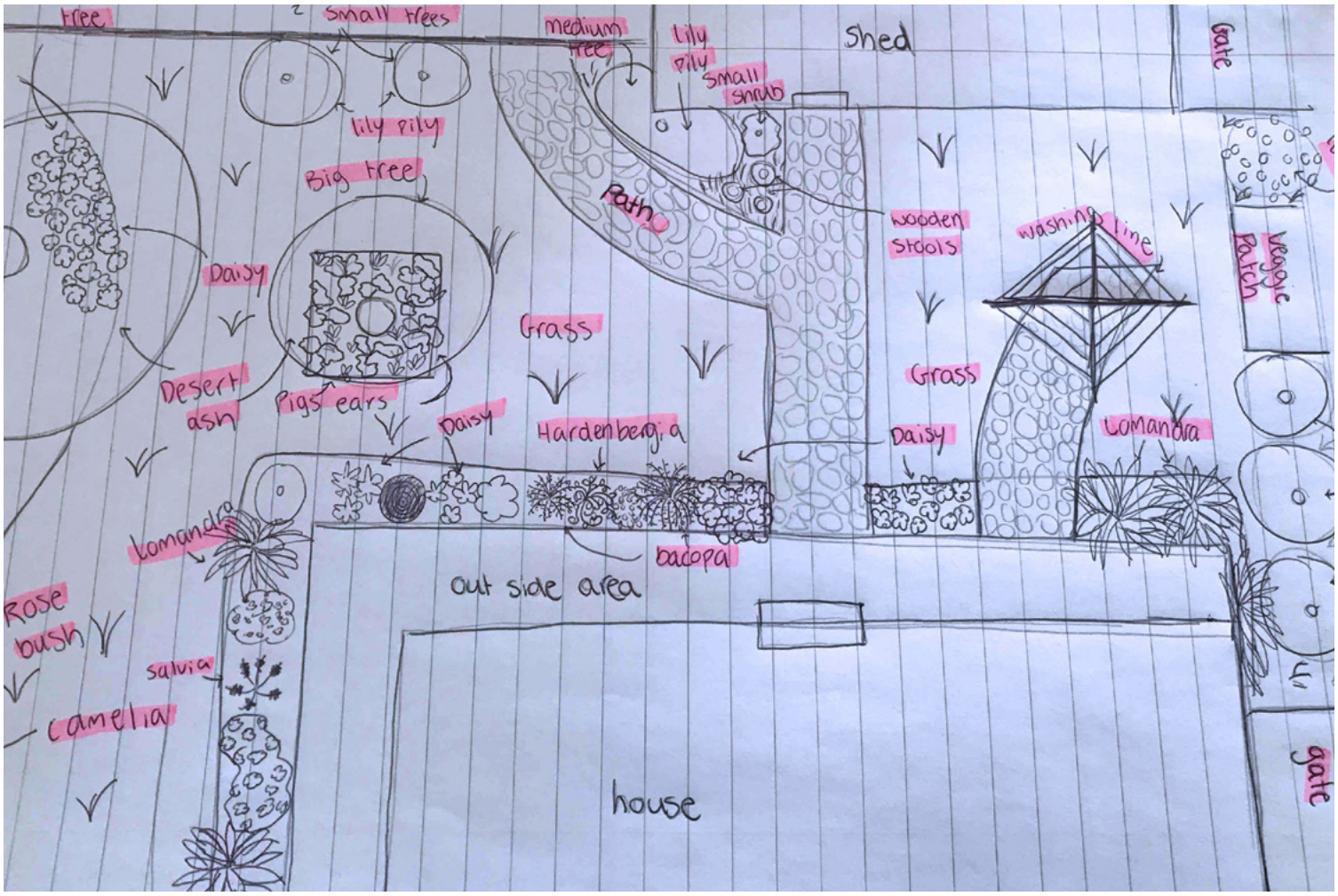
The experience of going through this incredible pivot together has demonstrated to our team that anything is possible! Our zoo Education Team has become stronger by working through this challenge together. From March to October, Zoos Victoria engaged with over 120,000 students and 11,000 teachers, all while our staff were working remotely from home. This included students from interstate and overseas. We connected with rural and remote schools who got the opportunity to experience zoo education for the first time. We have also created lifelong advocates for conservation education by demonstrating our ongoing support for teachers, no matter what the situation. This has been reflected in the many comments we are getting in our program evaluation – "Thanks to your staff for offering this free resource in such a stressful time for all of us; it offered a different way of engaging students to add to our curriculum this term. We really hope we can visit the zoos in person soon! Thank you Zoos Victoria staff, what you are doing caring for our animals and engaging with the wider community is so appreciated".

In the end, that powerful skill set held by Zoos Victoria's teachers to deliver learning experiences that include profound connections with wildlife (and maintain the resilience and creativity needed to form learning in a dynamic environment) was really just overlaid by technology.

FURTHER INFORMATION

Mel Wyatt *is Learning Engagement Manager at Zoos Victoria.*

mwyatt@zoo.org.au



REAL-LIFE NATURE EXPERIENCES AID BOTH LEARNING AND WELLBEING

After the devastating summer bushfires in East Gippsland and in the midst of COVID-19 remote learning, ***Andrea Savage*** *found multiple benefits in getting her students to investigate their backyards.*

I don't think anyone needs reminding that the year 2020 has been different, difficult and pretty awful. Awful if you have returned to a new school year after your community has directly experienced catastrophic bushfires over the summer. Or worse still, your own home or property was lost, or that of family and friends. This was the experience of our school community at Nagle College in Bairnsdale this year. With little time to adapt to this experience, take two in a health emergency occurred with COVID-19. The social and economic fallout in our community, which relies on tourism, has been devastating. As teachers, we have needed to diversify our skills from teaching the content of our subject to being receptive and empathetic to students experiencing trauma. We have also needed to diversify our delivery skills to an online forum. We have all become experts at sharing our screens and using the Google Classroom forums (thank goodness for these tools!)

As a teacher of Science, mainly Environmental Science, I have needed to engage my students in an experience of nature that is not wholly virtual. Unless a person connects with nature, they cannot truly care about it. Immersion in the outdoors, supported by scientific understanding, is essential to give students the opportunity to understand the concept of biodiversity, why it matters and what the threats are to it in a local and global context. In the aftermath of the devastating East Gippsland fires,

it felt even more urgent to raise awareness of the impacts. It also felt really difficult. All our beautiful recreational destinations had been burnt to the ground. I could not take my Environmental Science students on the annual camp to Cape Conran; the cabins we stayed in were lost. The entire national park where we marked and released potoroos and possums was burnt. Marine Science students couldn't survey the Cape Conran boat ramp because the boardwalk was lost and all the coastal vegetation had burnt. I had no desire to visit this most precious lost environment in any case. Well, COVID put an end to excursion opportunities anyway so this dilemma did not need addressing!

To teach an understanding of biodiversity in a remote classroom setting, my Year 9 and 10 students explored the biodiversity of their backyards. An assignment was set that required students to survey the biotic and abiotic components of their homes, to introduce the concepts of ecosystem, species and genetic diversity. Students were asked to critically analyse their yards, evaluating the 'richness' of the system. They were then challenged to discuss ways they could contribute to increasing the biodiversity. In every case, a simple offering of a carefully placed water receptacle was one way each student could facilitate greater species diversity. Creating a list was a practical task for students out in their yards. They also needed to provide photos and a hand drawn mudmap. These activities immersed students in the outdoors and successfully got them offscreen.

Feedback on the activities was really positive. Some students were amazed and excited to learn they could use their drones to take the photos of their properties; some of us have very large backyards of many hectares! (One student managed to crash his $1000 drone in the name of science during this task – that's a Year 9 boy for you!) There were also theoretical research tasks associated with this project, where scientific knowledge was built. Students could then build a deeper knowledge about some of the species they surveyed and their requirements for life.

A Biodiversity in your Backyard task can be a fantastic way of making the ecological concepts we teach relevant and of engaging students in the outdoors, which is essential for connection. Students can be empowered to make a difference, no matter how small scale – especially given the losses our local areas have suffered. That immersion in nature has been scientifically demonstrated to improve mental and physical wellbeing is also really important to convey to students. We can all do with any benefit we can achieve on those fronts! I like to think that the remote outdoor classroom, through this project, made a difference to the wellbeing of my students during this difficult year.

FURTHER INFORMATION

Andrea Savage *teaches Environmental Science and Science at Nagle College, Bairnsdale.*

asavage@nagle.vic.edu.au

Above: *Andrea Savage's property surrounded and later impacted by bushfire on 30 December 2019.* ***Photography:*** *Andrea Savage* ***Previous page:*** *A Year 9 student's mudmap of her backyard.* ***Photography:*** *Andrea Savage*

SERENDIP SANCTUARY REACHING STUDENTS WITHOUT SCHOOL VISITS

Vanessa Wiggenraad *and her team at Parks Victoria's Serendip Sanctuary in Lara adapted to online platforms so that students could connect to their animals and experts.*

My role focuses on delivering education and interpretation programs for students and visitors in Geelong area's parks including Serendip Sanctuary and the You Yangs Regional Park.

Serendip Sanctuary is a wildlife sanctuary of open grassy woodlands and wetlands and is also a Parks Victoria Education Centre. The sanctuary is a haven for wildlife, including emus, kangaroos and more than 200 bird species that visit the park annually.

Located near Geelong and the western suburbs, Serendip is accessible for visitors of all abilities and includes amenities and facilities suitable for large groups. The site is particularly popular with school groups, with more than 5000 primary, secondary and tertiary students taking part in excursions each year. Schools also undertake self-guided activities at the park.

My team delivers education programs at Serendip that focus on the wetland and grassland ecology of the Western Volcanic Plains. We also deliver cultural education programs, focused on Wadawurrung culture, and geography education programs at the You Yangs Regional Park. Our programs have a hands-on approach, with students able to have up-close encounters with wildlife, undertake wetland monitoring activities and habitat assessments, and use citizen science apps like ClimateWatch.

With school excursions to Serendip Sanctuary cancelled for most of this year, my team investigated how we could still connect with students. Realising that many students were already using online platforms like Webex and Microsoft Teams, we decided to develop webinars for schools.

We kept things simple and initially focused on developing two programs: a cultural webinar and a virtual excursion.

In the cultural webinar, Community Engagement Ranger Ebonee Cook, a proud Wadawurrung woman, explains why the You Yangs is significant to the Wadawurrung people and interprets their respectful and sustainable ways of living. She shows students traditional tools and images of shelters and rock wells.

For our virtual tour of Serendip, we pre-recorded footage of the sanctuary's animals and habitats, then delivered a live webinar where we held discussions with the students about what they were seeing.

In the first instance, the webinars were promoted to schools where we had existing contacts. Due to the success of the program, we soon expanded the opportunity to other schools. Environment Education Victoria has been invaluable in getting the word out through social media and its teacher newsletter. To date more than 2000 students have taken part in the webinars.

During the process, my team gained valuable skills in creating educational videos and teaching students through online platforms. We learnt how to engage students through a screen (visually) as opposed to engaging all their senses during an excursion at the park. It was challenging at times, especially keeping the students entertained. To make the webinars more engaging, we developed quizzes and allowed plenty of time to answer students' questions.

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Other challenges have included technology. Some schools have a bad wi-fi connection and we found that if this was lacking, our video footage would lag or the sound of our video would not work. In these instances, as a backup, we would run a different presentation without video footage.

An unexpected win through the process has been being able to reach audiences all over Victoria as opposed to just schools from our local area. More students are aware of our parks now, and what they can do to protect their local environment. The webinars have also inspired teachers to bring students to our parks for an excursion in the coming years. My team will continue to use this method of teaching in future as it is a great way to connect with schools that have barriers to access the park.

Teachers mentioned that our webinars offered students a great opportunity to 'visit' parks and to talk to an 'expert', considering they were unable to undertake excursions during lockdown. My team shared the webinar content with the teachers, and graphs and other data were used in the classroom after the session.

My team has now developed two new webinars: one for early childhood groups that incorporates storytelling and Serendip's animals, and another with a focus on geography for Year 8–12 students that looks at human impacts and park management.

FURTHER INFORMATION

Vanessa Wiggenraad *is a Parks Victoria Education Officer based at Serendip Sanctuary, Lara.*

For further information about this webinar series for schools, contact SerendipEducationCentre@parks.vic.gov.au

Parks Victoria also offers online learning for later-year primary school students called 'Park Explorers'. The program encourages students to explore nature while staying at home and includes immersive virtual tours. To view the virtual tours and find out more about the Park Explorers program visit the Park Explorers website at parks.vic.gov.au/park-explorers.

Previous page: *Lake Serendip.* ***Photography:*** *Vanessa Wiggenraad* ***Above:*** *Quoll.* ***Photography:*** *Brandon Hallas* ***Opposite page:*** *Tawny frogmouth.* ***Photography:*** *Vanessa Wiggenraad*

EDUCATION FOR SUSTAINABLE DEVELOPMENT IN THE EARLY YEARS VIRTUAL CLASSROOM

Harriet Deans *taught children aged three to five online during COVID-19 lockdown; she shares her thoughts on the importance of including education for sustainable development in a virtual classroom.*

INTRODUCTION

In 2020, teaching and learning in the early years experienced significant changes to the ways in which they were designed and implemented. The preschool classroom went online, and children and their families were encouraged to engage in educational content in the virtual world. During this time, learning in, about, for, from and with the natural environment and society became even more important to ensure that children were developing the values, behaviours and skills necessary to support them in an ever-changing world. This paper discusses the importance of continuing to embed education for sustainable development (ESD) in early years curriculum during a global crisis. The changes to the education of children attending early learning settings in Victoria, Australia, during the global pandemic is also presented. An ecocentric curriculum is reimagined to include online learning as one of the key methods for the educational program. Methods of teaching ESD in an early year's virtual classroom and examples of the design, planning and implementation of this curriculum are also outlined, with specific connections made to the United Nations' Sustainable Development Goals.

ESD AND ITS IMPORTANCE DURING A GLOBAL CRISIS

Education for sustainable development is a strong and central learning paradigm in early childhood curriculums across Australia and beyond. ESD

empowers children to make informed and important decisions and actions for environmental and societal protection, restoration and preservation. An ESD curriculum is learner-centred, hands-on and action-based and aims to equip children to become global citizens. The learning outcomes include "core competencies such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations" (UNESCO, 2019). ESD is a key element of the Sustainable Development Goals (SDG) and a driver for all 17 SDGs (UNESCO, 2019). The ESD curriculum includes a number of themes including citizenship, peace, local and global responsibility, social justice and biodiversity and resource management, and although there is a dominant focus on the environment, it is now recognised that ESD in the curriculum provides children with a holistic and transformational education (DET, 2016). The United Nations has led the promotion of ESD throughout the past decade and has advocated for a world where everyone has equal access to quality education to learn the values, behaviours and lifestyles required for a sustainable future (UNESCO, 2019). The importance of ESD in the early years has also been emphasised by Australian early childhood education bodies, who state that "as the need for greater sustainability becomes more apparent globally, so does the importance of embedding sustainability in children's programs" (ACECQA, 2016). Throughout this transformation came the development of an ecocentric curriculum (Deans & Deans, 2018) that emphasises the importance of human and nature relationships and taking action in response to the protection of the environment. Connected to ESD is also the future-focused vision of "embracing a culture of lifelong learning" (UNESCO ILL, 2020) that acknowledges the environmental, economic and societal challenges confronted by humanity, including the ongoing climate crisis, cultural and technological changes and the impact of global events such as COVID-19. ESD plays a crucial role during times of crisis (Giannini, 2020), teaching children important knowledge, attitudes and behaviours, including social–emotional skills, resilience, collaboration, empathy and critical thinking. The current global pandemic has encouraged early childhood teachers to rethink learning environments, how they teach and what they teach – moving online and into the virtual world and inspiring children to act sustainably. A teaching and learning program that includes content underpinned by the key themes of ESD has a powerful impact on fostering children's learning and development throughout today's challenging times and will prepare them for what comes tomorrow.

THE EARLY YEARS VIRTUAL CLASSROOM

Throughout 2020, the methods of teaching and learning in the early years moved from the traditional early childhood classroom to online platforms. Young children (0–5 years) experienced or witnessed learning in a virtual classroom in some form, and engagement in learning content was adjusted to meet the needs of children learning from home. The collaborative preschool learning environment was replaced with video-guided content and digital instruction for families to follow along with in the form of distance learning.

The virtual classroom became the teaching platform for the dissemination of educational content to approximately 170 children who usually attend the University of Melbourne Early Learning Centre in Abbotsford, and clear learning objectives and careful planning were required to ensure it met the needs of the children enrolled and the resources available to families in their homes. The online classroom was in the form of documents that included curriculum connections, links, instructions and work samples and was provided via an educational platform. The children were encouraged to engage in content with their families or independently and teachers were able to communicate with students through digital responses, providing feedback and assessment.

Learning from home provided many positive opportunities for children to engage in educational content that extended on, and connected to, learning about the environment and sustainability. Time, resources, support and motivation were all factors that affected the children's engagement in the online program; therefore, providing families with age-appropriate tasks ensured the successful completion of experiences. Creating video content, lesson proformas or accessible online web links were all elements that made a successful online teaching program underpinned by ESD.

VIDEO CONTENT

Teacher-directed video content engaged children for 5+ minutes and utilised visual stimuli or song, including objects, natural/human-made materials, rhymes or beats that connected to themes of ESD.

Left: *Exploring 'Head, Heart, Hands'.* ***Photography:*** *Kristina S.* ***Right:*** *A student exploring 'Greening Melbourne'.* ***Photography:*** *Candice L.* ***Previous page:*** *Students were encouraged to research and create marine environments and to identify the impact humans have on them.* ***Photography:*** *Emma B.*

The filming provided children with a 'how to' to complete a task or included specific information to extend on their knowledge or learning in a particular content area of ESD. Different materials were used throughout the filming for artistic or hands-on experiences including recycled objects and drawing and painting equipment. The video content was also designed to encourage the children to 'step out, find out, speak out' on matters of environmental importance such as 'greening Melbourne' or 'protecting the oceans'.

LESSON PROFORMAS

Lesson proformas provided a guide for the parent or guardian to teach the child. These included methods such as 'counting sheets', 'mind maps', 'see, show, say' (Wasik & Sparling, 2012), 'see, think, wonder' (Ritchhart, Church & Morrison, 2011) or 'guiding questions'. The following methods provided opportunities for children to step out and research and engage in environmental-based conversations with family or friends; they also supported the building of children's vocabulary around their observations of the natural world. Developing the children's mental processing and ability to think creatively about sustainability and the future of the world was a focus. The guided proformas also encouraged parents to become involved in their children's learning through positive role modelling and verbal and visual encouragement.

ACCESSIBLE ONLINE WEB LINKS

Accessible links provided by the teachers on a daily and weekly basis were used in a variety of ways. The world wide web offers a large amount of content, so providing appropriate and educational online web links that connected directly to a learning experience, such as attendance at an online virtual environmental or cultural experience or research into microplastics for a science lesson, extended the children's learning and provided parents and children with more focused opportunities for learning.

ESD IN THE EARLY YEARS VIRTUAL CLASSROOM

Integrating ESD into the early years virtual classroom took careful consideration and planning. With the characteristics of the 21st century child in mind, a multiplicity of modes for teaching and learning were employed, including visual, audio, gestural, tactile and spatial. The online ESD curriculum became a comprehensive learning system that focused on learning in, about, for, from and with the environment and society, while connecting to the children's physical, social, emotional, spiritual and intellectual development while at home. Through this method, children were also able to actively participate in their online education with the aim being to continue to develop a connection to the natural world and the skills necessary for a sustainable frame of mind.

ESD in the virtual classroom was also focused on connecting to the children's lived experience. This included:

- providing children with opportunities to get outside into the natural world (parks, riverbanks, nature strips, lakes, gardens)
- engaging in the local community

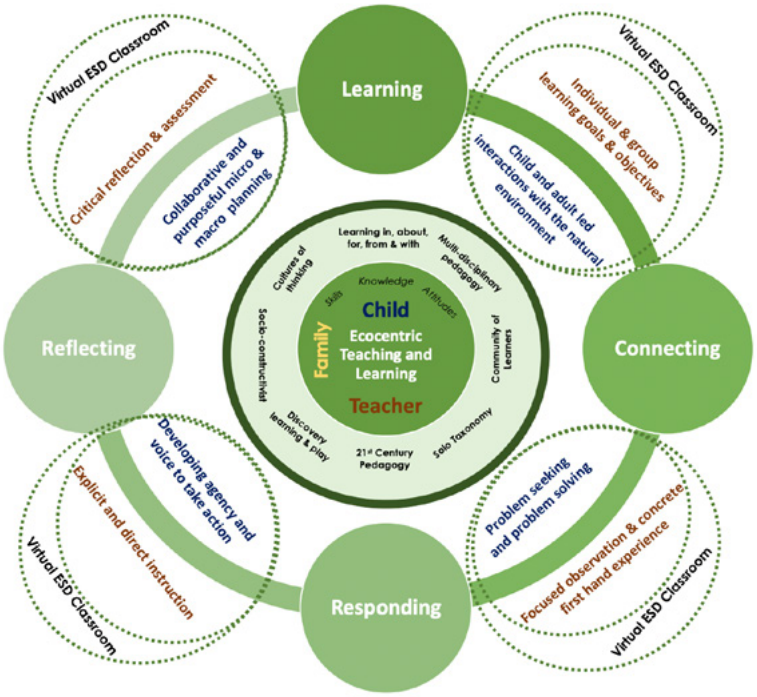

Figure 1. *Reimagined ecocentric curriculum including virtual ESD classroom.* ***Credit:*** *Harriet Deans*

- connecting children to current issues and themes around sustainability, environment and society
- supporting children's wellbeing and social–emotional learning
- encouraging positive relationships within the household and broader community
- practising mindfulness and careful daily observation.

The online program was designed to connect theory and practice, integrating 'big ideas' and 'life-worthy learning' through the adoption of an ecocentric curriculum in a virtual classroom (Figure 1). The online teaching made strong connection to ESD, and links were also made to 21st century pedagogy and visible thinking. A variety of hands-on, experiential, arts-based, and socio–cultural experiences were also provided to meet the needs of individual children and their interests. The virtual ESD classroom was connected to the ongoing cycle of connecting, responding, reflecting and learning and also integrated family into the inner circle of teaching and learning.

EXAMPLES OF TEACHING AND LEARNING ESD IN A VIRTUAL CLASSROOM

The early years virtual classroom included a number of themes and learning experiences connected to ESD and the Sustainable Development Goals. The following outline presents four weeks of content provided to the children:

1. Exploring the topic 'Wattle' and celebrating 'National Wattle Day' (SDG 15: Life on land and SDG 16: Peace and justice). The children were encouraged to explore vocabulary around wattle trees through first-hand experience in their neighbourhood parklands. The children were prompted to describe, record and explain what they observed (colours, shapes, patterns) by creating a mind map that included the features of the wattle tree. The children were also prompted to connect to the symbolic meaning and metaphor of the wattle tree – unity, reconciliation and joy – and what that means to them in relation to creating harmony in community. The learning was extended to journalling, documenting and reporting via photographs and storytelling.

2. Exploring the topic 'Deep blue' and participating in National Science Week (SDG 14: Life below water and SDG 9: Industry, innovation and infrastructure). This topic stimulated learning about marine environments and the protection and restoration of the oceans. The children were encouraged to research and create marine environments and to identify the impact humans have on these environments. The children's learning extended to ocean-cleaning inventions

that encouraged children to create, experiment, and hypothesise better ways of protecting and preserving the marine world.

3. Exploring the topic 'Head, heart and hands' (SDG 4: Good health and well-being). The children were encouraged to engage in mindfulness experiences, including dance, clay/play dough, singing and collage. The children were encouraged to collect, research and paint different winter and spring flowers and to discuss their symbolic meaning. Using these natural materials, the children were then prompted to form nests of protection for their friends and families. During these experiences the children were encouraged to spend time outside noticing and documenting the changes in seasons. Additional research around the seven seasons of the Kulin Nation, specifically the Guling season, was encouraged, and the children represented their understandings through collage. An extension of this body of learning content was also provided to the children in the form of a dance experience that inspired the children to create a dance that connected to the natural world, such as a tree dance, flower dance or bird dance.

4. Exploring the topic 'Greening Melbourne' (SDG 11: Sustainable cities and communities). The topic aimed to stimulate the children's thinking and learning around the connection between the urban and natural world (plant health, animal habitats, green engineering, eco action taking) and how to create a more sustainable, green and healthy Melbourne City. This topic focused on consolidating the children's learning and encouraged the application of existing knowledge to build new understandings. The curriculum experiences included drawing green roofs, constructing green buildings and houses, planting grasses and narrating eco poetry.

CONCLUSION

This paper has highlighted the capacity of early childhood professionals to rethink teaching and learning in the early years, to include a virtual and sustainability-focused curriculum. Such an approach to education supports the children to problem-seek, problem-solve, and take action (Perkins, 2014) on matters of environmental and societal importance. The curriculum presented in this paper occurred during a global pandemic and highlights the importance of embedding the principles of ESD into an early years virtual classroom to ensure that children develop the skills, attitudes and knowledge that they will take with them through life, to build a better future for all.

FURTHER INFORMATION

Harriet Deans *is an early childhood teacher at the University of Melbourne Early Learning Centre, Abbotsford, Victoria.*

harriet.deans@unimelb.edu.au

REFERENCES

Australian Children's Education and Care Quality Authority (ACECQA) 2016, 'Sustainability in children's education and care', retrieved from https://wehearyou.acecqa.gov.au/2016/01/28/sustainability-in-childrens-education-and-care/

Deans, J & Deans, H 2018, A 21st century pedagogy approach to environmental education in the early years. *International Journal of Research in Environmental Studies,* 5, 77–90.

Department of Education and Training (DET) 2016, *Victorian early years learning and development framework for all children from birth to eight years,* State of Victoria (Department of Education and Training), Melbourne.

Giannini, S 2020, 'Build back better: education must change after COVID-19 to meet the climate crisis', retrieved from https://en.unesco.org/news/build-back-better-education-must-change-after-covid-19-meet-climate-crisis

Perkins, D 2014, *Future wise: educating our children for a changing world,* Jossey-Bass, San Francisco.

Ritchhart, R, Church, M & Morrison, K 2011, *Making thinking visible. How to promote engagement, understanding, and independence for all learners,* Jossey-Bass, San Francisco.

United Nations Educational, Scientific and Cultural Organization (UNESCO) 2019, 'What is Education for Sustainable Development'. Retrieved from https://en.unesco.org/themes/education-sustainable-development/what-is-esd

United Nations Educational, Scientific and Cultural Organization Institute of Lifelong Learning (UNESCO ILL) 2020, *Embracing a culture of lifelong learning: contribution to the Futures of Education initiative,* UNESCO Institute for Lifelong Learning, Germany.

Wasik, BH & Sparling, J 2012, Nested strategies to promote language and literacy skills, In BH Wasik (ed.) *Handbook of family literacy* (2nd edition), pp. 66–86, Routledge, New York.

CHAMPIONING WATER LITERACY IN THE VIRTUAL CLASSROOM

***Kim O'Hoy** and colleagues from Melbourne Water Education now offer virtual tours of the Western Treatment Plant among a range of digital education resources.*

Water in an urban environment such as Melbourne is an essential element of a city's livability. Educators at Melbourne Water are bringing an awareness of water use, conservation, and management to thousands of primary, secondary and tertiary students. This is done using Melbourne's story of water supply, sewerage management, and stormwater and drainage systems. This is the fundamental understanding of a water-literate community.

The urban water cycle and the wellbeing of Melburnians are integral to the history of water in one of the world's most livable cities. That history includes the discovery of gold in the 1850s; Melbourne's first reservoir (Yan Yean) supplying drinking water; cholera and typhoid outbreaks; and the establishment of a sewerage system, including the Western Treatment Plant (WTP). Today, livability is still a priority in this city but with a slightly altered narrative. While continuing to provide clean and safe drinking water, the future outlook of water in Melbourne includes providing innovative green spaces with amenity potential and generating renewable energy at sewage treatment plants to power both the plant and homes.

ONSITE EDUCATION PROGRAM

One successful approach to water literacy over a number of decades has been running onsite educational programs at Melbourne's major sewage treatment plants and, more recently, at Edithvale-Seaford Wetland. The expectation in offering these onsite tours is that students and visitors are given the expertise and knowledge base to describe the

story of water in a city environment: where water comes from before entering your home, how we use water in and around the home, and where it ends up before once again entering the natural water cycle.

To do this, students encounter challenge-based learning on sustainable water issues that encourage them to reflect and ask:

- Is water a finite resource? Does water comes from various sources?
- Will litter and pollutants on Melbourne's streets end up in the sewerage or stormwater systems?
- Will what I do at home have an impact on waterways or Port Phillip Bay?
- Can I use recycled water from the sewage treatment plant for irrigation? Is it safe?
- Is sewage treated? Can it be discharged into the bay?
- What can be flushed down the toilet?
- Who is responsible for using and conserving water?
- What is water security and how is it achieved?

Helping students see the linkages between water, land and the environment is important in explaining the urban water story and embedding water literacy in a community of Melbourne's future adults. Students becoming familiar with Melbourne's sewerage system, or a natural wetland supporting animals and plants, assists in directly connecting Melbourne's water story to a student's life.

The aspiration is to inform students on all aspects of the water cycle, to equip them with the knowledge to participate in the imagination of our water future.

DIGITAL AND ONLINE EDUCATION PROGRAM

To maintain the connection between students, water, land and environment in the world of digital learning is a continuing journey in water literacy.

The present-day approach at Melbourne Water – with a suite of water-focused resources – explores a complementary alternative to the onsite program.

Current digital learning resources include:

- a 360-degree virtual tour of the Western Treatment Plant with teacher resources
- a fun, interactive version of the tour using an augmented reality (AR) app (called WTP Tour) with teacher resources
- lesson plans aligned by year level and Victorian curriculum links – these are currently being revamped for students to use outside the classroom
- online learning videos with water experts
- professional development for teachers
- webinars and online virtual excursions
- council-partnered webinars for community groups
- the WaterEd newsletter.

Building resources such as the 360-degree WTP virtual tour or the WTP augmented reality app is the foundation of Melbourne Water's classroom-free approach. These digital resources feature themes such as public health, livability, waste, environmental management, climate action and many more. Having these two complementary resources provides different ways to engage students with the WTP. With the WTP Tour app, the experience is reframed into a fun, shorter introductory activity where the viewer can walk around the site using augmented reality on a mobile digital device. Both resources can be approached in bite-sized pieces of interesting information about sewage.

The WTP virtual tour provides a comprehensive overview of the WTP, with introductory videos accompanying each stage of sewage processing. This and the other digital resources were designed to be easily accessed and used by teachers and students outside the classroom.

Previous page: *Western Treatment Plant virtual tour.* ***Photography:*** *Pixelcase Group*

Melbourne Water Education staff also offer a guided WTP virtual excursion to enhance student learning. This is to support students and schools at varying points in their urban water cycle journey and add value to the digital resource. We support the digital outreach program by also offering guided webinars to community and tertiary groups.

During National Water Week (NWW), Melbourne Water was able to offer new learning opportunities using our digital resources and expertise of our staff. Free webinars were provided on topics relevant to our water future, including:

- enhancing our Dandenong Creek
- managing the effects of climate change and population growth across the Melbourne
- celebrating NWW with Melbourne Water's Principal Advisor Aboriginal Engagement, Nova Peris OAM
- creating a frog-friendly habitat
- exploring the Western Treatment Plant augmented reality tour app

The significance of including a wider student audience in Melbourne using this digital learning approach, and the global citizen outreach, is immense to water education and literacy. To have the same or improved connection with water as the onsite tours is an ongoing objective of the Melbourne Water education program. Offering these resources also adds to the sustainable benefits and greater accessibility of the education program, and motivates the education team to develop and refine Melbourne Water's digital program.

WHAT HAVE WE LEARNED?

Currently, the aim of the Melbourne Water education team is to complement the onsite tours with a natural extension into digital learning resources. One challenge in providing greater outreach through digital methods is how to best measure the increase in water literacy resulting from the programs. This water literacy may lead to a commitment to our water future, which might include positive action or behavioural change around water or an indication of a sense of ownership about Melbourne's water future.

It is clear there are many opportunities created by digital learning experiences, and the education team will continue to evolve our approach by:

- creating more digital resources that extend and incorporate all aspects of the urban water cycle
- developing an asynchronous learning program using these varied digital and online platforms
- examining the incentive in these digital and online resources to learn more – is the digital resource a product or an experience?
- harnessing the power of storylines when using digital platforms – does it foster an accumulation of facts or does it drive a higher level of creativity and analysis in student thinking and thus ownership of the future of water?

Ultimately, what is critical in the future management of the urban water cycle in Melbourne is having a current community informed on water issues with strong water literacy.

FURTHER INFORMATION

Kim O'Hoy *is an Education Officer at Melbourne Water. She was recently interviewed in EEV's In Reeview series, which you can read at* https://www.eev.vic.edu.au/in-reeview-blog/in-reeview-with-kim-o-hoy.

education@melbournewater.com.au

Western Treatment Plant virtual tour, augmented reality app (WTP Tour) and teacher resources, and visits: https://www.melbournewater.com.au/water-data-and-education/learning-resources/water-and-sewage-treatment-plants

Learning resources: https://www.melbournewater.com.au/water-data-and-education/learning-resources

Programs and resources: https://www.melbournewater.com.au/education/feature-education-programs-and-resources

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CLIMATE CHANGE EDUCATION IN THE REGIONS

Jorja McKinnon, Monica Green *and* ***Peta White*** *designed and ran workshops on climate change education that, being online, allowed engagement with a much broader range of teachers than the original Gippsland focus.*

Two 'Climate change education' teacher workshops held in August and September provided online professional learning opportunities for educators across early childhood, primary and secondary education focusing on supporting climate change education in the Gippsland region. The sequential workshops were designed and facilitated by the Climate Change Education Network (CCEN), a collective of academics who focus on climate change education research and scholarship, in collaboration with the Regional Centre of Expertise on Education for Sustainable Development (RCE Gippsland), which is part of a global network of centres endorsed by the United Nations (UN).

The workshops included climate-specific ideas and resources designed to support educators to enhance their climate change education practices across all grades (K–12). The intention of the workshops was to 'work with' educators to discuss their needs and to collaboratively explore the complexity of our climate crisis, while focusing on curriculum and pedagogy resources. The workshops provided an important opportunity for educators to come together and consider what we, as a collective, know about our climate change crisis and to explore ideas on how to develop greater action across the Gippsland region via our work in schools and local communities. The focus on the local region of Gippsland was intentional; it is a region of Victoria that bears witness to expressions of climate change daily.

The workshops enacted the CCEN's vision to offer online professional learning opportunities to regional educators across Victoria. The workshops enabled important access for regional teachers (who are often challenged to attend professional development and learning events due to their geographical isolation) to engage in conversations about defining and teaching climate-related curriculum.

As many teachers will attest, the topic of climate change is not explicit in the Victorian Curriculum. While teachers may feel driven to embed climate change education within their teaching, the current curriculum provides limited structure and guidance. To this end, we used the UN's 17 Sustainable Development Goals (SDGs) to frame participants' broader understanding of education for sustainable development and then focused on Goal 13 Climate Action. The SDGs are an important and strategic framework that enables teachers to explore broader concepts of sustainability at the local and global levels.

In partnering with RCE Gippsland, a local network that mobilises education for sustainable development across the region via the SDGs, CCEN was able to facilitate important and specific place-based conversations about the long-term projected impacts of climate change on the region, engaging with the realities of rising sea levels, increased likelihood of fire, drought and floods, and increasing temperatures.

Anecdotally, many regional teachers are challenged to engage in climate-specific curriculum and pedagogy. Apart from a lack of resources, barriers include the ways in which climate is viewed as a political issue. In response, we were able to host important conversations about how teachers could approach the topic of climate so as to depoliticise the content and establish their rights as educators to complete their responsibilities. We also were able to collaboratively curate resources, many locally focused, that provide pedagogical scaffolding to generate great in-class interaction and engagement in the issues of the climate crisis.

The workshops were targeted to Gippsland educators, but the booking mechanisms meant that the workshops were advertised globally. This opened a wonderful opportunity for further engagement with a wider audience even if it resulted in challenges of considering content adaptation to maintain relevance when including educators outside the target audience into the network.

The CCEN are going on to offer an abridged version of these workshops at the Science Teachers' Association of Victoria conference (STAVCON) on 27 November 2020. The materials from our September and October workshops are all accessible via the CCEN website. In addition we are enthusiastic about offering the workshops locally adapted to regions around Victoria in 2021. We are especially interested in the Bendigo and Ballarat regions as well as the Warrnambool region. But wherever you are, if you are interested in working with us, please do send us a note – our intention is to support educators to adopt climate change education through the curriculum in meaningful, locally appropriate ways.

FURTHER INFORMATION

Jorja McKinnon, Monica Green *and* ***Peta White*** *are members of the Climate Change Education Network.*

Climate Change Education Network (CCEN):
www.climatechangeeducation.net.au.
Please contact us via the website.

UN Sustainable Development Goals (SDGs):
https://sdgs.un.org/goals

Previous Page: *Place-based sustainability teaching and learning at Brodribb wetland in Latrobe Valley, pre-COVID.*
Photography: *Monica Green*

ISO-ECOBRICKS AT AITKEN COLLEGE: BRINGING US TOGETHER WHILE APART

Cristy Herron *reports on how she encouraged her school community to make ecobricks as an environmental learning activity that students could participate in from home during remote learning.*

Aitken College, Greenvale, is known for its active involvement in education for sustainability. Activities and initiatives are regularly introduced and conducted across all year levels and subjects, as well as for curricular and co-curricular purposes. Needless to say, this year presented a variety of challenges in relation to maintaining the usual level of participation and enthusiasm in environmental programs. Aitken is always innovative when it comes to attracting students to sustainability activities, but without face-to-face exposure, Environmental Programs staff were forced come up with fresh ideas to accommodate remote learning arrangements.

The first idea was to start a Wildlife Show-n-Tell webpage on MyAitken, the Aitken learning platform. This was a fun way to share connections with nature made in our own backyards. It generated a lot of digital traffic through the Environmental Programs MyAitken page. Members of the Aitken community shared photos and videos of wildlife such as kangaroos, a variety of parrots and other birds, a praying mantis and even a bat! While this was a great way to keep the environment at the forefront of our minds, it didn't directly inspire change or encourage environmental responsibility. That's when we came up with the ISO-EcoBrick idea.

Ecobricks are plastic bottles that are packed tightly with soft plastics and can take the place of commercial bricks used in simple structures like garden borders and planter boxes. Onsite at Aitken College we collect soft plastics through the REDcycle program, which prevents large amounts of soft plastic waste from going to landfill on a regular basis (REDcycle, 2017). But during remote learning, many students and staff don't have access to soft-plastic-recycling receptacles. As an alternative, we educated the Aitken community

about how to make ecobricks by collecting soft plastic waste generated in the home and using it to fill single-use plastic bottles which would otherwise be discarded. Since families were constructing them at home in lockdown isolation, we called them ISO-EcoBricks. A webpage was designed to educate participants about the process and value of contributing to this initiative. Regular notices were made in the bulletin and College newsletters to remind families to make and bring in their ISO-EcoBricks. Collection receptacles were also placed in the Aitken administration building for those working onsite. The ISO-EcoBrick initiative was even featured with an informational video on Aitken's Facebook page. Slowly, the ecobricks started trickling in – and even now, the huge pile of ecobricks continues to grow. Since the initiative began, over 50 kg of soft plastics has been rescued from ending up in landfill, and potentially our waterways.

At the end of the year, the plan is to put all of the ISO-EcoBricks together and build something strong and long-lasting to commemorate this historical time in all our lives; not only to highlight the environmental benefits of re-purposing soft plastics, but also to serve as a reminder of how we faced immense challenges but still came together to build something great, even while apart.

The ISO-EcoBrick initiative has resulted in some spin-off ideas. For example, we plan to incorporate ecobricks into STEM activities where the density of each brick is analysed in order to predict structural integrity. It's assumed that bottles that are packed more tightly with soft plastics will be stronger than those with more air pockets. This opens up a plethora of opportunities for solution-based inquiry activities. Other ideas include conducting a student-led meta-analysis to investigate the big picture of the environmental impact of making and using ecobricks as an alternative to commercial bricks. After all, keeping soft plastics out of landfill isn't the only benefit of ecobricks. They also minimise the need to use new and/or raw materials to build structures, prevent single-use plastic bottle waste, and reduce the amount of soft plastics that could invade wildlife habitats and ecosystems. Lockdown and remote learning have not been easy, but like Aitken's ISO-EcoBrick initiative, there are so many positives to distract us from the negatives.

According to an article published in *Nature Climate Change*, daily global carbon emissions were reported as being down an average of 17% in April compared to the same time last year due to widespread shutdowns in response to the pandemic (Le Quéré et al., 2020). In some countries that figure was as high as 26%! Silver linings of this extremely challenging year are the environmental benefits that have emerged as a result of reducing daily transport and halting interstate and international travel. Of course, these environmental benefits are only temporary.

Left: *Making ISO-EcoBricks.* ***Right:*** *ISO-EcoBrick collection points.* ***Previous page:*** *Gathering and organising ISO-EcoBricks.* ***Photography:*** *Cristy Herron/Aitken College*

Above: *Collecting ISO-EcoBricks throughout the year.* ***Photography:*** *Cristy Herron/Aitken College*

As we start to enjoy the easing of restrictions, our carbon emissions will creep back to 'normal'. However, we should remember that it *is* possible to simplify our lives to minimise our impact on the environment. The choices we make every day, such as re-using bags, reducing the waste we send to landfill by recycling more or making ecobricks, and cutting back on unnecessary transport, all contribute to converting short-term environmental benefits of the pandemic restrictions into long-term outcomes. I'm sure that Aitken students, staff and families valued their ISO-EcoBrick experience. The ISO-EcoBrick project was initiated to keep students and staff engaged in environmental learning, while continuing to build connections with one another, even while learning remotely. I feel it did just that!

FURTHER INFORMATION

Cristy Herron *is Head of Environmental Programs at Aitken College.*

cherron@aitkencollege.edu.au

REFERENCES

Le Quéré, C, Jackson, RB, Jones, MW, Smith, AJP, Abernathy, S, Andrew, RM, De-Gol, AJ, Willis, DR, Shan, Y, Canadell, JG, Friedlingstein, P, Creutzig, F & Peters, GP, 2020, Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement. *Nature Climate Change*, 10, 647–53.

REDcycle Pty Ltd 2017, 'What to REDcycle' web page. https://www.redcycle.net.au/what-to-redcycle, viewed 16 October 2020

LOCKDOWN: THE PRESSURE FOR AN (ENVIRONMENTAL) EVOLUTION IN EDUCATION

Janine Dissegna *found positives in online teaching and learning that she would like to continue in her future teaching, including being more environmentally friendly.*

We may have been 'locked down', but the means by which educators and learners exchange learning has been 'opened wide'!

In 38 years of teaching, and in the first year of teaching VCE Environmental Science, I have never felt so empowered to teach in new and innovative, not to mention, environmentally friendly, ways.

Being 'forced' to teach using technology (mainly Zoom and email) has made it possible to envision education in the very near future being delivered with more efficiency and cleanliness (environmentally and otherwise).

Delivery of education via a platform such as Zoom has meant some initial hurried, and at times difficult, work in getting skills up to speed for the best means of conveying lesson content. I am certain there were times my students struggled with my scribblings (using my mouse) on the Zoom whiteboard! Personally I still have much to learn, but I now know some questions I want to ask to be able to best deliver remote learning; further (less

frantic) professional development (online of course!) to build on skills will address this.

The savings, environmental and otherwise, such as paper and energy usage (for which I have mostly anecdotal evidence at this stage) and vehicle emission reduction should provide individuals and learning organisations with some financial and environmental incentives to keep the momentum of online learning going.

A reduction in paper usage was obvious as paperwork became electronic through means such as scanning and emailing, and schools and offices should have been able to save on their heating, cooling and lighting energy costs with few, if any, classrooms being used. While these costs were transferred to individual households as energy usage in the home increased above usual levels, this could be minimised with many homes across Australia now having alternative energy sources, most commonly solar panels. Over 2.56 million rooftop solar power systems had been installed nationally by the end of September 2020 (Department of Industry, Science, Energy and Resources, undated). We must put pressure on governments to research and implement real and accessible alternative clean energy choices for all; solar panels with affordable battery storage capacity being just one example.

Travel time saved (to and from work or school), while varying greatly between individuals and again based on anecdotal evidence only, has allowed additional time for preparation (albeit, to teach or study online), relaxation or other pursuits. The media has given us glimpses of improvements in air quality in urban areas around the globe due to the reduction in vehicle emissions (The New Daily, 2020).

These gains could be counter-argued; most particularly with the social isolation experienced and associated mental health issues. Among my own students, increased anxiety levels and associated difficulties were apparent initially (throughout Term 2), but the most recent lockdown (Term 3) saw them adapting to, and in fact often relishing, some of the changed ways of learning. While interaction as would occur in the classroom was strained on Zoom, students took advantage of using Zoom to seek one-to-one assistance without other students being around, and they enjoyed being given time away from the camera (and teacher) to work on tasks. Online learning must be further explored as part of the evolution of education delivery; many courses, particularly at university level, are already being delivered successfully in this way.

Teaching a Science subject which incorporates practical work as a core part of learning presented some unique challenges. I was grateful that I had already been using interactive programs as a way of completing practical work, but together with my students, some lateral thinking allowed many practical activities to be completed safely with readily available (often recycled) materials in the home. I was impressed with the types of items students were able to source as 'organisms', for example, when simulating the mark–recapture method used for estimating population size; these ranged from beads and buttons to pencils and socks! Experiments in energy usage were completed using clinical thermometers, the students themselves (and sometimes family members) as subjects and stairs or a slope in their home or garden. It was possible, and mostly fun, to rethink how practical activities could be completed safely, in isolation and with commonly available materials.

Completing Outcome 3 (both Units 1 and 4 Environmental Science), proved to be an opportunity for students to really demonstrate their initiative and resourcefulness; it is an outcome which requires students to design and undertake a practical investigation. (This was modified by VCAA for Unit 4, 2020, but was unchanged for Unit 1). Given the task of 'Designing and undertaking an investigation, on the implementation of farming practices to minimise changes to an ecosystem', students set about brainstorming ideas (in our Zoom sessions). They identified and sourced materials that they could safely access from their homes to carry out the experimental methods they had designed. Recyclable materials such as plastic containers were often put to good use in their experiments (it raises the thought that while ideally we would live in a world that doesn't produce the amount of plastic waste that we do, these items could be an environmentally friendly replacement for some of the disposable items used in school laboratories). Other items such as measuring jugs

Previous page: *A An example of a practical activity completed at home during isolation for Environmental Science Unit 1, Outcome 3 – Designing and undertaking an investigation; implementation of farming practices to minimise changes to an ecosystem.* ***Photograph:*** *courtesy of Josephine Treklis (Environmental Science student).*

from the kitchen, stopwatches on their phones and of course soil, sand, mulch and plants from the garden were all put to good use. Some students designed and produced purpose-built equipment to enable them to run their experiments. Students' ideas to minimise soil erosion included levelling land on which to grow crops, keeping soil covered with a variety of toppings or ensuring land was never completely bare, and positioning and placing structures to control wind speed.

The way forward may not be online learning alone. The ideal delivery of education may require a balance between online and on-campus learning, not only for social reasons, but with subjects such as Science, for the completion of practical work that requires equipment which could not be substituted with anything in the home. I had prepared lists of equipment sets or 'kits' that students from a particular subject would need and could take home to complete required practical work; this may become as familiar to students as needing access to particular textbooks or other resources. The COVID-19 restrictions of 2020 may have provided the pressure for a combined evolution of education delivery and environmental savings making it an 'environmental evolution in education'!

FURTHER INFORMATION

Janine Dissegna *is a professional educator with a career spanning 38 years in a variety of educational settings, currently Chisholm Institute. Subject areas include Biology, Environmental Science, Geography, Mathematics and Science. Janine demonstrates a history of dedication to education through varied roles in teaching and other responsibilities in schools, as an information officer and as an author. She enjoys and is committed to learning both in the classroom and beyond with active involvement in cocurricular and community programs and other initiatives.*

Janine.Dissegna@chisholm.edu.au

jdissegna@gmail.com

REFERENCES

Department of Industry, Science, Energy and Resources (undated), 'Solar PV and batteries' web page. https://www.energy.gov.au/households/solar-pv-and-batteries (accessed 29 October 2020)

The New Daily 2020, ' The upside of the lockdown – Europe shows off its cleaner air', 30 March 2020. https://thenewdaily.com.au/news/coronavirus/2020/03/30/coronavirus-lockdowns-air-europe/ (accessed 29 October 2020)

IN TIMES OF TROUBLE STAY IN YOUR SEAT!

Sarah Moore *and* ***Jorja McKinnon*** *reflect on the rollercoaster ride that was teaching Year 12 in 2020.*

VCE ENVIRONMENTAL SCIENCE IN THE GRASP OF A PANDEMIC – YIKES!

Environmental Science is one of a suite of five science subjects offered through the Victorian Certificate of Education (VCE). The subject has far fewer enrolments per year than the other science subjects with less than 1,000 students enrolled in 2020. This small cohort of students translates to a small cohort of educators, many of whom are financial members of EEV. The EEV members who teach VCE enjoy a small but mighty collaborative network of professional support, the VCE Teacher Education Network, that has a strong culture of achieving outstanding results for our students. The network has traditionally been curated through face-to-face professional development activities, an approach that made it particularly difficult for the regional members of the network to participate.

On reflection, we can see there is a greater take-up of virtual offerings that are accessible to all. The network also supports students, through their teacher, and some of their experience has been captured in our reflection. We write this article while a number of elements remain unclear; however, the ability to hang on for the ride is something the VCE Teacher Education Network is proficient in.

AT THE TOP OF THE HILL LOOKING DOWN – CHALLENGE PIVOT TO OPPORTUNITY

When COVID-19 led to the Victorian Government imposing the state's first lockdown, the structure of the network – small clusters of teachers spread over the state – meant that teachers coming together in person was impossible. Adaptability was critical to maintain the network and provide the support that

VCE teachers needed, so virtual network meetings were established. The virtual meeting platform gave all teachers the opportunity to engage with support and other colleagues.

The virtual network meetings were immediately taken up by the teachers. There was some concern that there would be limited interactions as, in our experience, teachers were reluctant to activate web cameras. On reflection, this may be a cultural effect of previous experiences with webinars, generally a static interaction, rather than this newer platform of interactive meetings. Showing faces quickly became natural through camera use as seeing colleagues faces added to the experience and connection. The idea that being seen is just as important as being present has been normalised within the network.

AT THE BOTTOM OF THE HILL LOOKING UP – OPPORTUNITY PIVOTS TO BARRIER

As time wore on, and then on some more, screen fatigue became a very real issue. In the initial lockdown, there were so many opportunities to engage with various organisations. The opportunities were new and exciting but there was a point when the opportunities became saturated. You could have been at a meeting, a virtual tour or music gig etc. every night of the week. The content was new and engaging but the overall experience was not.

In fact, the technology that was the agent to our virtual existence became the barrier. This was the case not just for teachers but also for students. If COVID-19 brings no other change than firmly placing educational equity on the table, this would be a welcome step. While there were government promises of laptops for all students, the reality was very different. There were very real situations where Year 12 students were interacting with school content (either by necessity or choice) via their phones as these were the only devices they had or chose to use. In other examples, even when students had access to appropriate equipment, some households had limited data capacity that didn't meet the needs of multiple students in the home.

Teachers worked their hardest to manage the inequity. The delays in contact tracing and the caution required when reopening meant that, by the time the Stage 4 lockdown happened, some students had been in classes for no more than one to two weeks of Term 3. The stress of isolation and quarantining while awaiting contact-tracing results and being unable to access the school campus while it was decontaminated exacerbated an already stressful term. In a subject where practical work is a mandated requirement, the time to do that work was severely impinged upon.

On top of the challenges that schools were already facing, when VCE students were allowed back in at the beginning of Term 3, schools began to be closed down again for contact tracing and intensive cleaning due to positive COVID-19 cases. Once this occurred, students were unlikely to have all of their items, with textbooks and other items remaining in lockers. Those students with inadequate technical equipment were unable to resolve any technical issues that required in-person support.

The constantly changing situation necessitated innovation of new ways of teaching a subject, in the most engaging way possible given the circumstances! This, balanced with the need to constantly check student progress, resulted in a dramatic increase of out-of-hours workload for teachers. This would be challenging enough for experienced VCE teachers, but a lot of the teachers are new to teaching Environmental Science, as schools begin to offer the subject. Teachers new to Year 12 VCE would usually be supported readily on campus by other VCE teachers in their learning areas; however, in many schools there is just one Environmental Science teacher! This made virtually networking with other teachers and EEV via discussion boards, Zooms and other chat groups all the more important.

THE FINAL CLIMB AND THE END OF THE ROLLERCOASTER – LOOKING UP AND OUT!

There have been some striking adaptations that can have easy and long-lasting effects for classroom practice in the VCE Environmental Science space. The first of these are virtual field trips. The reality of education is that you cannot always head out into the field. There are timetable constraints as well as financial implications of taking students far into the field. However, in a subject like Environmental Science it is critical that students establish and maintain a connection to the environment in all its forms. Virtual field trips have the opportunity to remain as classroom practice as it means students can see areas of the state well distanced from their schools and use those sites to complement their home place. For example, when thinking about curriculum that describes the age of the landscape, many teachers use volcanoes. The crater and lakes country of Western Victoria provides excellent examples, but is totally inaccessible to students from

Gippsland, or even in some cases from Melbourne. A guided virtual field trip though these areas brings productive educational opportunities that were previously ruled out.

Further examples of content that can be maintained in classroom practice are the various webinars that have been recorded and made available and other resources that have been archived for post-COVID-19 use. The VCE Environmental Science teacher network has noted that there is a need for industry experts but they are not always available for classroom access. Recorded webinars can alleviate some of the pressure to find an available expert. In addition to using these resources in the classroom, teachers can even use these resources as professional learning about a subject prior to teaching. Recorded webinars have proved to be a useful way to gather necessary technical information. Publishing these resources on YouTube after completion means they are an everyday resource that can continue to be used, not just a COVID resource.

The change to remote delivery of classes increased staff availability for planning meetings and meetings just to reconnect and further develop collegial working relationships between teachers. Usually, teachers are face-to-face teaching and unavailable for a brief meeting on the fly, but when lulls occurred between students requiring help, teachers had opportunities to work together and verbally check more often how our syllabus delivery was going and share ideas. This is different from the norm where we might need to wait for a scheduled or allocated meeting time. These meetings could also be recorded for team members who were not present, enabling everyone to be on the same page.

The limited availability of outdoor spaces made it necessary to connect to nature in different ways. This created the notion that all outside spaces are useful nature spaces, in contrast to the perhaps default idea of the wilder the space the better for an outdoor experience. This latter notion reduces the value of all outdoor spaces. There is no need to head deep into the bush to have an outdoor experience. A rich experience can exist in your own backyard, and there are many experiences that capitalise on that, such as the Aussie Backyard Bird Count. The VCE Environmental Science teacher network had to make this critical adjustment due to the need for students to collect primary data either as part of assessment tasks or to authenticate the work recorded in logbooks. Many a student engaged thoughtfully and productively with their immediate outdoor environment, whether it be their backyard, visible sky or lichen on a patio. All these spaces became observable, researchable outdoor environments!

The seasonal changes visible to our students as they made their outdoor observations were interesting when juxtaposed with the situation many of them were in. The first lockdown was in autumn, with the natural world beginning its time of dormancy and conserving energy. Encouraging the students to go outside and observe all of the wonders of autumn, then winter and spring, brought new insight to some of them. The students compared the fungi they observed on their walks, talked about how the weather was warming up and the daylight increasing. The signs of new life in spring were eagerly anticipated and were not unlike the gradual resumption of campus life the students are now experiencing again. The flowers are starting to bloom and the school campuses are full of new life, just in time for the Year 12s to revise for their exams.

FURTHER INFORMATION

Sarah Moore *is the Sustainability Coordinator and VCE Environmental Science teacher at MacKillop College in Werribee. She works with educators at her school to embed sustainability across the curriculum, through development of authentic interdisciplinary project- and problem-based learning opportunities.*

smoore@mackillop.vic.edu.au

Jorja McKinnon *is the Secondary and Tertiary Liaison Lead with Environment Education Victoria. Jorja's role includes VCE publications, VCE Professional Development and host of the VCE teacher Members Network.*

jorja@eev.vic.edu.au

TEACHING STUDENTS TO LOVE NATURE FROM BEHIND A SCREEN

Loretta Leary *outlines the trials and tribulations of online learning in a subject that requires connection to the outdoors.*

A large part of my role as a Sustainability educator is connecting students with nature. In a primary school setting, one would think that this is not necessary, but sadly it is. Nature play, forest learning and finding their place in the ecosystem is fundamental to children feeling responsible for the environment. Without this connection, students think that animals, insects and plants are something to be experienced from behind a screen of some sort; that global warming and plastic pollution only happen on TV. This is why our school has decided to dedicate a teacher and a timeslot to the teaching and learning of Sustainability – and all was going well until COVID-19 hit our shores.

Teaching moved from something that was hands on and authentic to something completely digital and intangible. Teaching children to love nature from behind a screen is counterintuitive and extremely difficult. How do you digitally deliver a curriculum that was written specifically for hands-on learning to each of seven different year levels? How do you get students to go outside and get dirty when their parents, the media and the government are urging them to stay indoors and sanitise everything? How do you teach them to be environmentally sustainable when they can't interact with the world?

The first round of remote learning was like teaching blind. I created a website and wrote up elaborate lessons for each year level. Students were given the option to complete set tasks at their leisure, if at all. Parents complained that their children were getting too much work overall (not just from me), so lessons became basic and tasks became simplistic. Still, families were scared to let their

children out into nature so student engagement remained low. I struggled to provide an authentic learning experience to students who were struggling to survive the change. Then we went back to onsite learning and things began to look optimistic again.

We spent a few weeks at school drawing rainbows with chalk on the ground, learning about wombats, planting potatoes and reconnecting with the school environment. Our recycling program and cooking program came to a screeching halt but I was still able to engage kids in current issues such as the reintroduction and preponderance of single-use plastics. We watched the leaves on the trees change colours and we moved mulch into the gardens. Life seemed to be getting back to normal and we all looked forward to the school holidays.

Then COVID-19 hit again. Schools were given an extra week's holiday and teachers prepared for remote learning. This time I was prepared! I would engage kids with Webex meetings and the topic would be TREES. Lessons would be greatly simplified and shortened and the emphasis would be on admiring nature. Tree Planting Day was during this time and for the first time in 20 years our school wouldn't be participating. The theme was Love A Tree, so I asked students from all year levels to take a photo of themselves hugging their favourite tree. Most students complied but I still had emails from students telling me that they weren't allowed to "touch a tree because of COVID". I despaired at the thought of children being locked up away from nature, but the other ones that sent me videos of them making nature collages and planting apple seeds kept me buoyant and determined to persevere. And then we were told that we would be returning to face-to-face teaching after the holidays, but with one more week of remote learning to start the term.

My final task for the students was to go on a neighbourhood walk with their family and play bingo: spot a magpie, find a tree, smell a flower etc. I thought that everyone could easily do this; after all, we could now exercise for two hours a day. However, I was met with a barrage of emails from students who were "not allowed to go for a walk" or "not allowed outside" so they couldn't do the task. I answered each email with care and waited patiently for school to resume. So, for the past week I have been teaching outside, making students sit on the grass, much to some of their horror and fear, touching trees, exploring the textures of bark, doing leaf rubbing and listening to the birds sing. Reactivating the five primary senses after what has been essentially six months of lockdown has been crucial. Teaching Sustainability in COVID times has been a rollercoaster of successes and failures, one that has made me feel sick to my stomach and exhilarated all at the same time. But now, I want to get off this ride!

FURTHER INFORMATION

Loretta Leary *has been Sustainability leader for the past 20 years at Mount Waverley Primary School and is now specialist Sustainability educator at the school. She was the EEV Teacher of the Year 2019 and the ResourceSmart Schools Primary Teacher of the Year 2017–18 and received the Sir John Monash Award in Sustainability Leadership 2016. Loretta has presented at many conferences, including the Steps To Sustainability Conference this year and last and the Sustainability Victoria Waste Education Conference. She's also presented at local council meetings, Sustainability Victoria, Zoos Victoria and Kids Teaching Kids presentations and many more. Loretta has a wealth of knowledge about sustainability education and has written and implemented several whole school curriculums. She is mentor to many other schools and teachers across the state in sustainability education.*

leary.loretta.l@edumail.vic.gov.au

Above: *Neighbourhood bingo.* ***Previous page:*** *Hug a tree.* ***Photography:*** *Loretta Leary*

STUDENT PROFILE: LUCY SKELTON

RAISING CLIMATE CHANGE AWARENESS TO INSPIRE ACTION

In late September, the Environment Team at Melbourne Girls' College organised a virtual conference that brought together over 200 young people from around the country to listen to both guest speakers and each others' initiatives in the sustainability field. It was totally organised by students for students, and it's aim was to arm participants with a library of shared knowledge to empower them to take action. We speak with ***Lucy Skelton****, the MGC Year 12 Environment Leader, who together with the MGC Environment Team and the Student Voice Network put this fantastic project together.*

Thanks for chatting with us, Lucy! What inspired you and the Environment Team to initiate this conference?

Thanks for this opportunity! For myself, until I came to my high school in Year 7 and participated in a climate change conference, although I had heard the words before, I didn't know what climate change actually meant. When someone mentioned greenhouse gases, at that point I imagined a literal greenhouse where you grew literal green plants. For me, that was my tipping point towards action and now that I'm in Year 12, it is important to me that I can help offer the same opportunity to not only my school but students from across the country. For if we do not understand, how can we be expected to act?

What were some of the challenges you encountered and the triumphs you experienced through putting this project together? Would you do anything differently?

For one, I introduced the idea to our team around a month before the day we decided for the conference. That meant that we didn't have a lot of time for the details but with such a fantastic group of people working together we found that anything is possible. I tend to find when working in environmental and social justice movements that most people within tend to understand that we are all in this together, no matter the event, organisation or task. This means that, thankfully, even when holding a free event like this, people from all walks of life will raise their hand to support. A triumph for the whole sustainability space in our books. The one thing I think we would do differently is give ourselves more time. If this is what we can do in a month, imagine what we could do in a year!

What is the main message you and your peers hope to deliver to those making decisions that negatively impact your generation?

The message is simple. Our future is in jeopardy; do something! The decisions that are being made today are destroying our climate and ecosystems, and are jeopardising millions of homes, jobs and lives worldwide. Australia is part of the problem. We are not doing nearly enough and we not only have to be part of the solution but we have an opportunity to face reality and forge new pathways that are even better for people and the planet! Science tells us that we can fix these issues, but we must let the dinosaur industries die out and create policies that will produce a world where this generation and the next can thrive!

What inspired you to become actively involved in sustainability and environmental issues? How did you take that first step to convert this interest to action?

The dystopian horror of a reality without action and the utopian world of my dreams inspired me to get actively involved within social justice and environmental movements. I took my first steps by getting involved with people already immersed in the space (my school's environment team led by the inspirational Andrew Vance) and educating myself on my issues of concern wherever possible.

How do you deal with those who don't believe that there is such a thing as 'climate change', especially adults who may dismiss young people's voices?

It helps me to recognise that these people are not the majority (even if many have found their way into politics) and remember that since I want to go into politics and be elected one day, I hope that soon I will be in a position to challenge their notions. When attempting to challenge their beliefs I try to follow this pattern:

1. Decide whether this is the time or place for that kind of discussion where both people are willing to learn and mould their beliefs.

2. Create an atmosphere for a conversation, not an argument.

3. Establish where this disbelief came from and attempt to find a mutual solid platform of belief to stand on. If there is nowhere to stand then the argument will fall.

4. Direct them to new pieces of information that align with your middle ground.

5. Discuss what's important to them and bring your conversation to what will sway them personally with evidence once more aligned with your decided middle ground.

6. Use stories and narratives to demonstrate your point

7. Understand that not everyone is ready to change and maybe this conversation won't be their tipping point, but take satisfaction and comfort in the fact that you have tried and even if they move 1%, that's still 1%!!!

After an amazing few years of sustainability initiatives at MGC, how will you continue to be actively involved in this area to inspire change?

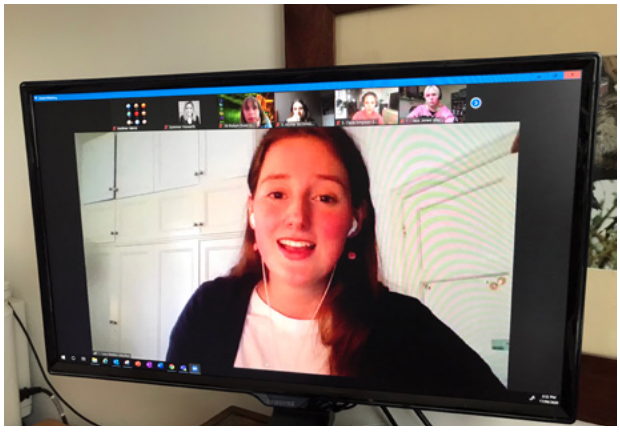
After my time at MGC (I honestly cannot be more grateful for the entire team there) I will be moving to Canberra to study politics at the Australian National University. It is there that I wish to discover the skills and insights that, alongside continued work in the environmental and social justice spheres, will lead me into a career as a policy adviser and eventually a politician. This is where I hope that I can create the most change, developing and supporting policies that will look after people and the planet.

I will additionally continue my work leading the Student Voice Network. (For all the teachers out there, I think this can be a fantastic opportunity for your environmentally concerned students!)

The Student Voice Network is a free, virtual youth platform based in Australia for students, by students aged 12–25 from across the world to take action on social justice and or environmental issues.

We act as a building block and an amplifier to support our team to create, lead and develop projects that make a meaningful difference on the issues that are important to them. That's climate change, gender inequality, racial discrimination, waste – all of them!

Using our schools network, a resource which may have only been accessible to one school or institution (maybe reaching a thousand or so students) can now be shared through our network!



Above: *Lucy hosting the online virtual climate conference which over 200 students attended from around Australia* ***Photography:*** *Andrew Vance* ***Previous page:*** *Lucy wearing a T-shirt advertising the Student Voice Network, a free vitual youth platform that she founded.* ***Photography:*** *Sue Hannan*

Thus, the resource can be utilised by schools and organisations across the country, reaching an estimated tens of thousands of people with minimal extra effort!

With over 300 members from across the country, welcoming our first international members and a team of over 50 young people currently leading, developing and contributing to projects that are making a difference, I can honestly say I couldn't be prouder of the team that we have and what we've been able to do together.

What is your hope for the future?

My hope for the future is that one day I will be able to sit back and think to myself: gosh darn it, we did it. The oceans are clean, the climate is safe, human rights are protected and any problems that will arise will be ones created by the next generation, not the previous. And I hope that SVN will be a part of the group that makes it happen.

Thanks for reading!

Thanks again for your time Lucy!

FURTHER INFORMATION

Lucy Skelton *is completing Year 12 at Melbourne Girls' College. Please contact Lucy if you, or any of your students, have any questions or ideas.*

svn.lucy@gmail.com

Student Voice Network: www.svn-au.com

Instagram @lucyskelton_au *or the Student Voice Network* @svn_au

Facebook " Lucy Skelton" *or* @studentvoicenetwork

SCIENCE COMMUNICATOR PROFILE: ANDREW GESCHKE

Jacquie Rynn interviewed science communicator ***Andrew Geschke*** *from the Arthur Rylah Institute for Environmental Research (ARI), Department of Environment, Land, Water and Planning (DELWP).*

What inspires you?

What a question! I think there are three elements to this.

The first being nature. I'm inspired by its beauty, complexity and connectedness. From the tiniest ants to the giant trees and all the life they support. There is so much to be curious about and impressed by. The interwoven relationships and dependencies of the natural world have always inspired me to learn more.

The second element would be people. Knowledgeable, passionate and dedicated people continue to inspire me to protect our natural world and support happy, health and sustainable communities.

And finally, technology, which funnily enough is often also inspired by nature (for example, image stabilisation inspired by birds as you can see at https://youtu.be/GmAP7l86Xug). I am forever inspired by technologies to test new tools and contemplate better ways of sharing both science and nature. Fortunately, my role as a science communicator at the Arthur Rylah Institute for Environmental Research (DELWP Biodiversity) lets me connect with all these elements – so I'm pretty inspired all of the time.

What brought you to the area of ecology, environmental conservation and science communication? Tell us some of your story.

I, like so many, feel that part of my passion for ecology and environmental science started with David Attenborough (and his brilliant film crews). Although David helped affirm my passion for wildlife and ecology, it was the devastating awareness of the global loss of wildlife and nature that first nudged my career path. I started off studying a double degree of commerce and science, hoping to build a multidisciplinary skill set to support both economic and environmental sustainability. After finishing my degree, and honours in environmental science, I realised that it wasn't quality science that we were lacking but the people who understood it and decision-makers who use it. It was through my graduate role with DELWP that I learned a lot more about making science accessible, relatable and shareable so that people, businesses and government could ask the right questions and make informed choices. Of course, this is the abridged version but, essentially, this is what inspired me to pursue science communication specifically around ecology and environmental science.

What elements are important to successful storytelling, both traditional and scientific?

As always, success depends on the reason you're telling the story! But, in general, successful stories resonate with your audience, and get them to feel, act or think about something more deeply. They also tend to be simple and easily sharable (that is, simple enough that your neighbour can tell it at an appropriately physically distanced family BBQ). Stories with these characteristics have a clear narrative and interesting or relatable characters; they connect with what your audience values and have a clear call to action (so people know what to do next). Each of these elements is core to successful storytelling, whether it is for print, video or art.

How have new technologies like virtual reality (VR) allowed you to create more immersive stories? Why do you believe that this is important?

One challenge we face is that our audience is very different from our scientists. Our scientists generally lead unusual lives, given they have often spent years, if not decades, studying places and species that many people have never even heard of. They are also incredibly connected and passionate about the places and species they work on. Our audience, on the other hand, often have never seen these places or even heard of the species we're talking about. So, what we're starting with is a very drastic difference in experience which can be a barrier to sharing our story.

Our immersive film series, *Walking with scientists*, uses VR to quickly level the playing field. It gives

Above: *The tiny planet is on Mud Islands with thousands of straw-necked ibis in flight.* ***Previous page:*** *Andy installing camera traps in Gippsland as a Science Graduate in DELWP.* ***Photography:*** *Andrew Geschke*

people the chance to get a feeling for these places and animals 'firsthand' (virtually).

Immersive films put the viewer in the driving seat. It lets them have their own experiences walking alongside our researchers in the field. I think this is an incredibly valuable way of helping people connect with our scientists and connect with the places we work. So far, it has been impressive in the way it has inspired curiosity and wonder about places people may never visit in person.

Our use of VR is just starting to fledge. So far, we have been using VR films as a primer to have deeper and more meaningful conversations with viewers about our research. But we're really excited about what we might be able to do in future.

If anyone is eager to use these VR films as educational resources, I'm more than happy to collaborate to help connect students with environmental science and nature.

What advice would you give someone looking to get into the area of science communication?

Science communication is accessible to everyone! With so many ways we can tell stories these days, anyone can start sharing science within their networks and beyond. Remember, science communication can be done in so many ways: art, photos, videos, music, and a variety of written forms. If you've got a particular strength, use it. Today, all you need is a phone and way to find stories that interest you. I think anyone who's looking at a career in science communication will learn a lot by following other science communicators and just giving it a go. On the flip side, having a science or arts background might give you a helping hand if you are looking at starting your career. Both will help you to write for your audience and interpret the science you're hoping to share.

What are some of your career highlights or lowlights?

I always have a career highlight when I see that my science is informing important environmental management decisions. My career lowlights are often related to receiving a rejection for funding or publication of a piece of work. However, while that negative news is always disappointing, I don't think those rejections are really career lowlights. With time, I have learnt to accept them, make the most of the feedback received (if any) and move on.

Do you have a favourite piece of technology that you use in your role?

Interesting question. Although I've only used it once, the Wildlife Ecology team's infrared camera was pretty amazing. I'm going with this because it enabled me to watch hundreds of critically endangered southern bent-winged bats fly out of their cave in the pitch dark. You can watch some of it in the ARI *Walking with scientists – field work showcase* film (towards the end). Technology lets you see things you couldn't with your own eyes – it is incredibly cool. It is also a great example of how our researchers, like Lindy Lumsden, use technology to learn more about Victoria's threatened species and how we can protect them. My less interesting answer would be my digital SLR.

What is an achievement or contribution you are most proud of in your career?

I have been very fortunate to have contributed to a broad range of projects across DELWP. These have ranged from bushfire management, community engagement, species surveys and recently the Victoria Nature Festival. However, I am most proud of the *Walking with scientists* VR project, of how far we have come and where we will take it. It has been a project that I have truly led from the initial concept all the way to the delivery of these trial films. Along the way it has highlighted the immense support from colleagues and managers to try something new. It has also led to some of my favourite wildlife experiences and conversations. While we've only just demonstrated how it will work, it is proving to be an exciting and novel way to share environmental research and connect Victorians with nature.

How do you envisage the future of scientific storytelling?

I think science-inspired storytelling will continue to grow and better connect with people research. Early science communication was very much about getting the facts out there and hoping people were listening. These days we're much more focused on the people in the stories and making it more relatable and relevant to our audiences. I think the core of storytelling will stay the same but the ways we create the stories will be much more technology-assisted. The types of media we have available to tell stories will continue to shift (for example, drone footage and thermal imagery).

Above: *Andy taking a photo with a 360 degree camera in the Dandenong cool temperate forest, where he was filming a burrowing crayfish video.* ***Photography:*** *Andrew Geschke*

I've definitely been inspired by my manager Fern Hames's passion for sci–art (science–art) and cannot imagine a future without more art, music and infographics connecting people with science. I expect the use of VR and augmented reality (AR) will grow as it becomes cheaper and easier to create. And surely, we will continue to find new ways to make science engaging and interactive to a wider audience.

And lastly, tell us how you find joy in nature – and can you do this without technology?!

In so many ways! I definitely find joy in just being outdoors with my camera. I love DSLR as a literal lens into nature. It narrows my focus and makes me think a little more about what I'm seeing. There are just so many scales of stunning and unfathomable beauty in the world to explore, and I love doing that through an optical viewfinder – particularly macrophotography. I also love birding, astrophotography and even just reading a book listening to the leaves rustle in the forest. Of course, you can enjoy, care and connect with nature without any technology. Nature for many of us gives some time and space away from the many screens of our lives and a chance to both reflect and replenish.

But if you do happen to have your phone on you, citizen science, through apps like iNaturalist, can be a great way to help us learn more about the world we live in.

FURTHER INFORMATION

Andrew Geschke *is a science communicator at the Arthur Rylah Institute for Environmental Research (DELWP Biodiversity).*

andrew.geschke@delwp.vic.gov.au

Walking with scientists: https://www.ari.vic.gov.au/research/field-techniques-and-monitoring/walking-with-scientists-vr-360

Walking with scientists – field work showcase: https://www.youtube.com/watch?v=UFHb7s2wDkA&feature=youtu.be

iNaturalist app: https://www.inaturalist.org

If you'd like to learn more about ARI's work, visit their website or subscribe to ARI updates at https://www.ari.vic.gov.au/about-us/ari-subscriptions

ENVIRONMENT EDUCATION VICTORIA AWARDS 2020: WHO ARE OUR NOMINEES?

After an extremely challenging year for our educators and students, EEV didn't want to miss the opportunity to celebrate the wins they've had over the year! The decision was made to hold the Environment Education Victoria Awards as an online event for the first time on Friday 27 November. This year, we're celebrating the successes of our educators who have mastered online meetings, digital video making and virtual education with energy and creativity. And the incredible students who have come up with some amazing sustainability projects outside the classroom – all while completing school virtually! All of the finalists this year are worthy nominees, and all are definitely 'winners' in the field of sustainability and education!

Help us celebrate our fantastic nominees for 2020!

COMMUNITY EDUCATOR OF THE YEAR

Alex Johnson – BirdLife Australia

As the Birds in Schools (BIS) project officer for BirdLife Australia, Alex Johnson delivered BIS in Melbourne for the first time in 2019. BIS is an education program designed by BirdLife and delivered in schools in partnership with teachers, volunteers, and local councils. The aim of BIS is to provide students with access to engaging science learning experiences, and teachers with support to deliver hands-on science learning content in a meaningful way. This year Alex built BirdLife Australia's e-learning platform, adapted and developed lessons and resources to suit this platform, renewed focus on increasing the use of Birdata (BirdLife's bird survey database) by participating schools and organised the redesign of the program materials, including the creation of new Birds in Schools characters.

https://birdlife.org.au/projects/urban-birds/birds-in-schools-project

Amanda Robertson – Dolphin Research Institute

i sea i care Marine Ambassadors is an environmental leadership program for students that aims to highlight the effects that human activity has on the marine environment and our responsibility in finding solutions to minimise this. As the Education Director, Amanda Robertson coordinates and delivers the program to almost one hundred primary schools and seven secondary schools across the state with the aim to educate and inspire more Victorians to care about their own backyard and to protect it for the future. To achieve this goal, the program empowers the ambassadors to advocate for the marine environment and look at ways to improve sustainability, reduce both carbon and waste footprints and develop a sense of marine and coastal self-esteem in their school and wider community.

https://www.dolphinresearch.org.au/

Madelaine Willcock – Nature Stewards

Nature Stewards is a new Victorian program, hosted by Outdoors Victoria, that began in February 2019. It supports adults to learn, connect, and act for nature locally. The program builds participants' basic ecological knowledge, connection with nature and local environmental groups. The normal format involves classes and field trips totalling 46 hours over 10 weeks. However, face-to-face classes and field trips were prohibited under COVID-19 restrictions from March 2020. Dr Madelaine Willcock, program manager, and the three educator-facilitators rapidly converted to online program delivery, including specialist presenters, to enable the programs to continue or commence in four local government areas.

https://outdoorsvictoria.org.au/nature-stewards/

2020 TEACHER OF THE YEAR

Harriet Deans – University of Melbourne's Early Learning Centre

As an Early Childhood Teacher at the University of Melbourne's Early Learning Centre, Harriet has been committed to leading programs and projects underpinned by the environment and sustainability, including Eco Heroes Green Impact Team (2019), the Eco Hero Action Week (2019), Eco Tunnel Project (2019), Grasses Project (2020), Learning in Nature Program (2020) and Children's Voices for Greening Melbourne Exhibition (2020). Over

the past year she has dedicated her time to engaging her colleagues, the children she teaches and their families in learning about how sustainability can be embedded in daily life and living. Her work is directed towards empowering others to develop the skills and values to care for each other and the environment, while also challenging people to think about how children's ideas can be taken into consideration when envisioning better environmental and community-oriented futures.

https://elc.unimelb.edu.au/home#about

Jemma Dunstan – Barton Primary School

As an Environmental Education teacher, Jemma Dunstan believes it is her duty to inspire students to become active citizens and contribute to sustainability initiatives in our local community. During remote learning over this last year, her aim was to engage students with environmental concepts in a unique and fun way. With a background in music education, Jemma created a sequence of music video parodies to introduce environmental concepts and planned unique activities to match with the music video introduction. The sustainability concept that was explored in this music video, was then incorporated across other learning outcomes creating a cohesive approach to embedding sustainability across curriculum. Students were learning and engaged through a fun activity at a time they needed it most.

https://bartonps.vic.edu.au/

Peta White – Deakin University

Peta White's long running commitment to Education for Sustainability is evidenced by a rich array of projects on this theme with a diversity of collaborators. Along with a colleague, she developed the 'Climate/Future Teaching and Learning Sequence' commissioned by the Australian Association for Environmental Education (AAEE). Peta also hosted a Climate Change Education Forum in collaboration with Sustainability Victoria and initiated and led the Climate Change Education Network. During 2020 the Climate Change Education Network has delivered a number of exciting programs designed to increase climate change education in the classroom and public domains. After leading Deakin colleagues in the Green Impact program where the team was highly successful, Peta was recognised as the Deakin Environmental Hero and then as a finalist in the Staff Champion Award by Australasian Campuses Towards Sustainability (ACTS).

http://www.climatechangeeducation.net.au/

Sarah Moore – MacKillop College

As an active advocate for integrated sustainability education, Sarah Moore has worked with teachers at her school to design project-based learning opportunities centred around sustainability. She has shared ideas with wider networks about how other schools can make these changes, encouraging collegiality between sustainability leaders and schools. This year, Sarah entered MacKillop College into the ResourceSmart School Awards, winning the honour of Curriculum Leadership School of the Year (Secondary). She firmly believes that sharing her school's successes helps other schools too, and provides a contact point for them for sustainability help and advice for future projects. Working this year with EEV's VCE Environmental Science Officer, Sarah aims to raise the profile of the Environmental Science subject and support emerging teachers in the field through her work across multiple sustainability platforms.

https://mackillopwerribee.com.au/

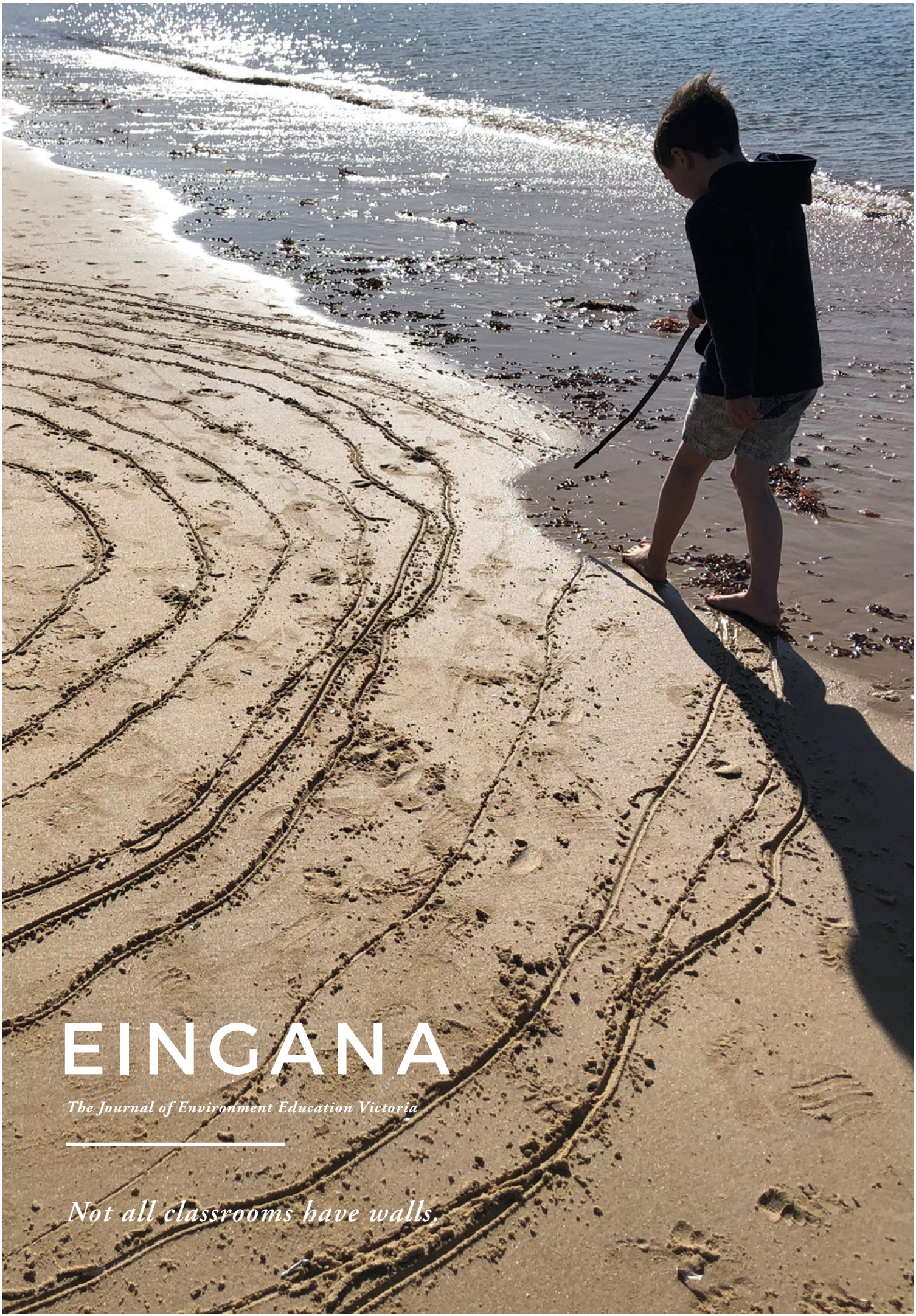
2020 STUDENT OF THE YEAR

Henry Lim – Brentwood Secondary College

As the Brentwood Secondary College Environment Team Captain this year, Henry Lim has been instrumental in ensuring that sustainability is high on the agenda at the school. He initiated and directed three videos for students that educated them on recycling, emissions and nude food, along with running an activity that encouraged students to return cans to the school for house points. Henry helped create the school's meat-free cookbook with contributions from a celebrity chef and coordinated a meat-free Monday campaign to complement this. From participating in a Tree Day organised by the Environmental Team to being the opening guest speaker at the Global Table Summit in 2019, Henry is widely involved in sustainability at his school and is also a Student Voice Network ambassador.

Lucy Skelton – Melbourne Girls' College

Lucy Skelton is the Melbourne Girls' College Environment Team captain this year, and her passion, commitment and infectious enthusiasm has meant that despite COVID-19, she has continued to drive Education for Sustainability within and beyond the school community. Since July 2019, Lucy implemented the zero waste to landfill strategy, defending the initiative to the student body (and some sceptical media!) and introduced the Carbon Neutral Action Plan to School Council. She organised the MGC annual community zero-carbon pedal-powered cinema along with a recent online student conference that brought together an amazing panel of speakers and over 200 students from around the country. Lucy is an active member of OceanYouth, EarthEcho and the Australian Youth Climate Coalition (AYCC) in addition to founding and running her own Student Voice Network – all while successfully completing VCE!



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The Journal of Environment Education Victoria

Not all classrooms have walls.