Welcome to a special issue of ecARTnz

STEM is an integrated approach to teaching and learning in science, technology, engineering and mathematics. It is promoted in many countries around the world, including New Zealand. However, from an ECE perspective the STEM approach lacks a key ingredient for young children because we know that the arts are essential for young children’s learning. However, when you add the arts, STEM becomes STEAM.

The articles in this issue of ecARTnz focus on a range of possibilities for children’s learning, which I saw in a diverse number of ECE settings on a recent trip to Europe and Australia funded by the Margaret May Blackwell Travel Fellowship. STEAM programmes were very much in evidence in these contexts.

I hope that these examples inspire you to include multi-modal discovery/inquiry learning in STEAM, with the arts at the heart of the matter.

Janette Kelly-Ware
Guest Editor
A bit about STEAM
Janette Kelly-Ware

L’ ecoline – Art meets science at a Swiss preschool, Saint Sulpice, Switzerland
With Elizabeth Biondo

Kris Kras Atelier and Atelier et een Koffee Amsterdam, The Netherlands
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With Wim De Graeve

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A bit about STEAM
Janette Kelly-Ware

STEM is a term to describe integrated learning in science, technology, engineering and mathematics but it is not a term commonly used in early childhood education in Aotearoa New Zealand (Holdom, 2018). Knaus & Roberts (2017, p. 3) describe that the term STEM “can be used when any two of the four subjects are related through an inquiry, a project, or a hands-on activity”. STEM is, however, increasingly used in primary and secondary school contexts. Nonetheless, there is a growing trend towards integrated holistic curriculum in these contexts and the new acronym that is gaining currency around the world is helping with this. The arts, which are so vital for young children’s learning and communication, have been added to STEM to make STEAM.

Innovative ways to extend teaching pedagogy and practice in STEAM subject areas in ECE are possible and supported in Te Whāriki (MoE, 2017) through its emphasis on children’s working theories. Because a STEAM approach to curriculum enables the incorporation of multiple disciplines simultaneously, the integrated nature by which infants, toddlers and young children and adults can explore, discover, and create their worlds through a STEAM approach is relevant in the ECE context.

The articles presented in this issue of ecARtnz highlight several initiatives in the realm of teaching and learning through STEAM that I was privileged to experience as part of a research project funded by the Margaret May Blackwell scholarship (see https://www.nzcer.org.nz/fellowships/blackwell) in 2019. The scholarship enabled me to visit Australia, Switzerland, the Netherlands, Belgium and Germany where I met many STEAM practitioners, researchers and artists. I was able to visit education programmes in many of these countries where I could see innovative examples of STEAM practices which embraced the arts as an essential component of the work being undertaken.

The articles in this issue describe several of these programmes, which I hope will inspire early childhood educators in Aotearoa New Zealand.

References:
Holdom, J. (2018), Science, technology, engineering and mathematics learning through the lens of Te Whāriki: He whāriki mātauranga mō ngā mokopuna o Aotearoa: Early childhood curriculum. He Kupu, 5(3), 1-11.

Further reading:
In November 2019 I visited Lécoline in Saint Sulpice, Switzerland. It is Switzerland’s first (pre)school inspired by the Reggio Emilia education project. There were also strong echoes of the Forest Schools movement as the school was situated in a multi-storey building adjacent to a bush reserve with Lake Geneva at the bottom of their no-exit street. Every day, regardless of the weather, the children from both parts of the school go outside and experience the nature community just beyond the building doors. The atelier for 4-6 years olds was on the first floor and the atelier for 2-4 year olds was on the ground floor.

A novel experience for me was spending time in the Coworking space (see image on page 4) at Lécoline with several parents who chose to spend their working day on-site, with their children nearby, in a fit-for-purpose workspace with desks, Wi-Fi, sofas, and a mini-kitchen. One woman described coworking there as a great alternative to spending time on the road between dropping off and collecting her two children while another said she enjoyed the company as opposed to working from home all the time.

The ateliers at Lécoline spoke to me of pedagogy based on inquiry/discovery learning, of integrated curriculum, projects and documentation, and the environment as the third teacher. Like many places I had previously visited in Europe, I could see that many aesthetic decisions had been made in setting up the environment, and organising the extensive high-quality teaching and learning resources for children’s ease of access. The environment felt welcoming and homelike for children, families and teachers, as well as international visitors like myself. Children’s social engagement with others was facilitated and experiencing their relaxed, unhurried three-course-lunch hour long lunch was amazing.
The older group of mostly bilingual (French-English speaking) children are taught by Elizabeth (who had previously taught in a Reggio Emilia education project inspired centre before migrating to Switzerland), and Laurence - her former scientist colleague. The wall displays attested to a previous project/investigation about mushrooms and toadstools. Everywhere there were books, wall charts and children’s individual and collaborative drawings and collages of champignon.

The latest Science/Arts project (unnamed as yet) was concerned with investigating the sky, clouds, planets, rainbows, the weather and space/rockets. There were numerous large non-fiction (reference) picturebooks and wallcharts available about the sciences and the arts, including *Journey on a cloud* - a children’s book inspired by Marc Chagall (Massenot & Mansor, 2011). Chagall is a favourite artist of mine, whose painting *The bride and groom of the Eiffel Tour* is reproduced in the book and inspires the illustrations.

Telescopes and planets and other scientific/natural phenomena were also represented in children’s artworks and constructions, and in the corner a giant paper mâché rocket was under construction.

An artist was employed one day a week to work with the children based on interests identified by Elizabeth and Laurence and their colleagues, and she was leading the creation of the rocket and planetary system installations. The children also had access to images of themselves in various positions to add to their drawings and paintings in order to represent themselves being in the sky on the clouds and rainbows.
When several children announced that they wanted to stage a performance about the planets, an audience of children and adults gathered in a quiet room with lots of seating. On request, Elizabeth immediately found a suitable music soundtrack on her phone, and the group danced and told stories delighting us all with their impromptu and seemingly unrehearsed performance.

This whole experience reminded me of the power of ongoing projects. When sustained investigations of phenomena combining different disciplines or domains (Arts and Physics for example) take place and are documented, the co-constructed understandings of children and adults are made visible for the community to behold.
In Amsterdam I attended several art classes for young children in the Art Studio downstairs at OBA the Public Library on the waterfront. Sabine Plamper and I had met in January 2019 at the 8th International Art in Early Childhood Conference at Victoria University of Wellington where she had invited me to visit her. Sabine is a cultural pedagogue, photographer and a former atelierista at De Platanen, a Reggio Emilia inspired early childhood centre in Amsterdam.

Kris Kras Atelier accepts enrolments for young children for 6 one hour sessions over 6 weeks. The day I visited there were up to 7 children (aged 1.5 to 4 years) in the class each accompanied by a parent or caregiver. I was initially surprised by the number of male parents until one man explained that he and the child’s mother worked four days each and spent the other day at home with the child/children – one on Monday and the other on Friday. Great family friendly practices in these workplaces it seems.

Sabine had experiences on offer at three different workstations that children could choose from. The 1st station is always the ‘explore drawing’ table with small A6 cards, also for painting, cutting and discovering. The 2nd station was sand play in a sewing box with various tools and the 3rd station involved two easels for large format paintings.
During classes, Sabine explained (and role-modelled) to parents that they should give their full attention to their child while they explored the materials with their hands and bodies. She advised the adults that some mess was ok. Sabine’s explanations related to the importance of the process, and the significance of mark making.

Parents were also asked to make observations on A6 cards about what their children were doing and discovering. Sabine explained that this important task for parents involved them being witnesses to the creative process. This task also helped parents to keep more distance from their child and not to interrupt or judge them.

As an observer I had access to a pen and cards to write/draw my observations to be included in children’s mark books along with their artworks. To me these drawing and hand-written notes were a refreshing change from the types of documentation often seen in many ECE settings in our country.
Sabine’s other work and passion is her training institute Atelier et een Koffer (Studio in a Suitcase). The suitcase symbolises various possibilities for creativity in daily life using practical tools. This suitcase’s mobility means that Sabine or one of her Kris Kras colleagues can set up anywhere – hence its name.

I attended a workshop that Sabine ran for a group of university students and their lecturer Joke den Haese, visiting Amsterdam from Erasmushogeschool in Brussels, Belgium. Then the mobile atelier was transported to Utrecht by train for another workshop at an Early Years conference. Sabine’s Kris Kras colleague Ursula Woerner facilitated the workshop there called “Help! I can’t draw”, while Sabine gave a presentation about her book *Understanding with your hands: Another view on children and creativity* to another audience at the conference.

At both drawing workshops I was impressed by the quality of the materials provided for us from the suitcase. Our collaborative efforts were far less stressful and way more creative than what my individual efforts would have been. We engaged in a number of collaborative experiences involving drawing and natural collage, drawing and stickers, drawing a Mandala using a limited number of symbols, observational drawing of insects, taking a line for a walk, etcetera under Ursula’s direction and timekeeping. Moving quickly from one hands-on experience to the next and using small postcards and shared strips of paper seemed to help reduce the anxiety that many participants described having felt about drawing in the past.

For anyone interested in this Art in ECE approach, who may be going to Europe in future, Sabine is running a two day course in English ‘Understanding with your hands’ in Amsterdam from 3-5 June 2020 and 2-4 June 2021. More information and tickets are available at : https://atelierineenkoffer.nl/product/international-2day/
Labyrinth, a museum for children aged 3-11, is part of Berlin’s cultural and educational landscape. At the 1,000 square metre museum housed in a former machine factory, exhibitions are staged that can last up to a year in duration. Open seven days a week, the museum hosts school and ECE groups on weekdays while on weekends lots of family groups visit to explore the range of hands-on exhibits.

Each exhibition is produced in cooperation with numerous institutes, companies, artists and scientists who develop an abundance of ideas for interactive exhibitions, projects, workshops, and events. The museum and organisation that runs it is staffed by 50 people including exhibition developers, pedagogues, artists, administration staff and interns. They are supported by many volunteers. The government and a major sponsor fund each exhibition – in the case of 1,2,3, Kultummel the major sponsor was Lotto.

The interactive exhibition I experienced on my visit, the museum’s 24th exhibition, was called 1, 2, 3, Kultummel - Diversity: Where does it come from, where can it be found, and how do we meet it? The exhibition explores the endless and rich world of diversity, and its key message is that, “diversity is what makes the world so rich and what makes life so worth living. Diversity is an unlimited amount of possibilities, paths, questions and ideas. Every person, every child contributes in its absolute uniqueness to the diversity of the world - and that’s a good thing”.

Alkistis Karouli, an art therapy student from Greece, was working part-time at Labyrinth for a year in conjunction with her studies. Alkistis described her role as a ‘diversity butterfly’ – she wears a coloured hood so she is easily recognisable and flits around groups of children and exhibits, eating, touching, asking questions, making suggestions and reading stories.
Alkistis stressed how there are few rules at Labyrinth and that experimentation is encouraged by the international team of staff and volunteers. Most of the team are non-German so everyone is practising their new language as well as speaking their home language with the ethnically diverse children/ students and families who visit the museum.

“The interactive exhibition 1, 2, 3, Kultummel involves the youngest in society in the current discourse on the value of diversity. Children are encouraged to take on new perspectives, to find creative solutions and to become co-designers, visionaries, practitioners and diversiflies of a new diversity” (see https://www.labyrinth-kindermuseum.de/en/content/content-kultummel).

When Alkistis (or one of her peers) welcomes a new group of children to the exhibition she gets them to look at their own and each other’s hands noting how different they all are and how each person’s fingerprints are unique to them. A school/ ECE centre visit often involves children exploring the hands-on exhibits as well as collaborative drawing, storytelling, songs and games adapted to children’s needs, drawing on their collective knowledge.

Self portrait with diversiflies drawn by Alkistis Karouli
The museum website describes “13 hands-on exhibits, inspired by modern pop-up stores, be it the large world course with the six continents, be it a try-on in the changing room, travelling thoughts in the suitcase shop, an exploration of the languages’ diversity in the book store or be it homey stories at the lamp store. The exhibition aims to engage the youngest of our society in the discussion about the value of diversity and to make them co-designers, visionaries, practitioners and new diversifies. The 13 creative and interactive stations motivate the children to get to know diversity which can be found in food, languages, clothes, history and stories as well as in countries, regions, colours, words, smells, feelings and of course in the fascinating singularity of every single human being” https://www.labyrinth-kindermuseum.de/en/content/content-kultummel.

The interactive exhibits are designed to get children working collaboratively with their peers. Freedom of exploration is encouraged and the play-based learning experiences featured many familiar ECE experiences such as Lego, puppets, dress-ups, books, maps, touch/texture boxes, smell boxes, matching/ guessing games, mirrors, and video screens featuring games and documentaries including a ‘Courage Machine’. Upstairs there were heaps of blocks and pillows and children were encouraged to build huts together. There was also a café and a large outdoor space utilised in the warmer weather for messy arts experiences such as papermaking. The next exhibition, Today, of course! Participate for tomorrow, focuses on protecting the environment and the planet.

It is possible that this type of museum exhibition might inspire teachers in this country to think about how children can be supported and encouraged to relate to diverse others through collaborative arts projects. It might also make teachers think about sensitively incorporating artefacts, symbols and arts from the cultural backgrounds of children in their ECE settings.

A range of dress ups from different countries
Visiting ABC House in Brussels with a group of artists/ art educators from Amsterdam was another highlight of my trip. A former industrial building (1600m2 over 3 floors), has been transformed into an interactive and artistic laboratory in which to work, play and explore. ABC House is a stunning research centre which operates on the border of arts and education as a laboratory for aesthetic experiences and awareness.

Children and adults of all ages are welcome at the centre which is run as a non-profit organisation that is financially supported by the Brussels, Flemish and French governments. See http://www.abc-web.be/.

Wim De Graeve, the centre’s financial director who has worked at ABC House for 20 years, hosted our small group. He is part of a team of 7 staff who are joined by large numbers of interns each year from universities and other education institutions around Europe.

ECE and school groups are invited to make an ABC House Lab or Studio their home base for a week or a month or a year, and ABC guides support teachers in their work. Last year a group of 20 children and their teacher from a Steiner school came to work and play every day for the entire year. A group of infants and toddlers and their teachers also visited one day a week over the year to use the gym/movement/dance studio.
The space is described on the website thus: “The building is organised along a circuit that links together a theatre pit, several studios, a film studio, a library, a crèche café, a children’s kitchen and offices. Several passages and views around these places enable all sorts of exchanges and relationships to be set up” (p.8). https://www.bozar.be/file/345/download

Our group visited a number of studios that focused on nature, theatre, graphic design, poetry, paper, cooking, architecture and many more subjects, a crèche-café and a cinema auditorium. Outside a vegetable garden and playground surrounded the building.

Kamishibai is a Japanese story theatre tradition (kami = paper, shibai = drama) that is used here. I was delighted to see numerous picturebooks turned into A3 prints with the text on the back that the narrator reads or tells. With every new episode, the narrator shifts a print from the box, and continues with the next one. A kamishibai story is a bit like a delayed animation film - image and language go together perfectly. To read more about the history of Kamishibai visit http://www.abc-web.be/abc-kamishibai/

ABC House makes and sells approximately 50 kamishibai theatres each year to schools and centres, libraries and out-of-school care programmes. They also organise kamishibai stories on request. Cultural centres, schools, libraries or festivals are ideal places for storytellers to perform on a kamishibai bicycle, or in a kamishibai corner or a nomad tent. ABC has more than 200 narratives for kamishibai storytelling and the collection is constantly growing. They transform existing picture books or give assignments to draftspeople and authors. The range includes Japanese ‘traditionals’, and stories from contemporary authors / illustrators. All stories can be borrowed for free or copies can be purchased online at the link above.
Accessible to all visitors, the resource library is an amazing collection of inspiring and stimulating books, ideas and materials on art and education. Within the building interactive working stations are equipped with selected books, visuals and specific research materials. Their well-defined settings enable small groups of visitors to explore and investigate at ease and in confidence. ABC support resources provide opportunities to have a different view, and to ask as well as answer questions.

One of the resources at ABC House

ABC House also has a range of quality multilingual mobile studios set up in English, Dutch, French and German. The staff including interns work with groups who tailor make projects and creative environments for organisations in the artistic, cultural, educational and social field and for permanent or temporary use. Museums, theatres, cultural centres, schools and ECE centres, libraries, refugee centres, festivals all access ABC House resources and/or mobile studios.

The ABC team are currently searching for strategies to inspire present and future teachers through informal learning experiences, to teach in a more artistic and personal ways. The team is working on a new, interdisciplinary teaching culture in which art is woven into all areas of the curriculum including STEM which they view as lacking an essential element - the Arts hence their advocacy for STEM + ARTS = STEAM.

In their STEAM Studio /Arts and Science Lab there were numerous interactive modules available on astronomy, architecture, mathematics and digital techniques to name a few. The ABC House team is hopeful that their ideas and materials will help teachers to go beyond the traditional transfer of knowledge, and gain new insights through interactive learning.
Shapes, colours, and actions: On the trail of the Bauhaus arts at Kinder Kunste Zentrum

With Lioba Hagedorn

ECE centre directors, scientists, cultural education specialists and cultural policy makers together with the non-profit Association Learn With All your Senses, have developed the concept for early childhood cultural education that operates throughout Berlin including Kinder Künste Zentrum - Children’s Arts Centre.

The Children’s Arts Centre sees itself as a driving force for:
• city-wide innovative early childhood education
• the practice-oriented qualification of artists and educators
• the development of new forms of parenting
• public presentations in interactive exhibitions and mini festivals
• the establishment of a network of early childhood cultural education in Berlin

Housed in a former Public Library covered by a preservation order, the historic building has been converted into a large exhibition room and several smaller rooms for art workshops and offices. The garden with its covered walkway and fountain also offers ideal space for creativity.
Workshops and projects led by artists including sculptors and set designers are offered during the week aimed at ECE centres and schools (for children aged two to ten years). Children can spend between 1-3 days working at the arts centre with visiting artists. The arts centre is also staffed by interns such as Lioba Hagedorn who is currently studying Culture Media Pedagogy at Merseburg University of Applied Sciences in Merseburg, Germany. You can watch Lioba’s short video of the exhibition *Shapes, Colours and Actions [Formen, farben and aktionen!]* on YouTube [https://www.youtube.com/watch?time_continue=21&v=qT2hXGOF66I&feature=emb_logo](https://www.youtube.com/watch?time_continue=21&v=qT2hXGOF66I&feature=emb_logo)

The workshops are about ‘growing exhibitions’ with everything that children create at the arts centre becoming part of the exhibition. Children can pick up their artworks when the exhibition is over. Exhibitions are often accompanied by artistic hands-on activities for the whole family on Family Sundays when all Berlin children and their families are invited to participate.
In 2019 Berlin celebrated the 100th anniversary of the founding of Bauhaus (1919-1933), a revolutionary school/university of design, where artists and students designed an extraordinary number of different things - houses, fabrics, costumes, dishes, furniture and much more. A short video about the exhibition at the Berlin Gallery that I visited the previous day can be seen at https://www.youtube.com/watch?time_continue=1&v=ClUmY7b7E&feature=emb_logo

Meanwhile, ECE and school students can undertake Bauhaus-inspired work by exploring line, shape and colour in artistic workshops held at Kinder Künste Zentrum - Children’s Art Centre. For example, they are able to design small ‘master houses’, knit mini carpets and design dishes, as well as build cone hats and unusual masks.

Other exhibitions have included subjects such as:

- Our city Berlin
- Clouds, forest and animals – colours in nature
- My body: a creative journey of discovery
- Sculpture: Art from light and shadow
- Children’s Art Mobile - a project with young refugee children and their families from six Berlin emergency shelters.

A range of stunning publications are available that clearly document these projects, showing the possibilities of pedagogical documentation as a tool for raising public awareness.
Despite the snow covering the playground, the children still went outside to play at Förskolan Karet - a preschool in Umeå in north-east Sweden in October. These outings were testimony to what we know as the Nordic mantra ‘that there is no such thing as bad weather, only bad clothing’. The drying room reminded me of a ski-lodge with lots of hooks, racks and heating to dry toddlers’ and young children’s outdoor clothing.

Inside there was what I came to view as Scandinavian design combining function and aesthetics – warm, soft lighting, and white walls. Children were engaged in numerous experiences in a range of different spaces. Our host for the visit was the preschool teacher Markus Johansson and he showed us around the large, well-laid out preschool.
I met with Sofie Areljung from Umeå University who was engaged in collaborative research with Markus and his colleagues that focused on Science and Aesthetics (the Arts). Her previous research had focussed on teaching science using verbs (Areljung, 2016). Sofie’s provocation to each of the ECE research sites in this project was to focus on an aesthetic mode of expression, a verb related to science, and young children’s working theories (a construct from the Aotearoa New Zealand early childhood curriculum Te Whāriki that Sofie had borrowed to help Swedish teachers support children’s ongoing theorising in science).

As Markus and his colleagues had chosen ‘GROWING’ as their science verb, the atelier at the preschool had been converted into a garden (see below), and the Laboratory was filled with fiction and non-fiction picturebooks, images and other documentation about their research project related to DRAWING and GROWING.
Markus reported that children’s drawing of plants had originally begun with the flower, and then a stem downwards from the flower, ending at the ground level. And then a child split a big white bean in half and saw where the growth came from. Other beans in various stages of growth were also split open so that children could see the source of the plant. The children were also learning about casual relationships, that is cause and effect, as they watered the growing plants on a daily basis. With the trough at a good height for young children they could closely position themselves to see what was going on. They were able to move the soil aside and actually see each plants’ roots growing downwards in the long trough, while the plant grew upwards. This process enabled the children to better understand and draw what they were seeing.

Teachers reported that over time the children’s drawings became more complex – changing in composition from only including what they saw above the soil to the entire plant from the bean or seed, the roots and the growth about the soil – more like a botanical drawing. When the teachers looked closely at the drawing processes, they could see that many of the children no longer started their drawings with the flower, but with the bean. Instead of the stem “growing” downwards from a flower, they drew it upwards from the bean. During the project teachers documented children’s working theories and made copies of their drawings in order that the children’s learning could be seen over time. From this visit I concluded that the arts are likely to help children to communicate and explore science phenomena, as well as encourage them to sympathise with nature.

Further reading:


Resources

fleaBITE is the latest innovative and entertaining children’s music venture from Robin Nathan, the producer of the award-winning Fatcat & Fishface CD series. Bold and irreverent, fleaBITE swerves off the beaten track of children’s music. The lyrics are exuberant, at times ridiculous, and always inventive.

fleaBITE has won two Tui awards with The Jungle Is Jumping (2015 Best NZ Children’s Album) and Circus of Fleas (2013 Best NZ Children’s Album) and took the prize for 2015 Children’s Video of The Year (as voted by the public) with Don’t Sit Under the Poo Tree.

For the latest digital music from fleaBITE see https://www.fleabite.co.nz/.
Contact details

Editorial Board information

ecARTnz, an emagazine of professional practice for early childhood educators, is a quarterly publication developed to generate new interest in visual art education in Aotearoa New Zealand. The intention of the editorial board is that ecARTnz will showcase examples of teaching and learning, literature, and conferences of interest to educators in early childhood education.

Members of the editorial board are: Lisa Terreni and Mary Jane Shuker (VUW), Janette Kelly and Helen Aitken (UoW), Rosemary Richards (Toi Ohomai) and Lesley Pohio.

The board is responsible for promoting the magazine, writing, reviewing and editing contributions, and ensuring that the emagazine is of a consistently high standard.

The views in this journal do not necessarily reflect those of the editorial board members.

Contributions are invited for the next issue of ecARTnz. Submissions of 1000-2000 words accompanied by up to 8 photographs sent as .jpgs are welcomed.

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