Stories on Transformation of Education by Design

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About DesignSingapore Council

The DesignSingapore Council's (Dsg) vision is for Singapore to be an innovation-driven economy and a loveable city through design by 2025. As the national agency that promotes design, our mission is to develop the design sector, help Singapore use design for innovation and growth, and make life better in this UNESCO Creative City of Design. Our work focuses on three areas. First, we help organisations and enterprises use design as a strategy for business growth; and for excellent delivery of public services. Second, we nurture industry-ready talents skilled in design and innovation; and engender a design-minded workforce for the future economy. Third, we advance the Singapore brand through raising design appreciation on the home-ground; helping local design talents and firms go international, and making emotional connections with people across the world. The Dsg is a subsidiary of the Singapore Economic Development Board.

Website: https://www.designsingapore.org

About IDC

The SUTD-MIT International Design Centre (IDC) began in July 2010 as part of a Collaboration Agreement between Singapore and MIT, and expectations of an SUTD-MIT IDC to be created and launched.

In a span of 11 years till June 2021, as a key multidisciplinary and broad-impact Centre based at the Singapore University of Technology and Design (SUTD), IDC succeeded in kickstarting research and driving design for students, faculty, staff, and external partners by collaborating and partnering with all of SUTD's departments and many departments at MIT. The SUTD-MIT IDC was a premier global scholarly hub for technologically intensive design science, research, and practice, with academic and industrial partners from around the world.

IDC faculty, researchers, and students studied and advanced the design process and design science, and developed new tools and methods for design practice and education to address the strategic needs of organisations and society. They worked together with partners to design devices, products, systems, services, and elements of the built environment that addressed the strategic needs of Singapore, the greater Asian region, the United States, and the global community.

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Preface

Fashion designer Paul Smith once said, “Experience is the best teacher. A compelling story is a close second.”

This sentiment underscores the “*Call for Stories on the Transformation of Education through Design*”, an initiative planned in the lead up to the Design Education Summit 2021. Held biennially, the Design Education Summit is a key platform for educators and industry professionals to network and exchange ideas on the adoption of design in education. It provides collaborative opportunities for educators to co-develop strategies and work on issues and possible solutions around introducing design in different levels of education.

Commissioned by the DesignSingapore Council (Dsg) and conducted by the SUTD-MIT International Design Centre, the Call for Stories was launched in February 2020. It invited educators and students around the world to submit their experiences related to design education. The open call welcomed both ongoing initiatives as well as specific projects in response to the COVID-19 pandemic.

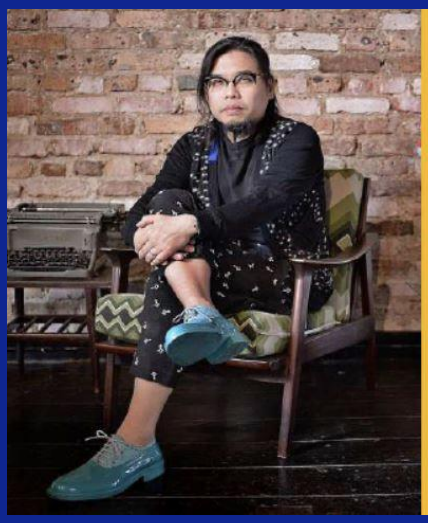
A total of 85 stories were received from 11 countries, including Singapore, India, the Philippines, and Belgium. These stories encompass how design has empowered individuals with the mindsets and skills needed to improve lives. They also highlight the opportunities unearthed during their journey and the challenges they met along the way. The stories focused on a diversity of topics, ranging from social innovation, and using technology to enhance creativity, to the design of learning experiences and rethinking design projects in a post-pandemic world. Educators shared their experiences of nurturing design mindsets and sensibilities to empower students. They described using design projects for building empathy, fostering creative confidence and collaboration, and encouraging self-directed learning in students.

We present all the stories here, categorised as educators’ entries from primary, secondary and tertiary levels, and students’ entries. These stories will inspire educators interested in applying design to their area of work. More importantly, these stories reveal how educators are driving the transformation of education - by *design*.

85
Stories

11
Countries

Primary Level



“Creativity is not about becoming an artist. It is a behaviour and a way of thinking.”

- Pann Lim

Co-founder/ Creative Director
Kinetic Singapore/Holycrap.sg

STORY

01

Using Design Thinking to Grow Student Leaders at Princess Elizabeth Primary School

Marselyn Jonatan

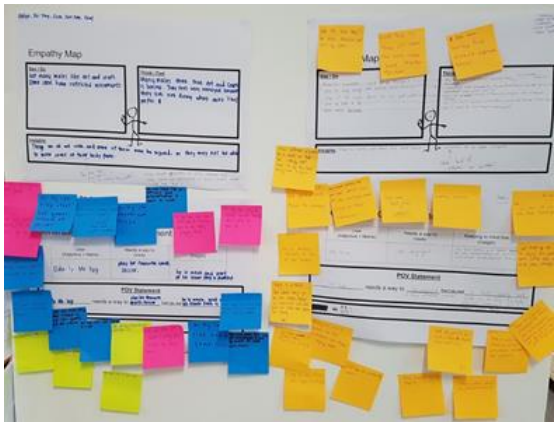
Princess Elizabeth Primary School

Singapore

In 2019, Princess Elizabeth Primary School (PEPS) established a signature Applied Learning Programme (ALP) focusing on Innovation and Enterprise. The ALP aims to develop inclusive design thinking in students to foster inclusivity through building empathy and inventive thinking skills. As part of the programme, students learn and apply design thinking to address societal issues, including social integration of seniors and intergenerational cohesion.

One such project involved Primary 5 and 6 student leaders taking ownership to work with patients at St Luke's Hospital. This community hospital cares for chronic patients as well as patients that require rehabilitation through physiotherapy.

To understand the patients' needs, student leaders interviewed patients to empathise and gain insights into issues surrounding the user experience of physiotherapy. Through a series of discussions and reflections, student leaders defined the problem faced by their target users. Eventually, they decided to frame the problem surrounding patients who are unwilling to undergo physiotherapy due to a lack of motivation.



Framing (Define) stage – Using one of the design thinking approaches, student leaders framing the problem

In the Imagine (Ideate) Stage, student leaders generated as many ideas and solutions as possible for their users. After brainstorming, substituting, combining, and adopting some of the ideas, the students decided to prototype ways to gamify the physiotherapy process, to make the rehabilitation experience more engaging for the patients. They then decided to make some interactive games and sensory boards out of recycled materials and materials that could be found in PEPS InnoSpace, a Maker Space that is set up in the school.

In the Prototyping and Making Stage, student leaders spent a few consecutive weeks to make the prototypes, obtain feedback from the staff in St Luke's, and refine their solution. This iterative process enabled them to develop a sensitivity to the design of solutions that meet the needs of the intended users.

The entire process took about a year with two site visitations as part of the Sharing Stage in semester two. These student leaders interacted with the patients in St Luke's through the games which they created.

It was evident that patients were more engaged as they were indirectly involved in physiotherapy through the games. The patients also enjoyed the energy and company of these young student leaders tremendously. Through this journey, the student leaders grew to understand how design thinking can enrich the experience of the people they wish to serve.

This in turn supports our school's mission of nurturing its capacity to embrace and celebrate diversity so that no one is left behind.

Prototyping and making stage at PEPS InnoSpace (Maker Space)

STORY

02

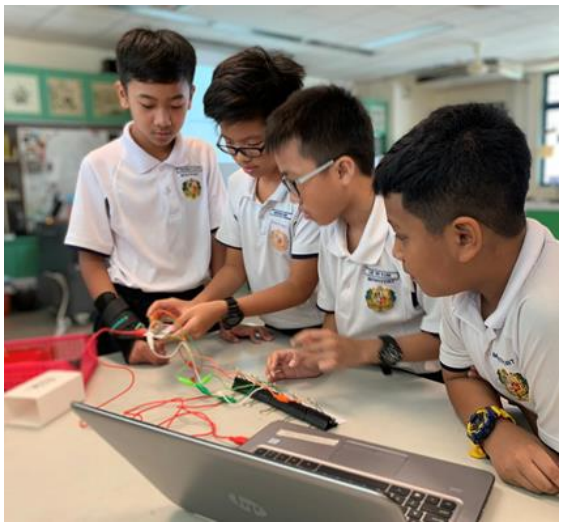
Integration of Music

Zhane Tang, Amy Khoo

Montfort Junior School

Singapore

In Montfort Junior School (All boys), we advocate a future-centric education, where we prepare our boys with future-ready mindsets and skillsets. There is clear evidence of how cyber-physical systems and artificial intelligence are steadily integrating into various job industries. The integral relationship between coding, design and making is clearly evident. With that in mind, we introduced the MakeyMakey + Music Programme where all our Primary 5 students make their own instruments. MakeyMakey is a microcontroller kit that will enable you to turn everyday objects into touchpads.



Exploring MakeyMakey kit

We incorporate the use of the Design Thinking approach, where pupils learned the fundamentals of Design Thinking (Empathise, Define, Ideate, Prototype, Test). Due to the time constraint and the boys' age, the problem in this project was identified for them. The problem was that pupils seemed to have very little interaction with our school's non-teaching staff and so, our pupils would build an instrument to bond with them.

Empathy plays a big part in the Design Thinking process. Pupils identified non-teaching staff they would like to approach and conducted an interview with her to get to know her better. Pupils gathered information like the interviewee's favourite song, colour, hobbies, instrument and her childhood. Pupils would take all the information into consideration when they were making their instruments. For the music aspect, pupils learnt the various songs by using the Orff Approach on the Xylophone. They would figure out the scale they were using, and the notes that were required to perform their song. They would then proceed to do coding using Scratch which was a required aspect to incorporate into the MakeyMakey kit.

Once they had settled the music and coding part of the project, they proceeded to design a prototype. Armed with the information they gathered earlier (favourite instrument, colours, hobbies, etc), they crafted the instrument. With the prototype, the pupils proudly presented their instruments to the non-teaching staff and played with them.

Throughout the process of making, pupils ran into many issues such as ensuring that their product made the right sounds, or if their product could not produce any sound, how should they proceed, how to troubleshoot their own project, and solve the problem as a group. Pupils had to learn how to adapt quickly to new situations that were constantly evolving during this project. They were very engaged throughout the project, asking questions, seeking clarifications from their teachers, and trying to think about what design would please their "client" whom they were designing for.

Presenting and playing with our bookshop aunty

As it was our first year trying this module, it was a steep learning curve for us. The end product of this project was not perfect, but we were very encouraged by the high engagement of our pupils, the support of our school leaders and staff, and the interest from our cluster teachers. It is not every day that the pupils get to use the skills they have learnt to solve authentic problems.

As such, we could see the spark in their eyes when they presented their project to the non-teaching staff! We believe that the skills they learnt in this project will be an asset to their future.

STORY

03

Serious Play in Montfort Junior School

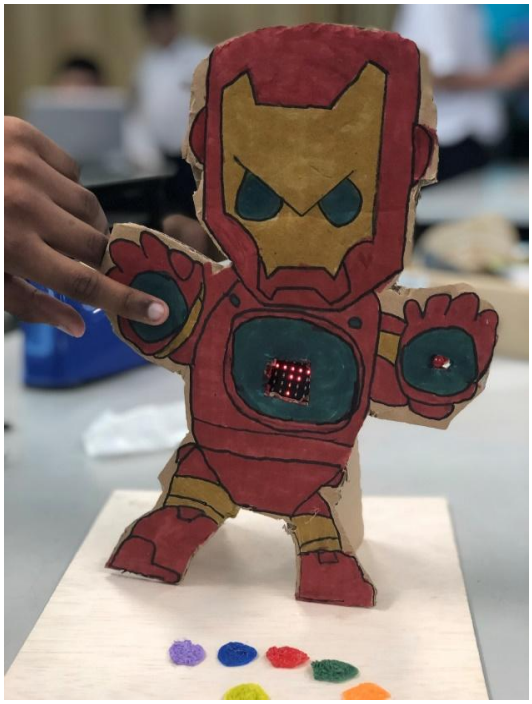
Amy Khoo

Montfort Junior School

Singapore

In Montfort Junior School, we believe in preparing our students for the uncertain future. We would like to equip our pupils with the necessary soft skills of curiosity, creativity, teamwork, communication, resilience, and a dare to fail attitude. We also exposed them to emerging technologies. As such, our pupils undergo a series of basic computation training throughout their six years of primary education, consisting of Junior Scratch, Scratch, and Microbits Programming.

In the process, we felt that it was not right to teach programming in silos but instead, we should make learning more authentic and fun for the boys. Hence, we decided to combine the boys' knowledge of Microbits with their Art skills to get them to create an interactive piece of art.



Interactive art: Iron Man

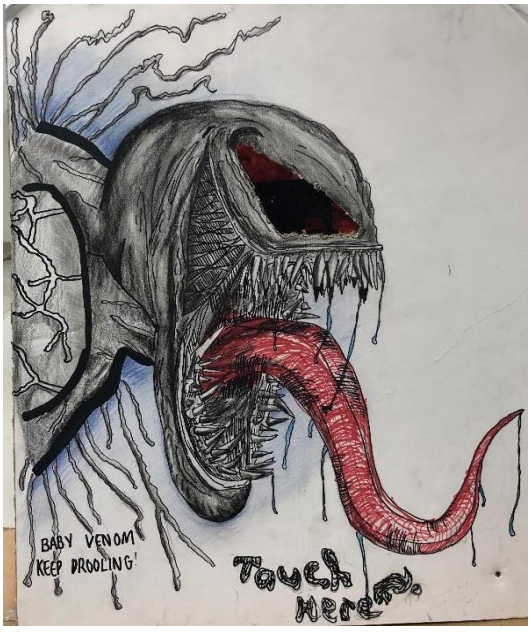
This module entailed eight weeks of 90-minute lessons for our Primary 6 pupils, conducted during our Art curriculum time. Pupils did a recap of some basic Microbits programming and were also introduced to light and sound sensors, while learning how to programme it using Microbit. They then used these sensors to activate a servo motor like a fan or an angled motor. Armed with some of this knowledge, they were tasked to design an interactive piece of artwork.

The pupils were quite perplexed at the beginning of the project but when we showed them some samples of teachers' work, it eased their fears. Subsequently, when they gathered in their group for brainstorming, their eyes sparkled, and ideas filled the art room. Such open inquiry projects always bring excitement to my boys as they were able to bring in the subject of their interest into the artwork.

Excitement and ideas were of course only the first step. They then had to figure out how to get their ideas to work and delegate the tasks accordingly. It was evident that working as a team for this type of project has many advantages. Not all pupils were good at everything; some might be good at generating ideas, some in leading the group, some in programming, and some in doing the craft. Even for those who do not specialise in a specific task, they were still capable of being a good helper to everyone or anyone in the team.

I wish that my boys would be good team players who are accommodating, compromising, and are good listeners, while also being able to deliver their project on time. The end result of their project is not as important during their presentation but rather, I placed more importance on their process and reflection. Energy and excitement could be felt throughout the project.

I really liked this project, and did not want to attach a grading component to it as it is not easy to give a grade to a process. I also did not want to conform to the mindset that students should be proficient in everything as I strongly believe that collaboration is necessary in the 21st century. Therefore, I would rather focus on the joy of learning and the power of collaboration!



Interactive art: Venom

STORY

04

Unstructured Play in Montfort Junior School

Norman Loh

Montfort Junior School

Singapore

In a Boys' Centric Education model, boys need to be given moments to explore, create and work with their hands to concretise their learning. In Montfort Junior School (MJS), our school supports that through its dual curriculum approach in our Makers' Education. In the last few years, MJS has continuously added new initiatives to our curriculum as we are inspired by the boys' enthusiasm in ideation and incidental inventing.

This year, Unstructured Play has also served as an extension of our newly implemented Unstructured Play @ Recess. In Unstructured Play @ Recess, MJS challenges students to put design thinking into action through thematic challenges. These thematic challenges are purposefully designed to motivate students to leverage the design thinking process from ideating to prototyping to testing and repeating the entire process until they achieve their intended outcomes.

In the Paper Flight Challenge, we started out by providing paper to fold a plane. Various competitions were set in place for the challenge. In one competition, students had to ensure that their plane could fly through a series of hoops. In another, students had to test the length of time their plane could remain in the air. Through these different competitions, the definition of a winning plane changed. Thus, students had to constantly redefine their planes, re-ideate, re-prototype, and retest their planes. What started out as a simple paper plane for some students evolved into a more complex building of planes, adding on more paper products and even recyclables. Similarly, in the Balloon-Powered Car Ramp Challenge, students had to invent balloon cars that could fly off a ramp. Our constant redefinitions of the winning product motivate students to go through the design thinking process again and again.

Students performing flight testing in the courtyard

The aim of the Unstructured Play @ Recess is to reach a wider group of students, beyond those who have the capacity to stay back beyond school hours to work in the Tinkershop.

MJS opens its Tinkershop's doors after school hours daily, welcoming students into an environment conducive for tinkering. Some students step in with an idea in mind and use the available materials in the Tinkershop to translate their ideas into realities. Others enter without a concrete plan, but their creativity and critical thinking skills are stimulated by watching their fellow peer inventors or by simply letting their ideas flow as they manipulate the available materials.

Some innovations that have been borne out of the Unstructured Play @ After School are a "Thank You" sign that drivers can place behind their car to provide affirmation to other drivers, spinning random number generators to aid the lower primary students in their math learning, and the reconstruction of a human digestive system using recyclables that allows the audience "see" how food gets digested.

The openness in product making may seem uncomfortable for some students, but it is very much our desire for the students to place more emphasis on the process outcomes instead of using the product outcome as a marker of their performance.

Students with their flight-inspired products

STORY

05

Interdisciplinary Project Work

Stephanie Tu, Kat Quek, David Lim

Huamin Primary School

Singapore

Since 2017, the Design Thinking (DT) protocol was leveraged as a structured approach to ensure that students experience a creative process that helps design meaningful solutions to the challenge statements crafted by teachers.

These challenge statements are aligned to the school's Applied Learning Programme (focused on Education for Sustainable Development) and are often related to real-world themes such as water conservation, managing resources for survival, and appreciating diversity and culture.

Through the DT protocol, students would be able to develop self-directed learning through the different tenets such as – ownership of learning: where they articulate and demonstrate their learning by presentations and working in groups; extension of learning: where they learn beyond the curriculum and apply inventive and critical thinking; monitoring of their own learning: where they reflect and consolidate their learning.

To provide opportunities for innovation, the school embraces DT and its principles as a whole school approach to teaching and learning, as well as character building. DT is an innovation protocol that uses a design-specific process to match people's needs with solutions that are both feasible and viable.

1. The DT protocol which consists the Empathy, Ideate, and Prototype Stages, allows students to experience human centricity by applying skills and values like collaboration, showing compassion, putting oneself in the place of another, brainstorming, discussion, and decision-making.

2. DT empowers students, even the younger ones, to take charge of their own learning as they go about discussing the ideas during the Ideate Stage. After discussion, they need to make informed decisions by selecting the best idea based on the input derived during the Empathy Stage.

3. DT enables students to extend their learning during the Prototype Stage when students need to find out more in order to ensure that their final product created is sound and feasible.

4. DT also allows teachers to be immersed in the experience while creating the Integrated Project Work questions for the students. During the Empathy stage, teachers take into account how students might feel, need or want, and design challenge statements to cater to those aspects.

Primary 3 students working collaboratively on their IPW project

STORY

06

Physical Education at Home with Household Items

Jeff Chang Jin Peng

Huamin Primary School

Singapore

Before Circuit Breaker measures were implemented, the Ministry of Education rolled out Home Based Learning (HBL) for schools in preparation for school closure. It was a challenge for Physical Education (PE) lessons to be conducted synchronously during HBL as students may not have the required sports equipment at home. It was with this in mind that I set out to explore this challenge, using the design thinking approach, and asking: "How might I continue to help students meet the learning outcomes of PE during HBL?"

Empathise

I spoke to the students prior to school closure. They shared that they hope to continue having PE lessons during HBL, to pick up skills and have fun. From the school's end, we felt that it was important to keep students active and to ensure that learning continued to take place. I also found out that not all parents would be free to help their children with their learning at home.

Define

With the data collected, I refined the focus of the challenge to: "How might I help students to do PE at home with least assistance from parents, who are likely to be occupied with many other responsibilities (e.g. work, paying bills, buying of groceries)?"

Ideate

During the ideate phase, I came up with various possibilities like giving worksheets with learning instructions, using digital choice boards, and using interactive videos. I also explored using items at home, such as crushed wastepaper and rolled up socks as ball substitutes so that students can learn and practice at home without the need for actual equipment.

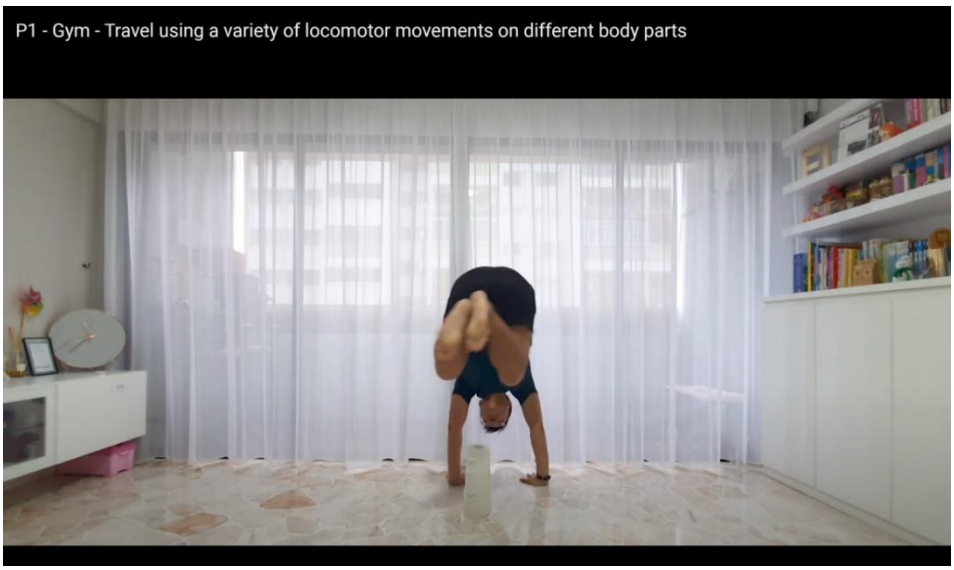
Prototype

I settled on using YouTube videos as it would be less challenging for some students in the lower primary levels, with lesser need to read. I first created a lesson on weight transfer and in that lesson, students would have to transfer their weight to the hands and bring their feet up and down in a controlled manner. Toilet paper was used as an obstacle to bring the feet over as the height can be increased gradually. I then shared the lesson with some friends in the fraternity to obtain feedback. With their feedback, I made some edits to the video.

Test

The lesson was assigned to the students and a survey was conducted with the students after that. From the survey, I realised that not all students had toilet paper at home. I would have to be even more flexible and mindful of the cultural differences for each home and find more common items to use instead. I should have also highlighted to students the need to look for alternative items as much as possible.

From the survey, I also realised other blind spots I had, such as that long videos with detailed explanation can be overwhelming for students. Equipped with the rich data and learning from the survey and feedback obtained, I continued to craft and refine more online lessons for my students.



Screenshot of the very first video I made on weight transfer

STORY

07

HB(Ltd) Edition Challenge

Faizlyana Ismail, Marselyn Prakarsah Jonatan, Shahroom Noor Mumeen

Princess Elizabeth Primary School

Singapore

Our Principal issued a challenge for Princess Elizabeth Primary School (PEPS) students at the onset of Full Home-Based Learning (FHBL). Putting three key personnel in charge, Subject Head (SH) Innovation, SH Info-Comm Technology (ICT), and ICT Aesthetics, the team crafted innovative strategies and oversaw the implementation of PEPS HB(LTD) Edition Challenge (Home-Based Learning/Limited Edition Challenge). The students were given meaningful tasks to occupy themselves gainfully throughout the period. Through the challenges, a platform was created for the family to bond and spend meaningful time together as they discussed and worked on the challenges together.

Thus, despite FHBL, the spirit of innovation and the culture maker education continued among the students. Students remained inquisitive, creative, and resilient when they worked on one or more challenges.

Entry for Art Challenge – use of 19 materials to create an artwork

The HB(Ltd) Ed. Challenge comprised three tasks for students to challenge themselves with at home:

1. **Maker Challenge**: to make the most delightful and functional indoor play area or toy, or to make the most functional Rube Goldberg Machine.
2. **COVID-19 (COol VIDeo) Challenge**: to make a creative video of not more than three minutes.
3. **C-19 Challenge (Creative About 19!)**: to think of creative ways to express the number '19', such as creating an artwork using 19 colours.

The team tapped into Student Learning Space (SLS) announcements, Form Teacher Guidance Period, and ASPIRE (Ambition, Self-discipline, Perseverance, Integrity, Respect and Empathy) moments, a special programme that runs during Snack Break, to promote the challenge actively to both students and teachers.

A total of 159 entries were received from students of all levels and classes. We also received entries from teachers who wanted to encourage their own students to participate.

Out of the 159 student entries, shortlisted as finalists were five entries from Junior Category, comprising Primary 1 to 3 students, and five entries from Senior Category, comprising Primary 4 to 6 students. The shortlisted entries were then showcased to the whole school using digital tools such as Padlet. Leveraging the poll function in SLS, all staff and students were involved in the selection of the best entries.

After the votes were collated, a judging panel selected the winners based on criteria such as originality, purpose and creativity. Using Google Meet, the team also organised and facilitated a live prize presentation for the winners. All shortlisted students received a certificate as well as a teacher-created plastic box of 'maker goods', materials that can be found in our school's makerspace, Innospace. The winners of each challenge each received book vouchers.

Entry for Maker Challenge – Pinball machine

STORY

08

Peaking in Professional Development

Ling Yuan

Edgefield Primary School

Singapore

In Edgefield Primary, transformation of education through design is through the use of Learning Circle (LC) as a vehicle to grow the capacity of staff, which in turn brings about more engaging Teaching and Learning (T&L) and student outcomes.

The current situation of professional development of staff remains mainly national. There is a paucity of training based on the school's needs. With data gathered from internal sources to evaluate the school's staff resource plans and external scans, such as new education initiatives, we initiated a comprehensive system design process for creating an effective learning environment for staff.

We mounted a disciplined inquiry through introspection and reflection to produce a comprehensive design of professional development for staff to bring about more engaging T&L. Our inquiry was guided by the values and aspirations of staff and it was based on carefully assembled knowledge bases. The purpose and meaning of growing staff through Professional Learning Teams (PLT) was then made explicit. Once the rationale was developed, boundaries for the design process were established.

PLT groups in discussion

Through the establishment of PLT, we created conditions that encouraged staff to form semi-autonomous groups to initiate innovative efforts and explore possibilities that improve T&L. We tapped into LC as the learning process and environment. This structure reflected the recognition of constant change and the need to respond systemically and creatively. Responsibility and accountability were also distributed among PLT, but all members were kept involved in a school-wide theme, so as to maintain a system point of view and attain a mutual perspective and purpose.

Typically, each learning cycle is celebrated through a learning fest where staff will have the chance to learn from the best practices of other departments. In time to come, this fest will go national, taking the form of online sharing and celebration of learning as a possible cluster community.

Our community is in its infancy with system design. We have learnt that it is necessary for our community and user designers to develop better readiness for the process and sustainability. Therefore, despite the progress made through various reform strategies and restructuring efforts in professional development for staff, we can continuously improve. One of which is to take into better consideration the readiness and capacity of staff, as this will affect the commitment and organisational capacity to run this. We should also better anchor our PLT through the principles of andragogy to create better buy-in from staff. The ideal situation is also to run and refine the professional development design as a description of the desired future system that guides designers, as we consider the implementation and feasibility issues.

As designers of education, we are mindful that transformation of education through design should aspire to create "the future of professional development of staff", rather than simply react to events and problems.

We strive for continuous improvement in developing enabling organisations, capable of embracing the new system in response to the pace of continuing change, while maintaining the inquiry and design process.

Sharing and learning among PLT

STORY

09

Student-Led Projects through Design Thinking in Huamin Primary School

Stephanie Tu, Siti Raudha, Myra Khoo, Angela Merci

Huamin Primary School

Singapore

Since 2017, Design Thinking (DT) was leveraged as a structured approach in our school to ensure that students experience a creative process that helps in developing meaningful solutions to issues that they are most concerned about, in their self-directed projects.

With DT, students take ownership of their learning by going through Empathy, Ideate, and Prototype Stages, which allow them to experience human centricity by applying skills and values like collaboration, showing compassion, putting oneself in the place of another, brainstorming, discussion and decision-making.

Prefects in Huamin applied the use of DT protocol in two main student-led projects: Teacher's Day Gift Project and Values in Education Project in 2019.

Teacher's Day gift project
To demonstrate appreciation to the teachers on Teacher's Day, exco-prefect students embarked on the Teacher's Day gift project with their receivers in mind.

At the empathy stage, exco-prefects carried out interviews with the teachers and gathered feedback on opinions of appreciation gifts. They then defined their challenge by sharing the data gathered from the interviews, came up with "How Might We" sentences, and voted for the challenge to undertake. At the ideation stage, the prefects brainstormed ideas based on the challenge defined, and later categorised their ideas into (Doable, Delightful & Long Shot) and voted for the best idea. During the prototype stage, prefects prototyped their voted ideas with craft materials.

They then presented their prototypes and gathered feedback on their ideas from the rest of the prefect community to refine it. Lastly, exco-prefects presented their ideas to the prefect committee and led the rest of the prefects to make the Teacher's Day gift.

Interview with teachers

Values in education project
At the empathy stage, prefects conducted a survey and discussed the project that they would be interested to embark on.

They then defined the challenge of organising games for the elderly from the Salvation Army Organisation. Prefects liaised with the organisation and prototyped games for the elderly. Following that, prefects carried out their Values in Action games with the elderly and improvised them on the spot.

Interacting with the Elderly through the games created

STORY

10

Using Design Thinking to Create Games for Juniors

Suresh Govindasamy, Amber Ng Yin Wai, Chia Chong Seng, Ong Pei Ling, Thian Jiahui, Jeff Chang Jin Peng

Huamin Primary School

Singapore

Our school has been conducting the LPSC (Lower Primary Sports Carnival) for a number of years. For LPSC, P5 students are tasked to create and host games (table/field games) using recycled materials and sports equipment for P1 to P4 students in celebration of Children's Day. This initiative also helps to reinforce the importance of recycling and contributing passionately to the school, which are aligned to our school vision.

In 2018, we decided to leverage the Design Thinking (DT) protocol for student involvement in school improvement. DT develops creative and critical thinking skills in our students, which are 21st century competencies. With that, the students were led through the process of DT by their Physical Education teachers to design games for the LPSC.

The process we went through with the students was:

- Introducing DT protocol to students
- Getting students to be in groups of four
- Assigning them a game type (table game/field game) to work on
- Assigning of game categories for a field games designer
- Defining the characteristics of a game
- Bringing students through the five stages of DT to design their respective games

During the Empathy stage, the P5 students had the opportunity to speak to the P1 and P2 students to gather information about the types of games they liked, why they liked those games, their experience with such games, and their perception of an ideal game. During the Prototype stage, P5 students got the younger students to try out the created games and to provide feedback. P5 students then reviewed the data collected and made refinements to their prototype games accordingly. For the Test stage, the P5 students set up their game booths on the actual day of the LPSC.

Based on observations and the feedback received for the LPSC, we noticed that the use of DT by the P5 students resulted in games of higher quality being created. P5 students were more engaged throughout the process of game creation and the P1 to P4 students were more engaged in participating in the games during the LPSC. Because of the positive outcomes, the school decided to continue with getting the future batches of P5s to use the DT protocol to design games for the LPSC.

P5 students with their booth set up and awaiting the arrival of their juniors

STORY

11

Changemakers@St. Hilda's Primary School

Jasjit Kaur, Jasmine David,
Andy Ng Ding Xuan

St. Hilda's Primary School

Singapore

Design Thinking for change

The current economy and society require individuals to not only have knowledge and skills but also a user-centric mindset that will guide solution-based methodologies such as Design Thinking. More than the "What to do?", innovators need to turn our attention to "Who do we do this for?", which will then inform "How do we do it?". However, the most important element that anchors all others is the value: "Why do we do this?". By adopting this approach of creating self-belief, it is possible to effect real change. In the words of David Kelley, one of the creators of Design Thinking, "Belief in your creative capacity lies at the heart of innovation." Thriving in this world and allowing this world to thrive means not just adopting Design Thinking, but using it to effect real change.

Our challenge in Primary School

To equip primary school students with the above slate of knowledge, skills, mindsets and values to thrive in our world seems like a tall order. Some questions beget: How will Design Thinking be carried out in a classroom of nine-year-olds? What does Design Thinking look like from the perspective of 10 to 12-year-olds? Is it even possible to apply meaningful Design Thinking learning experiences within a primary school environment?

Changemakers through play, passion, purpose

Our team leveraged something we know for sure primary school students are great at: PLAY!

When children are playing, failure rarely comes to mind because if the object of play works the first-time round, it is not fun anymore. Thus, in environments that encourage play, children would naturally take risks - the key to creativity, the fuel for design. Design Thinking also helps in developing empathy, which provides a sense of safety for all students to play and experiment while learning. With the concept of play underpinning our ideas, we initiated a set of progressive, school-wide programmes to allow our students to be Design Thinkers for a social cause: Hildan Changemakers.

Play: At the lower primary level, through unstructured recess play at our makerspace - Hildan Playscape, students play with resources like Strawbees, Quirkbots, Dashbots and Cubetto that expose them to fundamental making and coding skills. Continuing the spirit of free play from their pre-primary schools allows them to pick up these skills in a natural way.

Passion: At the middle primary level, the infusion of Design Thinking elements begins in Values in Action (VIA) programmes where students, already immersed within the culture of play, are able to create something that they are passionate about. These can be handmade toys for others using recyclables or a product to improve their classroom and school environment.

Primary 3 students sharing their upcycled game creations with the kindergartens in our community

Purpose: At the upper primary level where students may not have received as much exposure to design elements, Design Thinking is made more rigorous in not only VIA but in Art lessons and the Innovation Programme, where students work in teams to undergo the entire design process in the shoes of a real user.

Therefore, at St. Hilda's Primary School, the ***Play, Passion, Purpose*** progression allows primary school students to first be introduced to foundational aspects needed for design in a natural environment, followed by the deepening of this learning through student-centric experiences of creation, and finally, to apply all they have learnt to opportunities that empower them to be young changemakers who benefit the community through Design Thinking.

STORY

12

Changemakers@Home

Jasjit Kaur, Elizabeth Simon,
Jasmine David, Andy Ng Ding Xuan

St. Hilda's Primary School

Singapore

Disruption from COVID-19
When the Circuit Breaker in 2020 was enforced, lives and livelihoods all around us were disrupted. In schools, programmes that previously provided students with rich learning experiences were suddenly taken away, leaving a gaping void with no foresight of any return. Aside from the public health threat, the risk of a whole generation of students losing quality learning and the opportunities that come with it was all too real.

A crisis, an opportunity
At St. Hilda's Primary School, we adopt a progressive Play, Passion, Purpose approach to equip students with skills, mindsets, and values to become changemakers in society. During the start of Circuit Breaker, our team gave ourselves a challenge - to continue this mission of developing changemakers not just in school but from home. How would activities that involve play, activate passion, and give students purpose look like from home? How can these rich learning experiences once thought lost be recaptured amidst this pandemic?

Teachers as Design Thinkers
We would not be able to call ourselves teachers of Design Thinking if we ourselves did not adopt Design Thinking to solve these problems at hand. From sentiments of parents and students alike garnered through our check-ins during full Home-Based Learning (HBL), we were able to surface a core need: What can students and their families do during the May holidays when they were stuck at home? This was a complex and multi-layered question that went beyond fun and leisure. It involved not just the students, but their parents and home environments too. Through our Design Thinking process, we began to explore ways to develop activities that could keep children engaged while enabling parents who were working from home to focus on their work effectively. If we could develop activities that allowed children to bond with their parents, build family ties, consequently, collective mental health would be strengthened. Thus, our design challenge was an exciting and essential one.

An interdepartmental team developed a webpage entitled 'Hildan+', with the 'plus' signifying value-adding to oneself, family and society during this time of need. The visual representation of the 'plus' symbolises that every Hildan can make a positive impact.

Hildan+ webpage was created for students to value-add to the activities they could work on during the Circuit Breaker period

After prototyping the activities and testing them with teachers who put themselves in the shoes of students to determine age-appropriateness, we rolled out activities aligned with our Play, Passion, Purpose approach:

Play: We continued our makerspace programmes by curating sets of online activities aligned with our school values, where students had the autonomy to choose their play according to interest. To allow students to remain physically active, 'Minute to Win It' challenges were created as well.

Passion: For students to share their talents and passions, an 'Artsplosion Challenge' and 'St.Hilda's Got Talent' platforms were created to allow students to express themselves musically and visually. We received an overwhelming response from over 600 students who shared their talents with us on the Hildan+ platform. They also inspired their peers through their submissions, which helped increase the overall engagement. By understanding and empathising with our students, this user-centric platform was even able to cater to students who feared live performances and were reserved in showcasing their talents.

Purpose: More than just a slew of fun activities, we wanted our students to use this opportunity to make a real difference and to continue to be changemakers despite the lockdown. As such, a #keepSGgoing platform was created for students to encourage our essential and migrant workers.

Therefore, using Design Thinking, our team became changemakers ourselves by contributing to families under lockdown by creating activities that empowered students to continue to make a change to their learning, their families and our community.

STORY

13

The Art of Communication in the New Norm

Nur Ilyana Mohamed Anwar

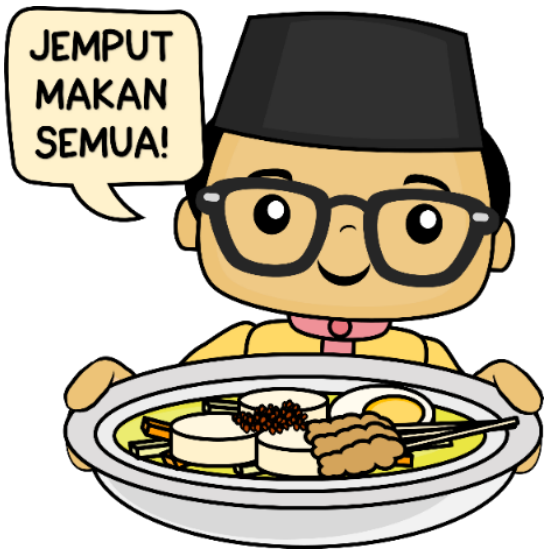
CHIJ Our Lady of the Nativity

Singapore

"What do we need to do in order to lead, care and inspire?" is a question that I ask myself every now and then, so that I never lose sight of the vision that we have as a fraternity. When the COVID-19 pandemic turned our once familiar world upside down within a span of just a few months, we faced the grand challenge of reimagining education, including what and how our children learn.

How do we continue to lead, care, and inspire amidst the loss of human interaction? I believe social distancing does not necessarily equate to isolation; it is about taking time to foster connections with others, in novel ways.

Showing care and doing our part for the community is a large part of our mission as a school and personally, I have always believed that it is not about monumental gestures but simple small actions or even random acts of kindness that would make a meaningful difference to others. During the Circuit Breaker period, I was inspired to design a series of encouragement stickers that all my colleagues could use when marking digital worksheets as well as in the virtual interactions with their students. I also used the app Sticker.ly which was recommended by my colleague to turn my designs into WhatsApp stickers.



Hari Raya WhatsApp sticker example

And because stickers are one of the fastest growing ways people communicate on WhatsApp, with billions sent every day, my designs were very much appreciated by everyone as the cheery designs as well as the encouraging puns brought smiles and perhaps even hope for many during the challenging times. I have always loved design and for my designs to make even a slight difference to the lives of others, it makes work more purposeful. Amazing things happen when passion meets purpose.

The stickers also became a source of inspiration to other educators in the fraternity. I created a YouTube video showing how I used Microsoft PowerPoint to design the stickers and shared it in different online communities with different educators. Every now and then, I will get a private message from a colleague from the fraternity sharing how they were inspired by my video to design and create their own cartoon characters and stickers.

I enjoyed designing the stickers so much that I went on to design some for Hari Raya and National Day. It brings me so much joy that even though as a fraternity we were physically apart, the presence and the support from these virtual communities enabled us to continue to inspire and be inspired, to learn, and to grow.

National Day WhatsApp sticker example

STORY

14

MGS Stay Creative! Story

Sophia Natasha Wei Junhao,
Tarika Cai Deyu

Methodist Girls' School

Singapore

Stay Home, Stay Safe, Stay curious...MGS Stay Creative! - a project that the school embarked on to foster the spirit of creativity, joy of learning, and a sense of togetherness despite school closures.

The challenge at hand was clear. Without the routine of school and opportunities for face-to-face interaction, students could end up feeling isolated and disengaged in learning. How could the school experience be redesigned under remote learning conditions and safe distancing requirements?

Instead of implementing top-down programmes and initiatives, we decided to allow the end-users (i.e., students) themselves to brainstorm ideas and co-create innovative solutions. This allowed students to exercise not just their creativity but also empathy for their peers. The *MGS Stay Creative!* Project attracted 282 submissions from 196 students and seven staff members. Submissions ranged from dances to baking to paper origami, and showcased all kinds of skills and talents.

Promoting school and house spirit

In an effort to support their peers amid the crisis and promote optimism and positive energy, the House Leaders (HLs) and Co-Curricular Activities leaders created videos that taught dance, art, brush calligraphy, and cooking (with teachers as special guests)!

Student leaders demonstrated initiative and leadership by being sensitive to the different age groups in school and successfully leveraged this platform to promote House spirit across the school even though no face-to-face games or events could be held.

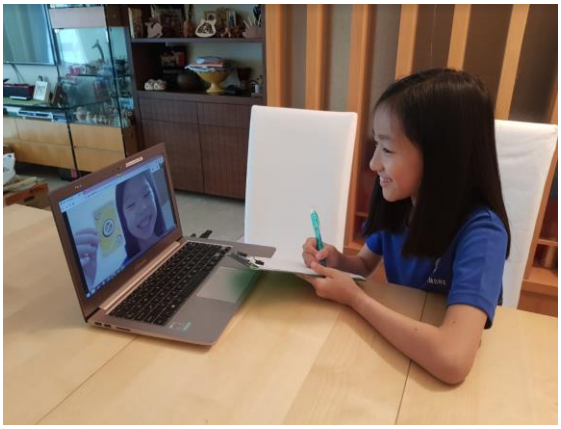
One of the activities in the "House Hour Challenge" led by the HLs was a Tik Tok Dance where the girls danced the choreography to the music "Sunday Best" by Surfaces

Creating a joyful and inviting (online) environment

The Prefects also got in on the action by initiating fancy dress-up challenges to brighten up Form class check-ins in Google Meet and Zoom. The circuit breaker certainly became less gloomy when the element of joy and surprise was incorporated into these routine online check-ins.

Finding meaningful and authentic expression through creative pursuits

Art and other creative outlets such as journaling, painting, or baking, provided meaningful forms of introspection and expression for students as they grappled with these unprecedented times. In addition, it allowed students to make meaningful connections across subject disciplines. Creativity thrived under these conditions and became a strong driver for digital transformation as students learned new skills and showcased them virtually.



Even though social distancing was mandatory, the Primary girls found new ways to connect with their friends and learnt to play Uno via Google Meet

Disconnect to reconnect

The circuit breaker period also deepened familial bonds. Students took the initiative to co-create content with their family members. One of our students even published an e-book with her parents based on her reflection during this pandemic. Despite the constraints, our students demonstrated perseverance, creativity, and an enthusiasm for life and learning. This was a powerful reminder that education is not hampered by space and place. With the right environment and enablers, education can be redesigned and reimagined!

STORY 15

The Colours of Life

Mehtap Kiliç, Medine Dilek, Hamza Yiğit Çıtak, Emir Sefa Ok, Zeynep Ecrin Kayaalp

Şehit Polis Volkan Sabaz İlkokulu

Turkey

STORY 16

The Art of Legumes

Mehtap Kiliç, Cihan Çınar Bozkurt, Elif Yağmur Çaltepe, Emir Sefa Ok, Eslem Azra Okay, Ömer Faruk Candan, Esila ÖNDER, İshak Emir Yaşa, Zeynep Ecrin Kayaalp

Şehit Polis Volkan Sabaz İlkokulu

Turkey

The Colours of Life

During the COVID-19 pandemic, my students could not attend school. Students and teachers missed interacting with one other. One day, when we connected through Zoom, my student asked me: "Teacher, we are always at home, so what do stray animals do?".

Student building animal shelter

During the pandemic, stray animals, usually fed by people in the community, were neglected. Stray animals share the same world with us and are reliant on us for love and care. My students said that they wanted to build a small shelter for stray animals. We designed one from household waste. All we needed were a box and imagination. We did not forget to put food and water next to the shelters we built in this hot weather. This demonstrated to the children about valuing and caring for all living things we share our world with.

Completed animal shelter

The Art of Legumes

We connected with our students during the COVID-19 pandemic through online platforms. It is easier to connect with students through face-to-face teaching, as it is more active. It allows teachers to interact freely with the students and engage them with games and activities. Such engagement is difficult in online education, as you use a computer as a medium to interact. It is difficult to keep students' attention for a long time virtually. We addressed this issue by planning different activities for students such as creating artistic works based on healthy nutrition. Students researched the nutrition pyramid. They shared their research with us. They also made various artwork with legumes. This helped them to build their knowledge in nutrition, as well as exercise their creativity.

Artwork with legumes

Artwork with legumes

Secondary Level

"Children are born with the capacity for innovation. Every child needs to feel that they can DO IT!"

- Monica De Silva-Lim
Director
Rosebrook Development Centre

"Change happens by Design, not by chance!"

- Madhu Verma
Founder & Director
Design for Change Singapore

STORY

17

Rolljak – Gamifying Design

Tat Leong Seah, Jia Xuan Lim,
Aditya Batura

Codomo

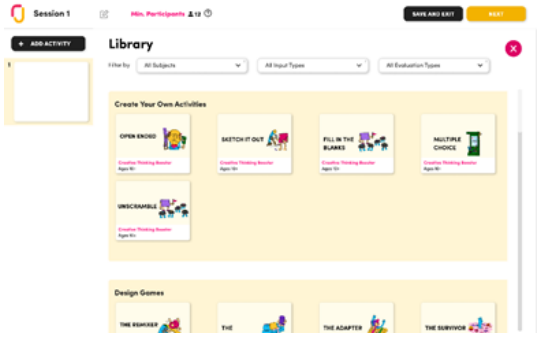
Singapore

Who are we?
Codomo started as an educational training and consultancy startup with the aim of liberating innovative minds. As firm believers in Design Innovation, we wish to inculcate these skills into learners, regardless of age, skillsets, or background.

How did Rolljak start?
Rolljak started out as a creativity warm-up exercise that we designed on paper and utilised for participants in our own Design Thinking workshops. The activity was simple: pick two random objects and sketch out a mash-up in 90 seconds. It was well-received by students and professionals as it was fun and creatively challenging.

We saw a need to digitise this activity when we had to engage with hundreds of audience members during events, hackathons and designathons. There had to be a scalable way to tickle the creativity of the masses and teach them design methods in a fun and engaging way. Moreover, in the post-pandemic world, we saw a clear need to unlock the potential of conducting Design Thinking online effectively with little to no barriers to entry regardless of audience size. It got us thinking: How can we inject the essence of innovation into mainstream academia and audience engagement? Our answer was Rolljak.

Rolljak is on a mission to be the most multi-purpose and trusted engagement tool for 21st-century learning - embodying collaboration, communication, creativity and critical thinking. Rolljak goes beyond quizzing or Design Thinking, and boasts an expansive set of interactive activities for any classroom across any subject, be it interactive quizzes or sparking deep learning through collaboration, peer evaluation and teamwork.



Some inbuilt design games for educators to add to their sessions

How does it work?
Create custom activities or choose an activity from our library in any subject area. Students will then individually input their responses by sketching, typing or selecting answers. If collaboration mode is enabled, another user's response will appear on their screen allowing them to build upon it. It is not always about getting the answers right; build critical thinking with peer evaluation modes or use our cutting-edge automated marking system to help them evaluate open-ended responses. With a single click, all the responses can be exported, enabling fuss-free progression tracking.

We have since tested many versions of our prototypes with students, working professionals, and top executives to make sure it is applicable in a variety of contexts. Our vision for Rolljak is to make design education fun and accessible for everyone.

Workshop at CHIJ St Nicholas Girls' School

STORY

18

Transmedia Storytelling: Augmented Reality in Arts Education

Jessica Cheng

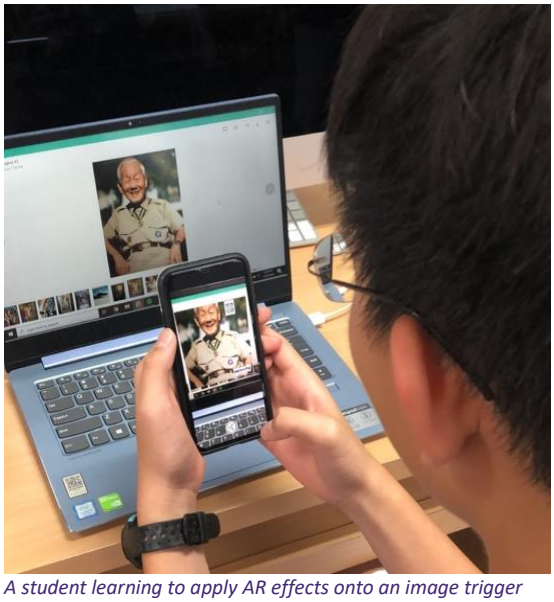
St. Joseph's Institution

Singapore

Have you tried to catch Pokémon or used quirky filters with your phone's front camera on Tik Tok in recent years? That is Augmented Reality (AR), and it has more far-reaching areas of potential use. AR expands our physical world by adding layers of digital information onto it. Unlike Virtual Reality (VR), it does not replace the real environment with a virtual one but appears in direct view of our existing environment, and adds sounds, videos and graphics to it.

Numerous student artworks hang proudly on the whitewashed walls of our school corridors. Passing them, I wondered "How can we honour these artworks? How can the school transform into a living museum to share the everyday narratives from students who walk these corridors?"

This thought seeded into a collaborative initiative to transform these corridors with my students. We sprung into a conversation, explored a few exhibitions and the idea of using AR emerged unsurprisingly from their rich experiences with new-age digital games. The potential combination of new narratives with artworks of graduated alumni through the use of AR was an exciting yet intimidating venture. First, there were few local art museums that modelled the use of AR. Second, most AR tools are inaccessible due to their complexity and dedication to professional use. We quickly learned that we had to seek an alternative approach and learn from scratch.



A student learning to apply AR effects onto an image trigger using various applications

After reaching out to various AR companies to consult them on tools for our initiative, we evaluated the AR-making tools. Fortunately, Vienna-based company, Artivive, provided a free platform without the need for extensive coding knowledge and my students dived straight into synthesising the AR triggers by self-learning from the tutorials available on their site. As first-time coders, there were many failed attempts when the AR effects could not align or animate. However, they remained resilient and resolved the glitches independently through trial and error and learning from online forums. I learned so much about synthesising AR effects from them.

Later, my students transformed my simple idea to bring the artworks alive through the use of visual effects and turned it into a fun 'treasure hunt'! They considered what visitors to the school would be curious about and planned a route within the campus, through which the sequence of selected works would 'speak' and tell the story of the school life they wish to share with the community.

Students testing each other's AR design by scanning the artworks along corridors

Although the learning curve was very steep for my students and I, and our initiative was halted by the recent COVID-19 pandemic, we firmly believe that introducing the use of an AR tool will engage our school community and visitors to rethink the narratives of artworks around them and reproduce new possibilities for interpretation in and out of classrooms.

We hope that our initiative can empower others to reshape their experiences along their school corridors and employ the use of technology to tell stories and cultivate new ways of seeing and learning.

STORY

19

Curriculum by Design through Play

Pennie Ong, Michael Poh,
Sundari Lakshmanan, Colin Toh,
Angelo Anthony Agujo, Mansor Bin Norani

St. Joseph's Institution

Singapore

In 2018, my team was tasked to start a programme that would challenge the lower secondary students in digital literacy, making skills as well as being engaged in authentic learning projects. The initial team comprised two Computer Studies teachers, a Visual Arts teacher, a Maths teacher, a Science teacher and a Google Trainer.

The challenges/concerns were:

- Different levels of student competencies in digital literacy and making skills (Direct School Admission Innovation students).
- Different readiness and competencies of the team as it was made up of different academic disciplines.
- Infusing play and self-directedness in the learning approach for the students.
- Leveraging technology and Google platforms for teaching and learning.
- Authentic learning approaches.

Our goal is to nurture the students to be creators, innovators, and producers of knowledge with soft skills incorporated in the process of learning. Varied online learning opportunities and multi-disciplinary platforms were created to allow students to learn through Play, Create and perhaps Innovate.

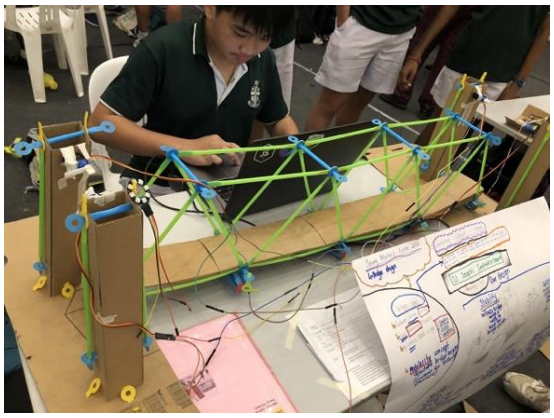
Writing the curriculum with the nurturing of soft skills in mind, the teaching and learning approach focuses on self-management skills (organisation, affective skills, reflection), communication skills, collaborative skills, and thinking skills (critical thinking, creative thinking, and transfer).

The team used Design Thinking to come up with a framework that is divided into four main strands: Modelling, Control, Storytelling, Systems. There are modules under each strand for students to choose from.

An online google site with materials written by the team was set up for students to engage in self-directed online learning during lesson time. Students select their skill strands and achievement levels from the learning menus based on their learning interests and needs. Materials are provided in the studio and mentors are always around for guidance. Attainment badges (novice, initiate, adept) are also awarded to the students to recognise their competencies in various skill strands. Teachers are now mentors facilitating learning instead of a typical classroom setting where students are receivers of knowledge instead of creators of learning.

Self-directed learning using Google Platforms; students are learning coding and Micro-Controllers

Students also learn to be the Agents of Change by innovating in service to the larger community and in the Year 2 curriculum. The Innomakers Programme's tagline is "Becoming Innovators for Others". Using the Creative Problem-Solving Framework by Donald J. Trefinnger and Design Thinking, students embark on authentic design challenges that focus on United Nations Sustainable Development Goals (SDG). They will apply the skillsets acquired in Year 1 in problem-solving by building prototypes for the solution.



James Chen (Year 2) trying to elevate the bridge prototype in a scenario of flooding in Singapore due to rising sea levels

Curriculum by design through play

In PLAY, activities are student-centred, the joy of learning and freedom of choice are essential in crafting the curriculum. The badge attainment is like a computer game with each level demanding a higher level of competencies. It is purely motivational with no academic implications.

In DESIGN, the teaching and learning approach is focused on self-directedness and play. The design challenges using the SDG provide the context for authentic learning and scope for innovative design solution.

STORY

20

Building Confidence through Online Exhibitions for Non-Technical Students

Yap Hock Heng

Fairfield Methodist Secondary School

Singapore

Non-Technical (NT) students generally have lower levels of self-confidence and are often critical of their own abilities. Throughout their lives, they have been frequently told that they are not good enough or that they will not succeed.

Schools are a safe environment that can help to build up their confidence. School projects can be designed to allow these students to start tasting small successes and build up the momentum for bigger successes. Some of these students may not excel academically but have an eye for design. My project aimed to provide an opportunity to showcase these students' successes to the outside world through the internet.

Process

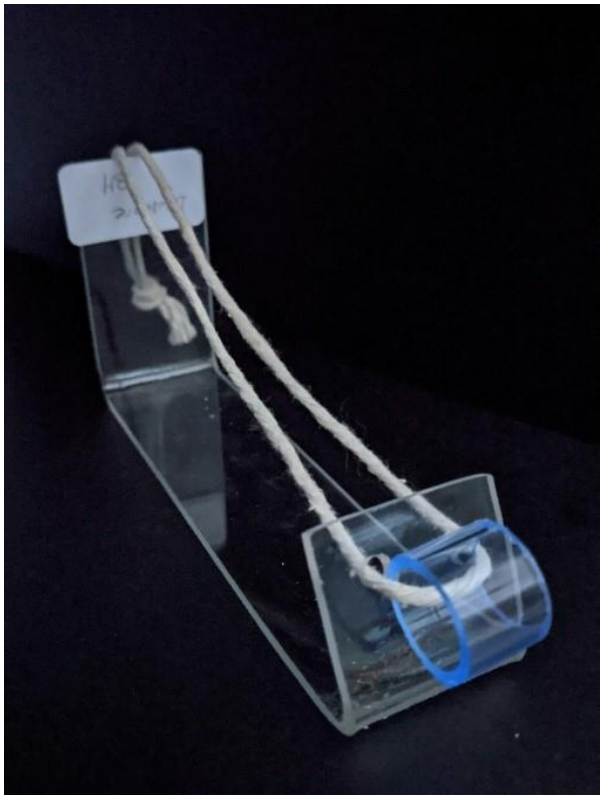
Three NT students were tasked to design a holder using a given strip of acrylic. They were only limited by the size and material given to them to push their creativity. There was no journal to mark, unlike academically driven projects in school. The only marking done was on the product that they made. This freed them from their academic limitations, their inability to draw, and their dislike for written work. Students started by exploring with paper models and then moved on to making the actual prototype. The design task was kept simple deliberately to ensure the students were able to complete it and taste success.

Pencil holder

The finished prototypes were then photographed and uploaded to the online exhibition space – Artsteps. A physical exhibition limits the audience to the teachers and students in the school. By utilising online exhibition space, students' works can be shown to a wider audience. In this case, links to the online exhibition were emailed to students and their parents. They were free to share the exhibition and they could be proud of their works.

Outcomes

Students got to see their works "exhibited" to the world. This helped in building up their confidence and imbue in them the belief that they could also "make it" and have an exhibition. The photography was done by adults to ensure that the products were well represented. This helped to convince the students that their works were worthy and motivated them to share about the exhibition. As the project was based on a physical prototype, the students were more willing to experiment, and this helped to motivate them to try with their hands. Although the designs may look simple, the project provided the students with a great sense of achievement.



Necklace holder

STORY

21

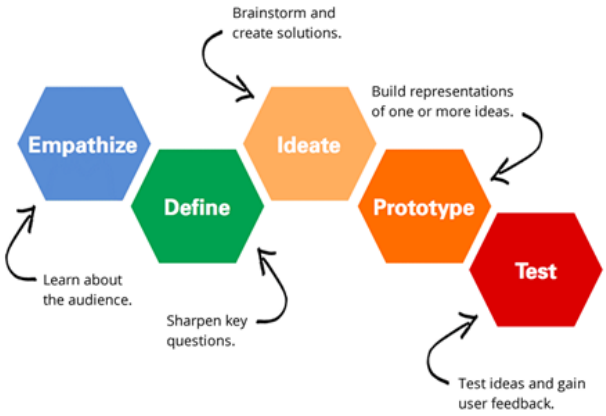
A Decade of Design-Centric Learning Experiences in the School of Science and Technology: A Snapshot from 2010-2020

Mohamed Irfan Darian

School of Science and Technology

Singapore

Being a young school that started only in 2010, elements of Design Thinking (DT) was leveraged as part of the curriculum in the School of Science and Technology, Singapore (SST) and only by the Art, Design, Media, and Technology (ADMT) department initially. This was in line with the nature of the ADMT's content area, being offered only to the lower secondary classes (Grades 7 and 8), and primarily being more focused in the areas of innovation, design, creativity, and developing students' competency in producing quality digital artifacts.



The Design Thinking framework

2017 was a tipping point year for the department, as we reviewed our programmes to see how we could continue to provide an integrated learning experience for the students. As the department explored working relationships with other external organisations, we were also cognizant about synergising our efforts within the school, and with other departments, and the idea of a ChangeMaker (CM) Programme was born.

Developed as a programme that unified the curriculum of the ADMT, the ICT (Information and Communication Technology), and the I&E (Innovation & Entrepreneurship) departments, it also served as an evolutionary leap in looking at how far a school could go in experimenting with an 'integrated curriculum' experience, and not just about merely the 'integration of curricula'.

The initial part of the programme aimed to leverage Design Thinking, but the execution of the programme was done with a strategic intent of first acknowledging that each child is different in terms of their abilities and preferences, and second, in getting them to form project teams that have complementary skillsets. Hence, after the students have identified the roles that best fit them, they would undergo specific training in that particular subject matter during their lessons, whilst concurrently knowing that their diverse expertise will converge and culminate towards a final makeathon-type event challenge. Organised over a period of three days and one night at the end of Term 4, the signature cohort event aimed to provide students with a valuable and significant learning experience in seeing the application of these content areas into a highly compressed signature event.

A video that best describes what the CM Programme is about can be viewed for added clarity: SST ChangeMakers Programme.

Besides looking at the integrated curriculum, the team also undertook the task of reviewing the DT framework, bearing in mind how an updated one, if reimagined, must adhere or have a sense of familiarity with the current model, for ease of curriculum familiarity and continuity. A redesigned framework was created, to take into account the offerings in the various content areas as well as to enhance the students' learning experiences, especially after the testing and evaluation stages in the original DT framework.

The ChangeMakers process

Heavier emphasis was placed on getting students to understand the issues on hand and their audiences. An extension of the students' learning experiences was also done beyond the testing stage, to ensure that the end goal is to get students to develop ideas that are acceptable and marketable, rather than something that is merely done as a curriculum exercise to tick off a learning experience checklist of sorts!

I must say that personally and professionally, reaching this stage of the development of this programme has not been without its fair share of challenges. But where there are challenges, there are also opportunities! As the team continues to refine the learning experiences of the students and the curriculum itself, what is certain is the continued evolution of the design-learning experiences of the SST students.

STORY

22

The Board Game Project

Michelle Kan

Anderson Secondary School

Singapore

AMK HERITAGE TRAIL:

THE BOARD GAME PROJECT

When I first joined the Ministry of Education (MOE), it took a while to find my identity as an ex-communications designer turned art educator as art has always been perceived as fine/performing arts rather than applied arts. It was also discouraging to see the students around me being unable to link the learning from subjects with one another due to a focus purely on content knowledge. During my own lessons, I try to draw links with what they learn in other subjects, hoping that they remember and broaden their perspective as to what Art and Design are. Design is especially easier for them to relate to as they are exposed to it more compared to the fine arts.

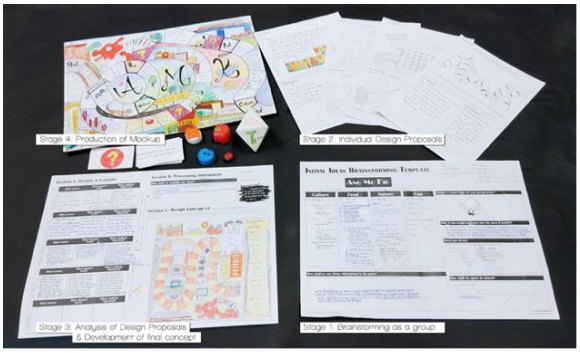
The Board Game project was conceived due to my disappointment from observing a lack of empathy in our youths, caring only about numbers and grades, and a sense of self-centeredness where they rarely thought of others. Thus, I decided to leverage the Sec 2 Ang Mo Kio Heritage trail at the beginning of the year to develop a project that would hopefully help them learn how to understand others and create a product that would benefit them. In drafting the design brief for the project, there were a few problems I hoped to address.

- Slackers in group work and unfair assessment
- Independent learning and creative problem solving
- Understanding and empathising with the target audience
- Create as authentic an experience as possible, emulating the process of designing a product/experience

My role was the facilitator and advisor. To achieve this, I broke the project up into various stages that took them through the whole design process from research to the final sales pitch. To address the problems of slackers and unfair assessment, each member would be given a theme to oversee, and individual components would have a higher weightage compared to the group components. To help them collaborate, I designed templates with key questions that would guide their thinking process. To teach them empathy, they were tasked with designing with a target audience in mind to encourage them to think about how their completed product will cater to that audience.

To create that authentic design process, in addition to the design proposals, once they had completed their mock-up, they would need to pitch their idea to an invited teacher posing as the client, to convince them that their product addressed the given brief in the most effective way, as well as through evaluation of each other's product.

The project itself is constantly evolving as I tweak it every two years to try and improve the process. Moving forward, I hope to expand this project to formally incorporate other subjects so students can explicitly see that what they learn contributes to developing ideas and solutions through the process of Design and Design Education.



Part of the templates prepared for the students

STORY

23

Transforming the Art of Storytelling for Under-Privileged Children in the Community

Muhammad Nazir Bin Amir

Academy of Singapore Teachers

Singapore

The 'Story Telling Project' was developed when my Secondary Two students (averaging 14 years old) and I were on a volunteer trip to MINDS (Movement for the Intellectually Disabled of Singapore). We passed by a pre-school class and noticed the teachers struggling to engage young children during a storytelling lesson, despite using picture cards, media-clips and puppets as teaching aids.

Teaching in MINDS, orphanages and pre-schools

This became a design opportunity for my students and I to conceptualise a storytelling project for the young children. We came up with the idea to design and make science-based toys that could make fairy tales and nursery rhymes come alive. This approach motivated my students to immerse themselves in a problem-solving activity that led to them brainstorming ideas to design and make toys through the creative use of scientific principles, all done during science lessons. Through the project, my students were able to showcase their creativity through their toy designs for stories such as 'Rapunzel', 'Red Riding Hood' and 'Humpty Dumpty'.

Teaching teachers and parents of pre-school children

This project also created an opportunity for me to collaborate with other subject teachers. This enabled our students to gain knowledge and skills from across subjects to pursue the design task. Students learnt language, narration, and dramatisation skills in English lessons so that they could tell their stories well; coloured their toys from skills gathered in Art lessons; and prepared presentation slides in Computer Applications lessons so that they can enhance the presentation of their stories – all done during subject curricula hours in school.

School values were consciously reinforced throughout this project:

Students learnt to respect themselves and others; they were trained to be resourceful by making use of recycled materials to fabricate their toys; they were taught to have a sense of responsibility by caring for their own design portfolios and toys.

They also learnt important lessons about resilience – there were many occasions when they were not able to get their prototypes working well in the initial stages but were encouraged not to give up easily.

The pre-school children and teachers in MINDS enjoyed our students' presentation of fairy tale stories and nursery rhymes through their self-made toy inventions and thanked them for providing an enjoyable learning experience.

This project spanned over 10 years, reaching out to many more underprivileged children in orphanages, intellectually impaired children, and children in pre-schools. Through invitations by the Early Childhood Development Agency, our students and teachers conducted professional development workshops for pre-school teachers, guiding them to make similar science-based toys for children in their own schools, as well as STEAM (Science, Technology, Engineering, Arts & Mathematics) workshops for parents of pre-school children.

STORY

24

Fostering Student Motivation and Engagement through an Interdisciplinary Hands-on-Minds-On-Hearts-On STEAM Project-based Curriculum

Muhammad Nazir Bin Amir

Academy of Singapore Teachers

Singapore

When I first started teaching, my fellow science educators and I struggled at engaging several classes of lower secondary students (averaging 13 to 14 years old). These students happened to be in an academically low achieving group in the school, exhibiting behavioural issues - several easily distracted, others disruptive and a handful exhibiting boredom even through hands-on experiments which we initially thought would have engaged them. While we acknowledge that many of them may have social, family, financial issues and that they may come from home environments that are not very conducive for learning, what we found interesting was that when we asked them why they were unmotivated to learn through the hands-on lessons, they did not always attribute the reasons to their homes, families or financial situations. Rather, they indicated that the lessons were boring! We saw this issue as a design opportunity to research and find ways to improve our pedagogical practices in view of getting our students to be more motivated in learning.

This led us to collaborate with teachers across the different subjects to design and develop a lower secondary interdisciplinary STEAM (Science, Technology, Engineering, Arts & Mathematics) project-based curriculum for these classes. In this curriculum, teachers co-ordinate to teach content across the different subjects using design-and-make projects that are not just hands-on but also ones that appeal to our students' interests – projects that are 'hands-on-minds-on-hearts-on'.

An example of an interdisciplinary project developed by teachers and students in the teaching and learning of Science, Mathematics, Design & Technology and Computer Applications

The teaching of content through the projects was carried out during the different subject curricula hours. It took us about 15 years (2002 – 2016) to develop and refine the curriculum. In designing the curriculum, we ensured that the content to be taught through these projects had to be relevant to the syllabi of different subjects, appealing and personal to our students (through contexts that are relatable to them).

We found that the interdisciplinary teaching through these highly appealing projects contributed to our students' intrinsic motivation and instilled in them a sense of enjoyment, appreciation, and purpose to learn content across the different subjects.

Through these projects, students were also able to showcase their creativity and inventiveness by coming up with toy inventions that benefitted the school and the larger community. This led to the students developing a sense of self-worth and kindled other teachers' beliefs in their academic and inventive potential. In addition, the benefits of fostering the joy of learning to motivate and engage students through the STEAM curriculum were not only for the students but also for the teachers. As teachers teaching different subjects, we were motivated to collaborate and carry out interdisciplinary STEAM teaching through the enjoyable projects as we could see how such an approach enthused our students to develop a love for learning.

Students experiencing the 'Joy of Learning' through STEAM projects that appeal to them

STORY

25

Problem to No Problem: An Empathetic Approach to Creative Problem Solving

Avani Patel, Sreya Majumdar

TinkerLabs

India

"My mother's feet are always cracked. It is very painful for her. She has a lot of work: washing clothes, cleaning the courtyard outside, hence in the freezing Delhi winter, the dryness makes it worse. She doesn't get any time to tend to her cracked heels."

This was one of the workshop challenges to the students, to help reduce the physical stress and pain experienced by women while doing household chores. Initial observations started with joint or back pains because women from this community in India lift heavy objects, but soon we had observations of more precise problem areas, like a mother's cracked heels. Empathising with the user brought them closer to the solution, an acupressure slipper that oozes gentle quantities of cream to keep the feet moist and comfortable. The cream was dispensed from a refillable slot, camouflaged at the back of the slippers. A moment of pride for the students and us.

Girls ideating on the details of the design

These Design Thinking workshops were a part of "EBCD – Everybody can Change with Design", an initiative, aimed at sensitising and empowering students from government-funded schools in New Delhi, India, to adopt an empathetic approach to problem finding and an experimental approach to problem-solving. The pedagogy was designed keeping in mind:

"How might we redesign our teaching approach so that it helps sensitise and empower underprivileged school children?"

Girls from one of the five schools we conducted EBCD workshops in, displaying their prototypes

Evoking empathy using their surroundings and stories as the base for learning was our motivation. We wanted to emphasise on why 'empathy' is the foundation of problem-solving and stepping into someone's shoes helps one with innovation. The programme design was inspired by their immediate environment, but not directly impacting them, so that they can relate, can observe, and interact with the environment and its people, helping them evoke more empathy.

One of the students shared how he helped a friend using empathy:

"I have a friend who gets epileptic attacks frequently. Due to this, his parents do not allow him to go out alone, hang out with friends. I felt bad for him and wanted to help him. I began by spending time with him and observing what triggers the attacks. I found that high noise levels, chaos, people shouting, and talking loudly to him resulted in the attacks. This understanding led me to ensure that I took him away every time such circumstances arose. This decreased the frequency of his attacks. I shared this with his family and our friends, and thereafter they began to be mindful of this."

The workshop challenges revolved around the areas and people they interact with regularly. The students' outputs were varied, from product redesign to simple system interventions, empathy was universal. There was a visible change in mindset, they had started opening up to the possibilities of lateral thinking. From jumping to superficial solutions at sight, they are now focused on enquiring about the problem first. The perspectives were transitioning as the user has become more important than the solution. They were now developing an empathic mindset and a sense of empowerment of honing a life skill.

STORY

26

Unleash Your Creativity: Adapting to COVID-19

Avani Patel

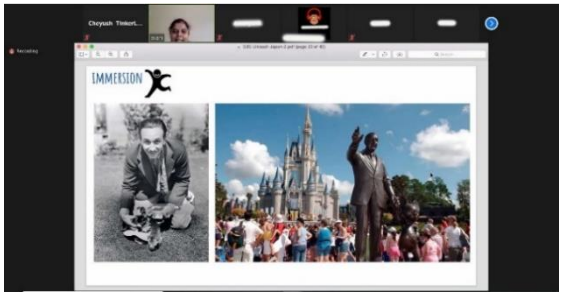
TinkerLabs

India

COVID-19 has united the world in its misery. With a 180-degree flip on how we lived, a lot of scenarios have had to be re-examined. This has impacted our movements, interactions and emotional well-being. Work and school from home are the new norms.

Lockdowns and social distancing have been especially taxing for children confined in homes. While schools are are running the curriculum digitally, holidays and day-offs can get more challenging in keeping kids engaged.

With "Unleash Your Creativity: A remote Design Thinking experiential workshop", we aimed to add meaningful skills that help learners stay in touch with their socio-emotional self and evoke empathy despite these constraints.



Workshop in session

Adapting to the digital space, where interaction is limited to sound and sight, and movement is confined to a chair, we wanted to recreate our physical experience online. Making the whole approach conversational and participatory where asking questions was encouraged, opinions were welcomed, and there was no right or wrong answer. Cultural, historical, and nature-inspired stories were used to illustrate how concepts and ideas can be borne out of references from their existing context. For example, we introduced the concept of biomimicry that borrows elements and processes of nature and translates these into the functions of our everyday objects.

Keeping in mind the constraints due to the pandemic, the workshop challenges were designed to enable independent problem solving and evoke empathy to help themselves and their dear ones cope with current circumstances.

"*How might we tackle boredom, without relying on digital media at home*", was one such challenge that resulted in interesting insights and some delightful solutions. One of the participants came up with an idea called "The mood jar". She first identified four reasons that caused her boredom: feeling unproductive, lack of motivation, sadness and tiredness. To counter these, she allocated a colour to each reason, then she wrote solutions in folded pieces of paper in corresponding colours. Whenever someone gets bored, they can pick a folded note from the jar, in the colour associated with the reason and use the prompt to combat boredom. For example, if blue is the colour for "sadness", the blue notes will have solutions to overcome sadness. So when one is bored due to sadness, they pick a blue note from the jar and act on the solution written, like "call a loved one", thus helping them cheer up.

This was an opportunity for students to make the most of their resources and surroundings. The kids felt a sense of achievement as they were problem solvers. "My problems - my solutions" gave them a strong sense of creative independence.

Self-awareness and empathy led to solutions that were frugal, yet impactful, which particularly helped kids to see things from a human-centred perspective rather than loosely using technology as a base for all solutions.

Excited and ready to take on the new world, students were equipped with skills of self-awareness, empathy and imagination. Our success is knowing that they continue to apply these skills, making 'COVID-19 times' better for themselves and others.

STORY

27

INNOWIZ & ONO, Accessible Tools for Teachers and Students to Explore New Challenges

Annelies Depaepe, Lisa Vromman

HOWEST Industrial Design Center

Belgium

In recent years, Flemish secondary education has focused more on project-based learning, competence-based evaluation, teamwork, and co-creation with companies and organisations. However, this new approach is not obvious to teachers. Therefore, HOWEST Industrial Design Center (IDC) decided in 2016 to translate its experience in training designers into accessible tools, like INNOWIZ and ONO, for teachers and their students to explore these new challenges.

INNOWIZ for education: A tool for short design sprints

INNOWIZ (Innovation Wizard) is a creative method that helps chaotic people find structure and deliver on time, and helps structured people to experiment more and spice up their ideas. The method and the supporting tools are designed to enable a personal approach and use.

Based on the four steps in the INNOWIZ methodology – (1) problem definition, (2) idea generation, (3) idea selection, (4) idea communication – the INNOWIZ template set provides 12 templates in each step to support students in getting started with a creative approach in their project.

With minimal explanation and maximum freedom, young adults learn how to find solutions through an iterative approach. It helps them to get started as problem solvers and become familiar with open projects and wicked problems. It structures and labels all the actions that trained designers spontaneously do when being creative.

INNOWIZ steps

ONO: A tool for planning and preparing project work

ONO stands for 'Onderzoek en Ontwerp' (Dutch) and can be translated as 'learning through research and design'. The goal of ONO is to support a group of teachers to think about project work, facilitate discussion on teaching formats, while having the freedom to operate on their students.

ONO in use

ONO enables multidisciplinary teacher teams to communicate in an efficient and effective way. Teachers are forced to think beyond the standard ways of instructing a course and given the possibility to transfer more responsibility to the students working on their own project.

The teachers appreciate the hands-on application and the fact that it is easy to get started. The tools are open for customisation which lets different stakeholders use the tools as they prefer: the type of challenge, the composition of the team, or the topic related to the challenge have no (negative) impact on how the tools are used.

Now that the effectiveness of both tools has been proven, we are focusing on a digital expansion of both tools. This process has been accelerated by the COVID-19 pandemic. During the lockdown, we facilitated a number of online creativity brainstorm sessions with students. We investigated how to create the same dynamics and creativity online with our tools INNOWIZ and ONO and how we can encourage teachers (and, at a later stage, students) to share their expertise online and develop innovative, cross-curricular projects.

STORY

28

Cultivate Self-Regulated Learners of Design Thinking in K12 Education

Joos Van Cauwenberghe, Tine Seynaeve, Roel De Rijck

RHIZO

Belgium

Design Thinking (DT) upholds the potential of equipping learners with a wide range of 21st-century skills and promotes student agency, with the end goal of developing young transformational innovators. As a team of Belgian educators, we try to give our students access to opportunities to deliver those skills. But as we compared the results of our novice (7th graders, after two DT projects) and experienced students (12th graders, after 12 DT projects), we noticed no significant difference in the quality and depth of generated concept solutions. This suggested that during five consecutive years of practice, DT *feels good* to use but fails to produce the shifts in individual core design skills and mindsets. So, we went on a quest to better support and facilitate a deeper design journey.

One of the problems is that the current DT resources are often presented as a one-size-fits-all solution. They describe the design process and mindsets in general and provide one step-by-step instruction on how to implement a particular design method. There is a lack of curriculum solutions that can scaffold students' design abilities from novice to intermediate or expert status. Hence, when students execute design tasks, teachers offer the same level of knowledge and coaching over and over again but expect different results. Inspired by the work of expert practitioners like J. Schell and E. Korsunskiy, we prototyped Designtools.

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Designtools in action, during RHIZO's Design Your City programme, where students tackle real-world problems in their local city

In essence, Designtools is a learning pathway for human-centred design in K12 education. To help scaffold learning, we use a backward design model and ask ourselves a sequence of questions. What are the actual building blocks a novice learner (from 10 years old) needs to know about interviewing for example? Which specific set of (observable) behaviours does a learner need to demonstrate in practice, before continuing to the next level? How can we support the teacher to achieve the desired level of knowledge and best practice?

This way, we deconstruct well-researched design methods into their underlying knowledge, skill, and attitude components. In co-creation with teachers and pupils, we identified twenty actions learners recognise and frequently have to demonstrate while practicing design: observe, define insight, pitch, etc. For each of these actions or "verbs", we developed lessons, with up to four levels of complexity, providing a scaffolded path towards mastery. Each lesson, we find elements of game design at the lower skill levels and strategically promote self-efficacy (mastery examples, effort-specific feedback, etc.) in DT, which leads up to learners that can regulate their learning.

Designtools is a peer-generated and open-source resource for teaching DT in K12. Through the web app, both teachers and pupils can structure project-based courses or capstone projects in a few clicks and gradually increase their confidence in their ability to think and act creatively. We hope to initiate further research on how to teach DT effectively in K12 education and keep prototyping Designtools, so it supports the professionalisation of K12 design education in Belgium or abroad.

A prototype exhibition at the end of a Design Your City programme.

The result of using Designtools:

- Video 1 – Design Your City Kick-off event @Barco
- Video 2 – Design Your City award exhibition @Vives
- Video 3 – Design Your City Kick-off event @Sioen

STORY

29

How Design can Help Failing Youngsters

Roel De Rijck, Marjolein Debergh,
Jana Gheysen, Joos Van Cauwenberghe

Antwerp Management School & RHIZO

Belgium

How can young people become successful after a failing school trajectory? That is the question a group of Belgium educators and researchers asked themselves. The answer is JUMPlab, a personal development programme that uses the power of design to transform how young people search for opportunities, which they otherwise would never have dared to take on.

The initiative started with design-driven research for one year, investigating the levers some people use to pivot a negative school career into a prosperous professional career. We call those outliers "jumpers" as they were able to make an unexpected career "jump" and find fulfillment in life. We built JUMPlab on three core levers all jumpers use to make a successful jump:

1. Jumpers never jump alone. There is always a crucial third party pushing the jumper to explore new professional opportunities.
2. Jumpers build and leverage networks while exploring jumpers develop and leverage a personal support network.
3. Jumpers design their own life. Jumpers operate as designers of their own life, without even knowing.

The bad news is that schools are not teaching these skills at all. On the contrary, 30 per cent of Belgium youngsters find themselves lost in their current course of study. It is precisely this group of "misfits" that JUMPlab is targeting.

The typical size of a JUMPlab-team, eight JUMPers with two coaches

From the misfit's perspective, the school system has failed them plenty of times, so they grew an "ostrich effect", avoiding all activities that they perceive as potentially unpleasant and losing any willingness to take risks and explore.

By empathising and designing with failed youngsters, putting their experience central, JUMPlab became a programme loved by "misfits". It offers them the opportunity to become designers of their own lives and build a career out of nothing.

The JUMPlab programme consists three steps:
Step 1. Experience a first JUMPlab
First, we build creative confidence by pulling youngsters out of school and let them participate in several Design Sprints. These Design Sprints are such an unexpectedly inspiring experience it enables us to become the personal mentor that will help them jump.

Step 2. JUMPlab XL, pushing the boundaries
Then we help JUMPlab teams to participate in competitive hackathons to build their design skills further, discover new networks, and get inspired by speakers. As a result, participants get rid of their "ostrich effect" and see new opportunities for their future.

Step 3. Rebuild your life in a LIFElab
Last, we persuade participants to use their design skills for the good of their own life and design a new future. By doing so, we stimulate youngsters to discover and grow on a personal level. “What do I want to become” shifts to “what do I want to grow into next”, turning a stagnating life into an action-oriented life full of possibilities.

JUMPlab quickly became loved by a community of misfits who are willing to shift their mindset and push boundaries to take life into their own hands, building self-awareness on the way. JUMPlab is just a beginning, ready to inspire wherever possible.

Prototyping solutions for making a soccer club more attractive to a broader range of youngsters

STORY

30

Supporting Teenagers to be Self-Directed Learners during COVID-19

Gabrielle Tanneau

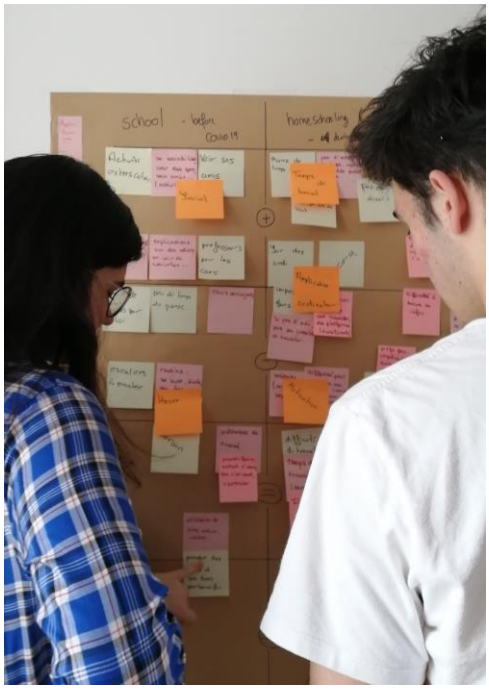
Royal College of Art

France

The worldwide health crisis has revealed many issues in current educational systems, including the absence of self-discipline and the lack of ownership from teenagers towards their learning.

Thanks to a design process, Self-learning.tips serves as an example of how education systems across the globe can benefit from a design approach. The platform is built around a continuous improvement cycle divided into six steps: assessing oneself by determining one's strengths and weaknesses, visualising one's profile, accessing recommended tools, using them in one's daily studies, improving, and repeating. Its physical tools help users develop a sense of control over time, increasing productivity and enjoyment when learning.

The project development follows the five stages of the design process laid out by IDEO (Innovation Design Engineering Organisation). Its structured human-centred approach helps navigate through the different phases, starting with understanding and observing the world to framing a design challenge or research question to ultimately prototyping and testing solutions. Self-learning.tips was developed by engaging with users at different steps and in various ways such as online surveys to gather insights or remote user testing to validate the outcome.



Small-scale workshop

User filling his empathy map

During the first week following school closures, teenagers aged 11 to 18 years old were given the opportunity to share their thoughts, preferences, difficulties, and adaptations regarding school at home versus being at school through a small-scale workshop, group discussions, and an online survey.

They stated that they struggled with self-discipline, motivation, and focus as they would normally rely on the rhythm given by the educational structure. This insight was supported by the parents who were also invited to fill out a similar survey. Pupils realised the need for a teacher and a structure to guide their learning. They noticed that they had no choice but to adapt to this new normal and figure out ways to get organised and keep doing their homework. The kids also saw this situation as an opportunity to gain more freedom over their pace and learning content. Having control over their studies sounded very appealing, however most of them shared their lack of self-management.

The solution is a self-directed learning structure that provides teenagers with tools to self-regulate their learning while growing intrinsic motivation to learn. Integrating this intention, Self-learning.tips follows a six- step process inspired by the Deming wheel. The envisioned system is divided into three actions which represent the three elements: combine (the website), self-assess (the questionnaire) and act (the tools). The platform thus turns self-improvement into a fun personal challenge!

Tertiary Level

“Children should be encouraged to tap into their natural abilities to wonder and explore their creative potential by ideating and learn by doing.”

- Phila Meskanen
CEO & Founder
Arkki International, Finland

STORY

31

Use of Customer Journey Mapping in Republic Polytechnic's Customer Experience Module

Queenie Lee, Irene Low

Republic Polytechnic

Singapore

Customer experience is recognised as the key driver for sustainable competitive advantage. It is also the driving force for customer acquisition, retention, brand loyalty and achieving high customer lifetime value. Businesses are now placing greater emphasis on using customer data and insights to visualise the customer journey for the creation and improvement of the customer experience delivered throughout the customer journey touchpoints.

We decided to introduce design thinking to the School of Hospitality students by leveraging the Customer Journey Map (CJM) in the module H224 Customer Analytics. The main intent is for students to be able to look at customer empathy and use customer analytics methods to map out the journey of a customer.

Lecturers had attended several design-thinking courses in the area of Customer Journey Map and thereafter, we collaborated with several industry partners to hone and apply our skills through industrial attachments and consultancy projects. The hands-on application skills from the consultancy projects allowed our lecturers to build up skills in Customer Journey Mapping and thus enabling us to transfer the knowledge back to our students through our academic modules.

We started with familiarising other lecturers with the use of CJM and persona creation. The lecturers in turn imparted their knowledge to the students over 13 weeks through the module. The Customer Analytics module adopted a Project-Based Learning pedagogy which means at the end of 13 weeks, students were expected to complete an in-depth analysis of a specific organisation with a validated CJM. The project deliverables will be the final assessment for the module.

To prepare the students for the module, we introduced several scaffolding lessons to guide the students in the different aspects of creating a CJM leveraging customer analytics tools such as using Voice of Customer Feedback analysis and Customer Satisfaction and Net Promoter Score scoring. With the project findings, students will be able to reveal opportunities and recommendations for the project.

Familiarisation of the module by lecturers

STORY

32

Design Thinking in Action

Candace Fu, Brian Tan

Republic Polytechnic

Singapore

Hospitality Solutions Centre (HSC) is the consultancy arm for the School of Hospitality, Republic Polytechnic (RP). Our core business is to provide consultancy services and conduct applied research projects for the hospitality industry in Singapore. HSC@RP has the industry expertise to provide relevant advice and along with a wealth of knowledge in hospitality management and operation best practices, we aim to support the industry to raise productivity levels while not compromising on customer experiences.

We work with our industry partners closely throughout the projects. Postmortem of the projects tells us that we can establish a positive relationship between a customer's satisfaction and innovation implementation. Our projects and research also suggest that technological innovation not only enhances overall productivity, it also leads to enhanced customer experiences for our hotel clients for example, and an improvement in the overall productivity in the Front Office and Housekeeping departments.

We use design-thinking tools to help our clients to map out innovative designs and their implementation. In order to illustrate how we use design-thinking processes in our projects, we present the solution we designed (and implemented) for some of the hotels' Housekeeping department.

Empathise: We worked very closely with three hotels throughout the project and the key to our success is the ability to listen and understand their problem statement. Housekeeping departments in Singapore often face two main problems:

1. How might we autonomously transport dirty linen from hotel rooms to the back-of-house collection point?
2. How might we enable hotels to automatically share the count of linen to and returned by the laundry vendor?

Define: We then carried out on-site observations to analyse and synthesise the issues in order to define the core problems for those hotels that we worked with.

Ideation: After defining the core problem, we identified new solutions to the problem statement. In this project, we aimed to enhance hotels' linen operations productivity by:

1. Employing Autonomous Mobile Robot (AMR) for Linen Movement
2. Redesigning the Housekeeping Cart for AMR Docking and adding Smart IoT Technologies
3. Enabling the Laundry Vendor to pack linen directly into the hotel's Housekeeping Cart
4. Enabling Radio Frequency Identification technology for linen inventory management

Prototype: We also worked to produce a scaled down version of the product or specific features of our solution. The prototype was tested by both team members within and outside the project team.

Prototyping

Test: We tested the completed product using the best solutions identified during the prototyping phase. When executing the project, other than testing the solution, we also help our clients streamline the job processes, as well as to re-design the job tasks of that particular department. Prior to and after the project completion, we conducted training workshops for their staff. This is very useful to ease their worries about the solution, as well as the solution's impact on them.

Testing

STORY

33

Creating Interactive Browser-Based Lessons for Design & Media Students at Nanyang Polytechnic

Daryl Goh

Nanyang Polytechnic

Singapore

COVID-19 has been singled out as the biggest disruptor of this generation. The education sector in Singapore has not been spared. To continue delivering classes while following safe management measures, we moved our classes online. This story illustrates how we conducted browser-based lessons, via the Zoom platform, to engage students enrolled in the Design & Media track in our Polytechnic Foundation Programme (PFP). The PFP is a one-year programme for students emerging with GCE "N" Levels to acquire broad-based skills in a polytechnic setting, before they go into their specialisation for their three-year diploma.

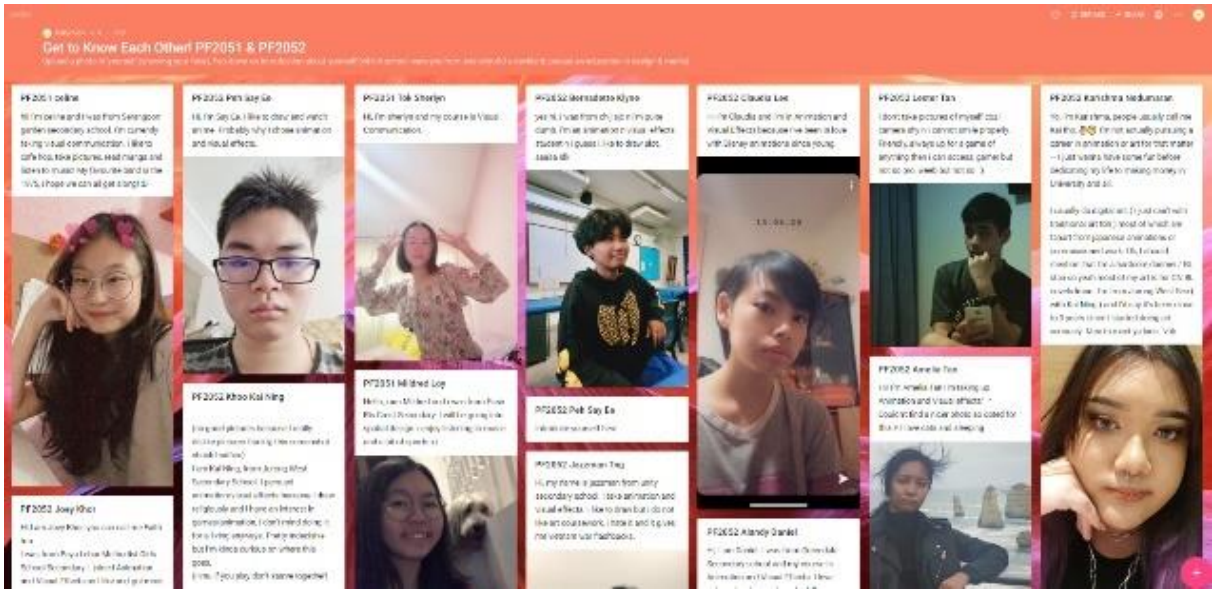
In Singapore, a Circuit Breaker was put in place to break chains of COVID-19 transmission in the general populace. Its start in 2020 coincided with the start of the polytechnic's Academic Year. With the Circuit Breaker, students were unable to enter campus. This was particularly distressing for freshmen, as they were new to the polytechnic environment. In addition, given their youth, we had to explore ways to provide interesting and interactive content quickly, to effectively utilise their attention span.

To help assimilate them into the polytechnic system and familiarise them with fellow course mates, we conducted Zoom teleconferencing calls during their online enrolment. We also asked students to use Padlet, a software that allows sharing of information through sticky notes, to make introductory boards about themselves. Through their respective introductory boards, and the interactions they had on the platform, we were able to learn more about our students, their likes and preferences. This was key to helping us customise subsequent lessons for them.

To keep students engaged during online classes, we also embedded interactive elements from other educational technologies like Articulate and Google into Blackboard – the platform used for Nanyang Polytechnic's Teaching & Learning activities – to create interactive bite-sized lessons on Design. Housing all lesson materials within one repository (Blackboard) also made it easier for our students to reference these materials.

Lessons were made available to students on a weekly basis, and students could access the content remotely as the lessons were accessible from any browser. We complemented the lessons with live Zoom discussions to go through online materials via direct instruction. To assess their progress, online quizzes were implemented. Students also submitted their completed work pieces via Google Drive.

At the end of their one-year PFP programme, we plan to export the content from Blackboard for students to download. This huge repository of reference materials would definitely come in useful during their subsequent three-year diploma programme.



Padlet icebreaking

STORY

34

A ‘Ten Course’ HBL Banquet – Integrating Various IETL Platforms Seamlessly on Existing Platforms

John Guk

Nanyang Polytechnic

Singapore

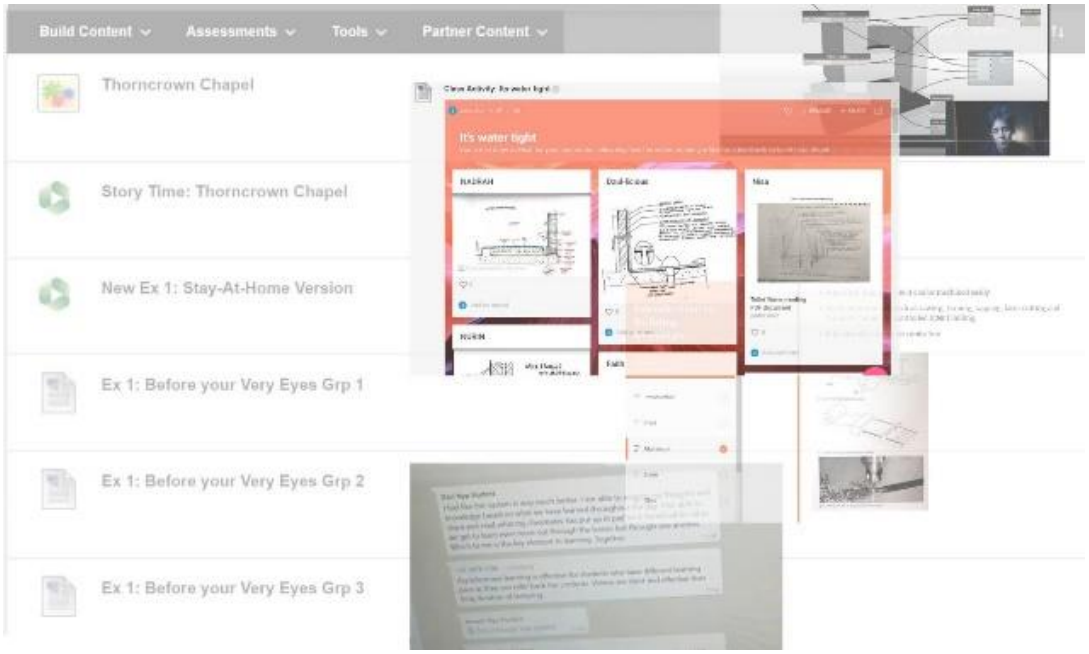
The COVID-19 pandemic situation proved to be a powerful push factor that has digitalised the way educators teach. However, this may not be an entirely bad thing.

I have been teaching modules related to Architecture Construction and Detailing at Nanyang Polytechnic (NYP) School of Design (Architecture). My course requires students to not only do a lot of technical sketches, but also requires them to use Building Information Modelling and Computer Aided Design drawings in their assignments.

The course normally requires both face to face consultations and lectures. With the pandemic, I had to use both synchronous and asynchronous methods to teach. There is a myriad of IETL platforms that proved to be useful such as Padlet, Trello, Panopto, Zoom, etc. However, if not curated in a user-friendly setting, it may be a cause for confusion and frustration.

NYP has been relying on BlackBoard as the main platform for a long time. It is also the platform students have been accustomed to. Tapping into this pre-existing condition, I discovered that learners appreciate a familiar yet intuitive learning environment with the following main points:

1. Organise all teaching materials in respective weeks and release information progressively in a one-click-see-all approach (like an iPhone home button).
2. Keep asynchronous Panopto lectures short and succinct (e.g., series of five-minute lectures).
3. Design lessons requiring constant diagnostic feedback, e.g. reflections or exercises on Padlet for learners to consolidate their learning as well as for educators to keep track of their progress.
4. Use up to three platforms to minimise confusion for the learners yet varied enough for engagement (e.g., Panopto, Padlet, Articulate rise).
5. Arrange for Zoom sessions periodically only, to avoid fatigue from the learners.
6. Tap on available online resources such as LinkedIn-Learning.
7. Embed Panopto Videos via Video embed function on BlackBoard.
8. Embed Padlet via HyperText Markup Language code embed function on BlackBoard.
9. Embed Articulate rise packages via Sharable Content Object Reference Model package embed functions on BlackBoard.
10. Embrace new ways and practices.



Online platform

STORY

35

Designing for the Homeless

Kong Chee Chiong, Nurlina Bte Mohamad,
Nurul Ashiqin Bte Roslan, Nadhirah Binte Hady,
Muhammad Asyraf Bin Mohd Yazid

Republic Polytechnic

Singapore

For the Final-Year Project (FYP), the Diploma in Design for User Experience included an open brief for student initiatives to apply Design Thinking and Problem-Based Learning to causes they are passionate about.

Some of my students encountered a homeless during a school trip to Hong Kong after Typhoon Mangkhut. Together with two other FYP members, they approached the Homeless Hearts of Singapore (HHOS) to explore how they can improve the lives of the homeless in Singapore through design.

Homeless on Ladder Street, Hong Kong

As part of Design Research, we encourage students to explore various methods to understand the user's needs. The students started to volunteer with HHOS to distribute food and befriend the homeless hidden in pockets of the Central Business District. They were shocked to realise the huge number of homeless in Singapore. They recognised their own prejudices when they interviewed an ex-convict who used to be homeless but through HHOS, had found a job and is currently volunteering as well. The students discovered the main reason for homelessness in Singapore was due to family relationship problems. They also fear losing their belongings. The homeless have drifted away from society and there is a greater need to bridge the gap.

The students met up with Prasoon Kumar, who received the President*s Design Award Design of the Year 2018 for the weatherHYDE tent for the homeless. Inspired, the students initiated a two-day structured experience to stay overnight in the tent at East Coast Park to test the product in Singapore's context, experience a day in the life of a homeless with limited cash, and also interview the homeless there.

The students decided to design a locker system for the homeless and conducted a poll in school to gather feedback since there were also homeless people staying in Admiralty Park nearby. Some feedback raised concerns of crime and stench which highlighted similar prejudices the students had. Despite the obstacles, the students persevered as they saw the need to advocate for the homeless through their design.

Participatory design poll at Republic Polytechnic

The students envisioned their design to be a safe place where the homeless can be reintegrated into society. The public will pay to use the lockers and through this, donate to support HHOS. The payment screen will show videos to raise awareness of the homeless and allow the public to post encouraging notes to them. This design was well-received by HHOS and we plan to submit this for Citi-YMCA Youth for Causes grant.

This is a good example of how we promote self-directed learning for students to integrate their design skills with overseas exposure, industry expertise, and social responsibility to produce innovative design solutions.

STORY

36

Using Common Software as Innovative Design Collaborative Platform

Sean Lim

Nanyang Polytechnic

Singapore

AS a lecturer from Nanyang Polytechnic's School of Design, during the COVID-19 period, I experienced a steep learning curve in using virtual conference software to conduct remote lessons.

Zoom is the adopted software by the school which I had to use to teach my students and conduct workshops for industry partners. It was very difficult and frustrating to engage them because there was no direct eye contact. During the Zoom lessons, I was not sure if the participants were actively contributing during group discussions.

These were some of the challenges and limitations I encountered:

How to engage participants during Zoom lessons? How to engage and help participants in a two-day Design Thinking online workshop?

The challenges triggered me to find ways to improve my lesson delivery. I did not want to conduct a lecture where participants sit for long sessions and listen to me. I want the participants to enjoy and be involved in the lesson where they can have the closest experience of a face-to-face classroom setting. I want to ensure they have positive learning experiences.

- How to break the limitation of multiple screen share in Zoom?
- How to challenge multiple annotations in the Whiteboard function in Zoom?

I developed a simple solution where participants can be comfortable in using the reframe utilisation of PowerPoint Share and Google Slides. These are familiar tools to the participants, which I reframed the mindset in usage and innovated a simple way of merging these tools into Zoom to make lessons more engaging. It was simply using this software as a collaborative tool when sharing screen while they were in the breakout rooms.

I do not have to go to individual breakout rooms to understand the participants' involvement as this method allows me to check them remotely. This is very helpful as I can check and decide when to intervene and when to cease the breakout session of a group of participants.

I explored, experimented, and validated the innovative methods with my class students. Sixty-five students gave me constructive feedback on my modification of lesson delivery via Zoom. It boosted my confidence in how I conducted my lessons over Zoom.

Their feedback allowed me to make iterations to this new method of delivery and find creative ways to improve Zoom workshops with these tools that everyone already has in their computing system.

The method allows participants to feel connected to one another as everyone's contribution is visible through this innovative platform. The transparency in such collaborative methods enhances their learning experience.

This reimagined delivery can be incorporated with little effort yet bring about a huge positive outcome. With the joint attributes of these software, it has allowed me to enjoy the sessions with my participants.

STORY

37

Four Stages of Designpreneurship

Mark Phooi

First Media Design School

Singapore

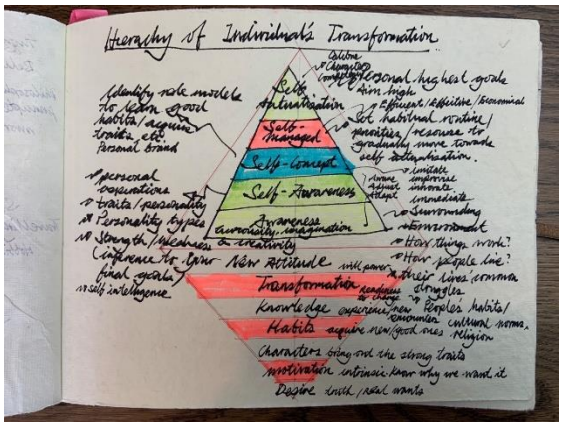
As a Designpreneur managing a suite of local and foreign agencies, the method of understanding and grasping the applied concept of empathy has always intrigued me.

I have always imparted the knowledge of Multi-Dimensional Thinking (MDT) to all my design students. The MDT is a proprietary teaching pedagogy embedded within the "Design Thinking" and "Whole-Brain Thinking" models enabling designers to structure ideas that are practical and user-friendly.

Recent pandemic and digitalisation trends have proven its effectiveness especially when non-physical contact is concerned. It begets the challenge of how to connect with our users when we cannot connect with them emotionally.

The tangible value of one-dimensional creative thinkers has lapsed. The intangible value of creative thinkers who are trained to think in a multi-faceted way is the next big thing.

As First Media matured in its field of design education, its teaching pedagogy also gathered momentum. Today, I am pleased to present its proprietary Four
Stage Designpreneurship Pedagogy built upon the MDT and Design Thinking model, with the teaching objective of nurturing the next generation of whole-brained trained designpreneurs.



Hierarchy of an individual's transformation all starts with self-awareness

Every stage encompasses an experiential learning journey all aspiring designpreneurs need to embark on to become highly competent in their field of design practice. These four stages are:

Stage 1 - Self Awareness - To discover their passion and align it with their purpose, innate talent, and general interest.

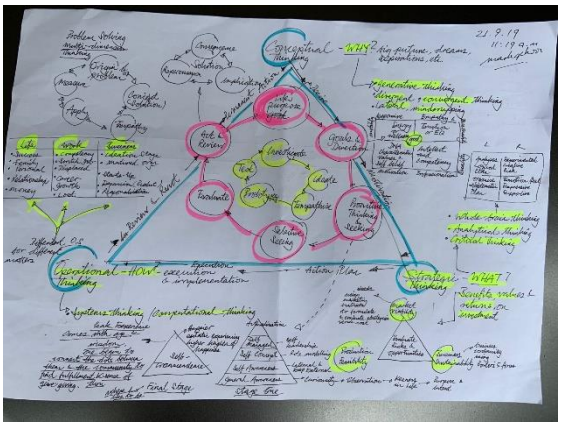
Stage 2 - Creative Skill - To be an accomplished designer through referencing and improvisation, and to attain mastery as an innovator in their field of practice.

Stage 3 - Management Skill - To be a strategic thinker and problem solver through these four key roles: Planning, Organising, Leading, and Controlling.

Stage 4 - Entrepreneurship Skill - To practice self-leadership by harnessing their beliefs, value system, and leadership principles in order to flourish as an entrepreneur.

As a practitioner turned educator, I recognised there is a life span to a designer's career. The digital frontier has opened the competition between talents from our neighboring countries, devaluing our service as designers. We need to take stock of these imminent challenges and thrive in this new digital landscape.

It is my personal responsibility and privilege to be part of this educational journey to train design practitioners to advance their thinking prowess to become whole-brained thinking professionals and help advance Singapore's reputation as the design capital of the world.


Thinking methods to which our Four Stage Designpreneur Pedagogy was derived. Various methods were put to the test to see the merit of each and understand what would suit a growing designer.

STORY

38

Design Learning Experiences for Online Teaching and Learning

Nachamma Sockalingam

Singapore University of Technology and Design

Singapore

Teaching is an innovative process where we have to adapt to diverse students to engage them in active learning. It is no longer sufficient to transfer knowledge to our students. While knowledge acquisition is necessary, we need our learners to be future-ready so that they are able to solve problems, think critically, work in diverse teams collaboratively, be techno-savvy and be flexible to meet unforeseen demands. Hence, we embrace inductive ways of teaching such as Design Thinking (DT) beyond the traditional lectures. However, DT is often limited to academic topics. The question is can we use DT in soft subjects like learning to teach which is about self-improvement. Can we get our teachers to innovate teaching, especially for COVID-19 like situations, using this method?

At the Singapore University of Technology and Design (SUTD), I run a graduate course on Teaching at SUTD for pre-service teaching assistants. This is a six-week course, which was conducted completely online due to the lockdown situation. The course is typically conducted face to face and we had to redesign the activity for online teaching. We used the online teaching framework to identify and use technological tools for teaching. This course was run for a batch of 25 students.

Technological tools used in online teaching

The course aims to prepare our teaching assistants to be able to teach face-to-face, blended, or online using active, student-centred learning methods. The course gets the learners to think about themselves and their students and introduces them to an educational challenge of engaging diversified students. They are tasked with designing a five-minute teaching challenge to engage their students using active learning methods over a three to four week period. They are also introduced to various teaching methods and teaching skills such as questioning skills.

The learners submit reflections weekly on various aspects of teaching such as (1) the changing roles of teachers, students, and teaching assistants during the COVID-19 pandemic, (2) their teaching plan for the microteaching challenge, (3) how they could use technology tools to assess student learning, and (4) how they would assess individual learning in group projects. Comments on these reflections provide formative feedback to the students in designing their microteaching task. Although many of the class activities are in groups, the final task of microteaching is individual.

Thus, the learners have to design learning experiences through the DT cycle of **Empathy** (Understanding students' needs/prior knowledge), **Define** (How to engage students and what sort of learning outcomes), **Prototype** (Activities and assessments) and **implement** (Microteaching).

In general, the learners felt positive and confident at the end of the course about their teaching skills through the course. All of them demonstrated active, student-centric teaching methods in their online teaching (even though many were not familiar with such methods at the onset). Despite this achievement, the learners' sentiments of the online class varied. While some liked the online activities, some others found the activities a little monotonous and limited. The discussions and collaborative activities were found to be challenged especially in the early weeks when participants were still warming up. As noted by many of the students in their reflections, students still prefer face-to-face learning over online learning. While blended online (blend of synchronous and asynchronous) offers some relief, students seem to actually prefer a blend of face-to-face and online learning. However, given the unprecedented and sudden situation of COVID-19, and given limitations of technology, our graduate students had risen to the occasion to be able to teach online using student-centric methods. We continue to explore further how we can improve this learning experience.

STORY

39

How Might We Create Impactful and Enjoyable Learning by Design?

Jason Khiang, Chee Kong Boey, Hoo Tze Jiun, Geoffrey Tan, Alagu Sundaram, Alexis

Ngee Ann Polytechnic

Singapore

Design students in any design institution are constantly pressured by the rigours of the projects, deadlines, and submissions. Students are frequently overwhelmed by the number of projects and wondered why they are working on the assignments beyond the grades.

We have all been through the relentless academic stress of design education and wondered if our education can be more enjoyable and yet still impactful and relevant in training us for the design industry?

As design educators, we have a chance to change learning. As much as we use the design thinking/user-experience methodologies to empathise and design better experiences, why can't we apply them to design better learning experiences?

Persona creation - aspirations & challenges faced by our design students
Most of our School of Design students in Ngee Ann Polytechnic (NP) come from secondary schools. Unlike secondary education, design education in polytechnic requires self-directed learning and a good Grade Point Average depends on consistent performance across semesters.

Our students typically come with huge aspirations; are extremely curious and driven to try new things. Being emotionally driven, emotions can influence their performance.

Mapping design student's learning experience
We observed students' emotions falling into the negative zones when academic demands are high. These may lead to low-quality submissions, students giving up, and counselling which affects their education experience. The potential correlation between emotions and quality of learning highlights the importance of instilling joy into learning.

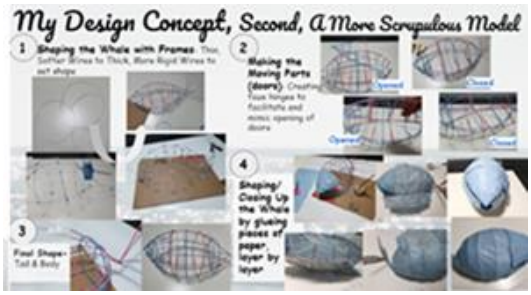
Student workload analysis revealed that the lack of coordination across modules resulted in multiple deadlines within the same period and overlaps in assessment areas. Students cannot relate to certain projects' purposes, leading to a less favourable learning experience and design quality.

Design solutions to elevate the experience
To address students' pain points, the teaching team examined the curriculum, learning outcomes, teaching methods, learning strategies, and assessments for all modules. We proposed:

1. **Purposeful integration** - Align all modules within a semester with an anchoring project to integrate knowledge and skills acquired. Align time frame and deliverables. Each module planned activities to stagger students' workload towards design submissions.

2. **Relatable coursework** - Students apply design knowledge and techniques to address real-world issues in collaboration with industry. We aimed to cultivate social responsibility in our students through sustainability projects. Together with the teaching team, Scanteak curated the brief and collected recycled factory materials for upcycling.

3. **Showcase and celebration** - Incorporate project showcase in public spaces for exposure of students' projects to the general public and industry. These opportunities help students see the value of their works.



Students' preliminary upcycling designs

Boundaries. What?
Purposeful integration breaks boundaries within a course to elevate and create impactful and enjoyable learning experiences. With the push for graduates to be more multi-disciplinary, design education must be more encompassing. Within NP, we have explored project collaboration between two courses and since merged these into one course (product design and architecture). Looking ahead, we will explore cross-disciplinary learning and its impact on student outcomes.

STORY

40

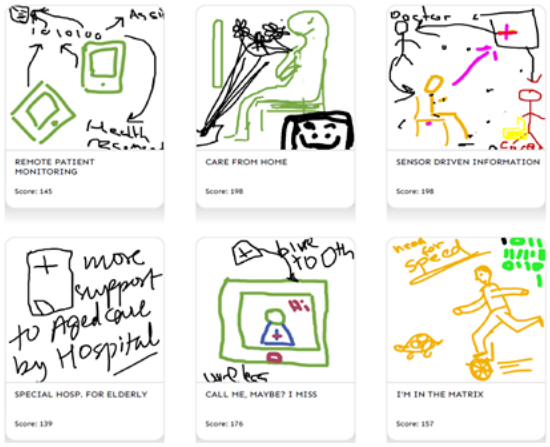
Serious Games for Health

Bina Rai

National University of Singapore

Singapore

Like any other instructional solution, a game should be carefully designed, developed and implemented to facilitate learning. The goal of a serious game is not only to create an immersive and engaging experience for learners, but also for them to achieve a specific learning outcome. Game designers have a strong understanding of game goals, core dynamics, game mechanics and game elements. But this does not guarantee a serious game if designers do not possess solid instructional design skills. This gap in serious game design motivated me to launch a brand-new technical elective for biomedical engineering students at the National University of Singapore (NUS) entitled, "Serious Games for Health".

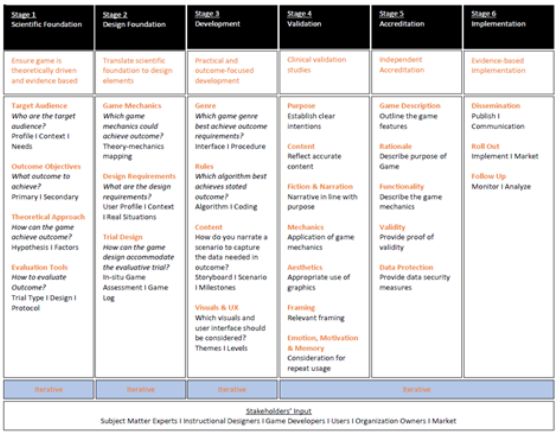


Examples of student sketches in response to the question, "How might we reimagine access to healthcare for the elderly?" An online, gamified, collaborative tool was used for this hands-on activity.

The module starts with an introduction to what serious games, gamification and simulations are, and what problem statements or challenges can benefit best from them. This is followed by a close look into brain processes and the cognitive neuroscience of memory and learning. Next, students will explore why people play and the motivational theories that explain this behaviour. Students are then taught the differences between game design and instructional design, with a focus on iterative design, playtest design, and the need for assessment of competencies (evidence-centred design). By the end of the course, students will be able to execute a well-informed, evidence-based approach towards the instructional design, development and validation of a serious game.

One highlight of the curriculum is that students will experience experiential learning from numerous local and overseas guest speakers from academia and industry who will share their unique design approaches towards the development of serious games. These speakers come from diverse backgrounds and professions but are unified with a similar goal, that is to use serious games as a means of training, whether it is for healthcare professionals or mental health of citizens or cognitive ability in the elderly population.

Another highlight of the curriculum is that the students will be encouraged to apply the instructional design knowledge acquired in this module to several real-world based assignments. For example, students are instructed to modify an existing game such as chess, and design a suitable playtest for the original and modified versions to decide which one to keep based on desired experience outcomes. Students will present a poster with live demonstration explaining the modifications made, the rationale for it and their playtest design. In a separate assignment, students will be presented with a scenario where they play the role of a game designer who is keen to help a client to solve a problem they face in their company. The client has the budget for a serious game approach and students are required to conceptualise a solution based on the client's needs. In the solution, they are required to include and highlight at least three game design principles that they have learned from this module.



Students will be taught to consider and apply the Serious Games Design, Validation and Accreditation Framework adapted from Mindbytes.

STORY

41

Innovation Made Possible – Redesigning an Engaging Online Experience in Design Thinking

Tan Jit Hong, Kevin Goh, Lai Wan Tan, Jennifer Koh, Kah Yee Ng, Juliet Tan, Ee-Lon Lim, Chern Tat Yeo, Kevin Jeandin-livet, Genny Chia

Ngee Ann Polytechnic

Singapore

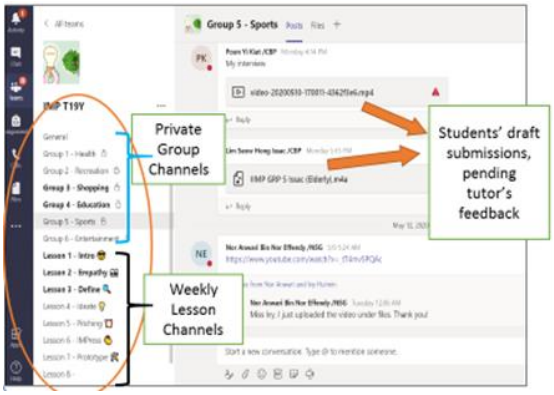
How might we engage 1,600 students to apply Design Thinking (DT) principles to tackle the challenges faced by people in their neighbourhood, under the constraints of the Circuit-Breaker (CB)? That was the challenge for the team behind Innovation Made Possible (IMP) – a module that seeks to imbue in year one students the value of user-centric innovation.

Pre-COVID-19

IMP is a highly interactive and engaging module. Prior to COVID-19, students typically underwent an immersive 10-week hackathon-styled challenge on campus, with several large-scale events taking place. For instance, to develop students' empathy for persons with disabilities (PWDs), we got the students to navigate the campus on wheelchairs which enabled them to experience the challenges faced by PWDs.

Recreating the interactivity and engagement in Home-Based Learning (HBL)

Keeping students at the heart of our design. With the announcement of CB, the module team scurried to convert the entire curriculum to HBL. We are mindful that this is IMP students' first semester in Ngee Ann Polytechnic and probably their first experience with fully online learning. Hence, we kept to just three online learning platforms. Blackboard for official module administration. Google Sites for self-paced access to all learning resources and guiding students through the DT processes. Microsoft (MS) Teams allows tutors to support and deepen students' learning through synchronous consultations and team collaborations.



Consultations with tutors & team collaborations on MS Teams

Simulating challenges faced by PWDs online. Empathy is an abstract concept in DT. How can we help students empathise with PWDs online? We leveraged a special camera to design and produce a 180° video to simulate the difficulties faced by a PWD on campus. This helps students to see the point-of-view of a PWD without being physically in a wheelchair and internalise the abstract concept of Empathy.

Potential challenges faced by PWDs

Moving the 10-week hackathon *online*

Constrained by the CB measures, we redesigned the usual Hack-the-Campus challenge to 'Hack-the-Hood, Change-For-Good'. Students had to uncover opportunities to improve the lives of individuals in their neighbourhood, while staying at home. Students conducted online interviews with relevant stakeholders to uncover their pain points relating to "Work", "Transportation", "Sports", "Shopping", "Entertainment", and other aspects of their daily lives, craft opportunity statements and come up with interesting ideas to solve them.

Applying DT

Many students worked on addressing problems resulting from the COVID-19 pandemic. Some noteworthy projects include helping businesses to maintain profits and retain employees, boosting productivity for students in their HBL, designing a better online shopping experience for consumers, and educating the public against discrimination towards frontline workers. At this moment of writing, students are working on their digital prototypes, such as building mobile and web applications, webpages, and social media tools to test their ideas.

Student experience

Students' opportunity statements demonstrated empathy for their target stakeholders. Initial student survey results indicated that they internalised the importance of DT and innovation in Singapore, as an innovation hub. They also find the Hack-the-Hood challenge relevant to their daily lives.

STORY

42

Integrating Multi-Disciplinary Design Education Experiences through Service Learning

Jason Khiang, Raja Mohammad Fairuz, Chee Kong Boey, Mabel Koh, Nurul Adillah Anwah

Ngee Ann Polytechnic

Singapore

The current design industry values interdisciplinary designers who can apply design methodologies to tackle different problems. Hence, there is a need to broaden the current niche approach in design education, to expose design students to a wide range of applications and design projects.

Our approach to integrate and expand cross-disciplinary collaboration
Two staff integrated learning from two different design diplomas, Sustainable Urban Design and Engineering (SDE) and Product Design and Innovation (PDI) in School of Design & Environment, Ngee Ann Polytechnic. They identified and reached out to suitable communities with an intent to serve through design projects. With their diverse expertise, they focus on co-creating building solutions and objects respectively.

Twenty-six SDE and 40 PDI students worked with the same identified community. Through studio-based learning, students applied their learning to solve real-world community issues. Students could connect with stakeholders in the community and apply participatory design methodology within their service-learning projects.

The generic process
Both SDE and PDI students go through the following processes: Discovering Opportunities, Defining Themes, Developing Concepts, and Delivering It. These processes are elaborated in the following illustration.

This project consisted three partners: Community: Kampung Naga (Indonesia) and Industry: Cellini, Djalin.

Discover
Students engaged stakeholders to understand opportunities and immerse in the culture, and co-design solutions to meet their needs. SDE and PDI students applied their knowledge of architecture and furniture-making respectively. Along with our community partners, etc.lab, teaching staff planned participatory workshops for students to learn and understand community needs, local materials, and crafting techniques. The engagement enabled students to build rapport with the local community, which led to a fruitful co-creating experience.

Define
Students interpreted and framed inputs from interviews and creative engagements into different opportunities. Based on the different opportunities, students identified common themes and used the “How Might We?” question to generate concepts to address community needs. Students iterated the concepts based on the community’s feedback. Co-creating and co-designing with the community are extremely important to instill a sense of ownership among the stakeholders.

Develop
Designs must be validated with the community before implementation. Students built prototypes and mock-ups of their ideas and developed their concepts based on stakeholders’ feedback.

Deliver
Students co-built and fabricated the co-created design with the community. This facilitated rapport building and bonding with the community.

Community bonding

This integrated service-learning project allowed SDE and PDI students to interact with people of varied backgrounds and perspectives from the community. Students applied their domain knowledge in designing buildings and products to address the community’s needs.

Impact
Clearly, students were greatly impacted by their service-learning experiences. This is evident from their reflections on Instagram. Following graduation, students involved in the project planned a graduation trip and returned to Kampung Naga to render further assistance with the construction and refurbishment. Staff from etc.lab also curated exhibitions to share insights from the service-learning and participatory experience with the design community in Singapore at events like International Furniture Fair Singapore and Built Environment Xpo Asia.

STORY

43

Play: HCSA x NP x Keen x Kayo

Chee Kong Boey, Jason Khiang, Mabel Koh, Don Ang, Terence Loh

Ngee Ann Polytechnic

Singapore

Working with beneficiaries from HCSA's (Healthcare Service Act) Dayspring SPIN (Single Parents INformed, INvolved, INcluded) programme under HCSA Community Services

Within social design, you will be looking at: Working alongside HCSA's Dayspring SPIN programme. HCSA is a charitable organisation with the Institute of Public Character (IPC) status and a member of the National Council of Social Service (NCSS) in Singapore.

This was an integrated module project to expose year two Product Design students to Social Design and Service Learning, learn and apply Design Methodologies, and work with HCSA beneficiaries to co-create solutions that can engage children and single parents within a courtyard space in HCSA.

Carnival style event to engage beneficiaries

In the real world of design practice, relevant research, information, and knowledge acquired are analyzed, evaluated, and assembled to be applied to a particular design. As part of the holistic approach to create a better understanding of how seemingly different and unrelated modules are applied in the design creation process, this project had three modules combined and students working in small design groups.

The modules Product Aesthetics & Ergonomics, Furniture & Lifestyle Product Design and Product Design Studio were integrated to make the flow of the whole design process more visible for students. Other objectives were to let students understand how different elements in the design process come together, to allow students time to find out, apply research, learn to empathise, apply methodologies learned, explore design, create real solutions as well as have a taste of service learning.

Forty-seven product design students started out by learning about lives that were very different from what they would have known. The students learnt how to observe, find out more, empathise and understand, so they could create designs that would bring smiles to those who may have less.

HSCA familiarisation/fact-finding carnival event

Students researched, built prototypes, and organised a carnival at HCSA, to observe, test ideas, interact with and to better understand and empathise with beneficiaries. From observations and information gathered from interaction with stakeholders and beneficiaries in the first carnival, students developed, redeveloped, refined designs and once again made more prototypes to test their ideas at a second carnival in HCSA.

It resulted in a fun Saturday for HCSA's Dayspring SPIN beneficiaries. It was an informative and experiential learning session, which also provided further feedback for our design students to refine designs. The project resulted in a final presentation in NP to different stakeholders, and the selection of concepts to be refined and built for HCSA. Students have started final refinement of concepts to prepare for the construction of the designs, but COVID-19 hit and for now, plans have been temporarily shelved but we hope to complete them by year-end.

STORY

44

Temasek Polytechnic's Design Transformation Stories

Gail Goodenough

Temasek Polytechnic

Singapore

The School of Design at Temasek Polytechnic prides itself as an institution with high-tech and highly visual educational tools. This is especially so for the Diploma in Digital Film & Television (DFT) where students have at their disposal state-of-the-art media facilities and production equipment.

Our students were not only coming to grips with all the new and exciting media amenities but also consistently winning awards and distinction for the films they were producing. Then, in early 2020, the seismic onset of the COVID-19 pandemic hit.

Implications
All film recordings ground to a halt. Social distancing became an immediate barrier to any form of studio or production work, involving talents and crew who have to work in close proximity. The uncertainty was worrying for many of the students who were ready to execute their filming plans.

However, if 'Necessity is the mother of invention', then adversity is surely the impetus for adaptation. This is an account of how our students adapted.

Strategy
It is fortunate that the School of Design not only prepares our students for the digital world. In their foundational year, all DFT students have to take a subject called Design Fundamentals, which trained students on basic drawing and visual storytelling skills.

When it was time for students to produce pitch videos to solicit funding from media sponsors, lecturers and students found creative ways to work around the filming restrictions. They made use of various analogue skills to create moving storyboards - painstakingly drawn to piece together a visual storyline. The video was well-received by the sponsors who are now keen to further fund the production of their final year projects.

The sponsors mentioned that DFT students were still able to come up with creative narratives despite the COVID-19 constraints and showed adaptability by using fundamental non-digital skills to get the message across.

Example of student storyboards for visual storytelling

Implementation - new teaching methods and assignments
Production Design classes where real-life sets are built in the Television studio could not take place due to the circuit breaker.

Lecturers had to create entirely new online lesson plans that revolved around virtual 3-Dimensional (3D) sets instead. Assignments also had to be adapted to incorporate the use of 3D interior design (ID) software like ‘sweethome3d’ to give students a chance to experience hands-on design without physically building an actual set. This sort of creative solution allowed DFT students a chance to explore ID software, which they would have never done otherwise.

Example of set designs submissions by students

Reflections
For educators, the COVID-19 pandemic has been a test of adaptiveness and a massive transformative challenge. The School of Design has been quick to respond to the changing demands as the pandemic evolves and will need to continue to do so. This will ensure that not only are teaching and learning outcomes not compromised, but creative teaching approaches can continue to engage and stimulate students, even from a distance.

STORY

45

Design for Good in the Age of a Pandemic

Yeoh Pang Jin, Bryan Angelo Lim

Temasek Polytechnic

Singapore

There is a growing recognition of the role Design can play in mitigating the world's complex issues such as climate change, diversity and even an ageing population. For that reason, the 'Industry Studio Project' was designed to be industry-driven with a core focus on collaborative practice-based scenarios. It was meant to expose students to 'live' industry projects in partnership with industry players and partners.

One of the criteria the teaching team was looking for was that the project outcome needs to be meaningful and thought-provoking. Therefore, two socially impactful design projects from two non-profit organisations were identified as the beneficiaries for this module.

As COVID-19 wreaked havoc and schools were shut, the constraints pushed our students to explore creative ways of collaborating as they needed to work 100 per cent remotely. Students were placed in groups of threes in virtual breakout rooms and given clear instructions on the topic to discuss and the problem to solve.

The first brief was to collaborate with advertising agency McCann WorldGroup and their client National Council of Social Service (NCSS). Students were briefed to develop campaigns, products, and innovations to raise mental health awareness as it has become an increasingly relevant topic for the youth community.

The student proposals were so well-received that the idea will be showcased at a public exhibition in the near future. Speaking about the works, McCann WorldGroup Singapore Group Creative Director Alfred Wee said: "*It's inspiring to see students participate in projects dedicated to real-world issues. The recent COVID-19 situation has surfaced many problems, mental well-being among vulnerable groups is just one of them. Pushing beyond their comfort zones, their creative spirit was sparked to create relevant ideas for today's uncertain times.*"

The second charity organisation, VIVA Foundation, is a charity that focuses on saving the lives of children with cancer. The students collaborated and came up with new fundraising ideas that engaged with the public through a thorough Design Thinking methodology.

We challenged students to design a campaign around our upcoming art exhibition fundraiser that would engage wider audiences to support our mission in saving the lives of children with cancer. They were able to bring in fresh, vibrant ideas, which we look forward to implementing when our fundraising exhibition takes off in 2021. As both mental health and childhood cancer are heavy topics, the challenge for our young designers was to figure out how to weave stories and craft messages that emotionally and visually connect with the respective audiences.

The COVID-19 pandemic poses a valuable opportunity to remind ourselves that the bigger picture skills that students need in this unpredictable world are those which can be applied to many different scenarios, such as creative problem-solving, focus and perseverance, critical thinking, and above all, adaptability.

Amidst the gloom, we have reason to be hopeful about the transformative power of design and that designers have the agility, grit, and creativity to do their job well, guided by how it fosters desired outcomes for collaboration, productivity, and culture in the creative workplace.

Student teams pose for a virtual group photo

STORY

46

Design Education during the Pandemic: Testimonials from the Soccul Group

Mitha Budhyarto, Roshan Abhavya, Tanvi Bihani, Ker Kai Li, Esther Romane Alizee Omez, Mohamed Hisyamuddin Bin Mohamed Hussain

Lasalle College of the Arts

Singapore

The “Society and Culture” group is one among four of the “research studios” at Lasalle College of the Art’s Level 3, Bachelor of Arts (Hons.) Product Design programme. The research studios encourage students to examine a multitude of topics within the distinct parameters of the studio’s aims and expectations. In the process, characteristic practices that are unique to students working in each studio are revealed. This year, we also learnt – the hard way – of lessons in resilience and adaptability within design education as we scrambled to face the uncertainties and pressures brought by COVID-19.

Diverse topics emerged from Soccul 19/20: future perspectives of “leisure” in a “post-work world”, community music-making as a critical response to social prejudice, experiential fashion products that simulate the experience of anxiety, translating concepts of imperfections and materials exploration related to skin decay into lifestyle products, and incorporating efficient resting methods in industrial unit workplaces.

Abhavya Roshan. “I Can't Breathe” Jacket. Appearing as an unassuming, fashion-forward bomber jacket that gradually inflates to stimulate several symptoms of anxiety

Creating responses to public concerns forces students to move outside the safe confines of the academic design studio into the messiness of the real world.

Despite responding to public and shared concerns, the specificity of their topics prevents them from sharing a generic set of methods. Building unique techniques to gain more information about their own topic becomes another characteristic of their practice. These may be seen as part of their collective journey towards developing a personal point of view – a “voice” - as a designer in speaking towards larger concerns.

Esther Romane Alizée Omez. Impurità. Impurità is an organic and minimalist pendant light for the hotel lobby based on explorations on skin decay, aimed at challenging our standards of beauty

Entering 2020, COVID-19 brought truly unprecedented changes to our lives, including the work that was being done in our studios. As Singapore entered its DORSCON Orange and Circuit Breaker period, our students were in the midst of producing their final models. Suddenly, shipment for materials were delayed, if not altogether cancelled. They had to make do, in Abhavya’s words, with “*borrowed equipment, make-shift props, and family members as models and assistants*”.

Assessments and exhibitions were abruptly moved to online platforms, with their benefits and disadvantages. There were many reasons for frustration and disappointment, but the group proved determined and resourceful. The outcomes may be far from what we had in mind before, but the final works were fresh, original and inventive. As we now try to negotiate new realities, the Soccul group provided an opportunity to experience resilience and adaptability as fundamental to design education.

STORY

47

Employing Participatory Design Methodology to Engage Ubin Residents to Co-Create their Living & Working Environment

Raja Mohammad Fairuz, Prasoon Kumar, Trecia Lim Gek Hoon

Ngee Ann Polytechnic

Singapore

To help resolve issues faced by residents staying at Pulau Ubin, students taking Design Studio 1, in April 2019 semester, were tasked to employ participatory design methodology. Students took the lead in their own learning. 5Ds process (Discover, Define, Design, Develop, Deliver) was used to bring about awareness and empathy in the social issues faced by the residents:

Discover
Students made multiple visits to Ubin to foster relationships with the residents. They started by helping residents clean their kampong houses and yards. Interactions like these brought them closer and residents started sharing stories about why they chose to stay in Ubin despite the inconveniences. The warm hospitality of the residents enriched the experience.

Define
In the early stages of research, findings are collated. This unravels the needs, dreams, visions, experiences and aspirations of the residents. By finding and identifying common themes, students were able to engage in meaningful conversations to understand ground sentiments.

Design and develop
After defining their challenge statements, students worked with residents to brainstorm ideas to meet the design challenge.

Different creative community engagement methods employed, led to fun and light-hearted resident-engagement sessions:

- Using picture collage method to enact the ideal environment
- Using board game to uncover the desired changes for a refurbished taxi stand

Deliver
Students had to select, build and test their most promising prototype. Constant gathering of feedback ensured their proposed solution addressed the identified problem.

Scaled physical 3-Dimensional models were built to illustrate the design intention. The design proposals with detailed drawings and specifications were presented to NParks and the Minister during Ubin Day 2019. One of the design proposals was selected for implementation. In December 2019, a group of students returned to Ubin to implement the design proposal to refurbish the taxi stand.

Students presenting their design schemes to Minister Desmond Lee

Identification of the root cause allowed students to understand the complexities of authentic problems. This could be daunting, as students have limited power and resources.

Some residents were unwilling to open up initially. With perseverance and sincerity, the students managed to break the barrier. These were some heartwarming moments, and it is as real as it gets. From these experiences, students learned that community design requires determination, grit and adaptability.

Throughout the process, students reflected and shared their thoughts, feelings, and frustrations at different milestones. They learned the importance of staying true to their cause.

Through service learning, the community also helped students learn life lessons in this meaningful journey together. It is a humbling experience, to cast aside prejudices and judgments and see the world through the community's lenses.

This experience yielded significantly deeper outcomes, including motivated and resilient students and an empowered community. The students saw themselves as transmitters of hope, even though their proposals might not be implemented.

STORY

48

Designing for the Underserved Communities in the Region during COVID-19 Crisis

Raja Mohammad Fairuz, Prasoon Kumar, Trecia Lim Gek Hoon

Ngee Ann Polytechnic

Singapore

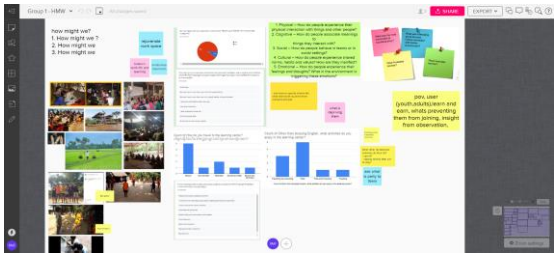
In April 2020 Semester, Design Studio 1 students took on real-world challenges and employed design thinking to design a community school/learning centre for underserved communities in Indonesia and Cambodia.

Amidst the evolving COVID-19 crisis, the teaching team moved the studio sessions online and ventured into cross-border real-world projects with overseas community partners.

In the eight-week project, students had to employ design thinking methodology and the 5Ds approach in their design process to design a community school/learning centre.

Discover and define
The students could not conduct site visits, and had to depend on their community partners for information about the community and the site. Through online and phone interviews with the community, students gathered adequate and relevant information and conducted a physical and cultural analysis of the community and school sites.

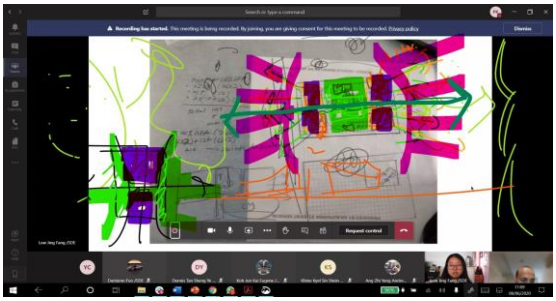
They presented their consolidated findings, insights into the community, and design parameters to the community partners as a group before embarking on their individual design projects.



Using online platform such as mural.co for consolidating and synthesising data as a group

Design and develop
With the synthesised findings and site data, the students came up with their design concepts, an enhanced programme taking into consideration the community needs and culturally sensitive schematic designs appropriate to the site conditions.

After the online Interim Critique of their schematic design proposals by the studio lecturers, they further developed their designs in terms of the structure, materials, indoor and outdoor elements, and sustainable design features.



Using Microsoft Teams to conduct online consultation session and marking up directly on students' proposal

Deliver
After eight weeks of intensive design process, including weekly online studio consultations, guest lectures by practicing architects working in the social architecture realms, and regular interactions with the community partners, the students finalised their design proposals. Students presented the 3-Dimensional renderings of the proposed school, photographs of scaled physical models and recorded video presentations. Positive feedback from the community partners was received which reinforced their hard work.

In the absence of physical studio interactions, students might experience a sense of isolation and become less driven and productive. However, these students remained motivated and on track for all the online studio sessions and kept to their deadlines.

The studio culture was emphasised through small group consultations with lecturers so that they could learn from and support one another. The transition to an online studio-based learning environment was done out of necessity and the students proved to be flexible in adapting to the crisis. Through careful learning designs, we overcame multiple barriers to create an enriching teaching and learning experience for both students and lecturers. All the learning objectives were met, if not more, as shown in our students' determination to design for the underserved communities despite being in the current crisis.

STORY

49

A Virtual 360 Summer Camp to Remember

Eugene Wong, Rachel Chew, Aliana Koh, Erman Tan, Aqilah Fatin, Sheanes Michelle, Joy Limb, Amelia Gay, Si En, Kieran Chan, Ermund Wong, Bryan Tenh, Thong Tze Ling

Nanyang Polytechnic

Singapore

Since we started Home-Based Learning (HBL) after sorting out all the technical glitches with virtual classes, there were happy discoveries such as stumbling upon new teaching methods and spiffy tools. It was pretty daunting at first to teach two distinct modules during circuit-breaker to first- and third-year students in Concept Ideation (COIDEA) and Portfolio Development (FOLIO).

Our first-year students were challenged each week to explore new ways to iterate and improve the current creative platforms that promote creative talents and their design skills.

With the use of Padlet, the first-year students were able to share their resources on designers, artists, freelancers and other media practitioners.

Seeing how energised the first-year students were when sharing their ideas, news articles, and streaming videos on Padlet, Mentimeter, and other digital tools found in their resource arsenal, I decided to try this collaborative approach with our final year FOLIO students who were preparing their online visual effects demo-reel and portfolio.

Lo and behold, our FOLIO students loved this mode of collaboration too and before long, like-minded Visual Effects artists, 3-Dimensional artists, Motion Artists, and Visual Storytellers were banding themselves to share their resources. This pre-career preparation module has now taken a life of its own and I am heartened to see that students are willing to help one other and improve their reels and portfolios.

The next step was by far the most audacious yet rewarding. I swapped the COIDEA and FOLIO collaborative workspaces to allow first- and third-year students to interact and share their research and ideation. Having this opportunity to share virtual workspaces has allowed them, who in normal circumstances are unlikely to collaborate and interact with one other, to have a shared learning experience of discoveries. It was really a dichotomy of opposites. The first years, while new and inexperienced in this sphere, had fresh takes on the creative platforms approach while their third year seniors were older and more experienced with such platforms.

The first-year students also created an e-Survey and Focus Group to gather feedback from the third years on the type of platform features they preferred. The eSurvey and Focus Groups tapped into the user experience of creative platforms such as Patreon, Fiverr, Instagram, ArtStation, YouTube and Vimeo. The first-year students hoped that with their fresh inputs, they could provide solutions to help their seniors improve their success rate.

In return, the seniors have returned the favour by sharing their own portfolio development process, career strategy, hopes, and dreams during small breakout room sessions so that the first year students have a better understanding and appreciation for the learning journey that they too will embark over the next three years.

With this binary approach to learning, I am excited to see the results of such collaboration in different levels, horizontally and vertically.

Sample of final year student demo reel

STORY

50

Awesome Table for Overseas Programmes

Eugene Wong, Alfred Zhuo, Jarett Teo, Leonard Chua, Ng Yen Tong

Nanyang Polytechnic

Singapore

I would like to share this exciting programme that I initiated with a group of students to find a smarter and faster way to match-make students to their ideal overseas programme. In a three-year programme like our Diploma in Animation and Visual Effects (DAVE), it is important that students get opportunities to explore, collaborate and take part in apprenticeship programmes to hone their skills and build 21st-century attributes such as resilience, resourcefulness, agility, adaptability, and empathy. Even more so during these difficult and uncertain times!

As part of our mission as International Development & Competitions (IDC) staff in the School of Interactive & Digital Media, we are required to plan and implement overseas programmes for students such as overseas internships, exchange programmes, overseas competition, and market immersion study trips.

The opportunity was to address the tedious match-making process of determining the appropriate type of overseas programmes given several variables such as scheduling, course type, funding schemes, budget, student criteria, skillset and country.

For students with financial difficulties, we had to source for eligible financial aids. There are many variables in determining the ideal choice for our students. Overall, it is a highly complicated affair of match-making students to the best available financial aid or funds at the most suitable time.

Finding the root problem

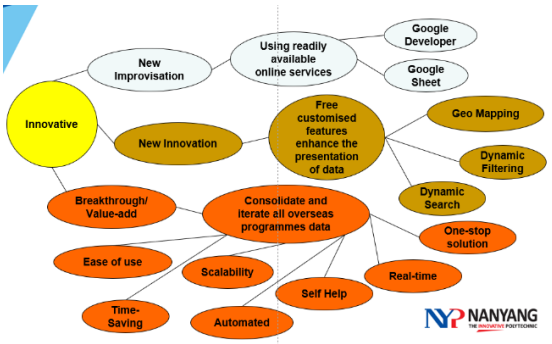
No	Root Cause	Verification / Validation
1	Manual processing	**Process walkthrough** revealed that the process is indeed very manual and tedious.
2	Repeated process	**Process walkthrough** revealed that process is repetitive in order to find or verify the information needed.
3	Tendency to overlook	**Feedbacks from IDC Reps** revealed that they tend to miss some details.
4	Human dependent	**Feedbacks from IDC Reps** revealed that the current process depends very much finding the staff who has the necessary information.
5	Data is stored locally	**Process walkthrough** revealed that the info stays with staff
6	No masterlist of companies and IHLs	**Data** collected revealed that no one has a consolidated list of companies and IHLs.
7	Information is outdated	**Data** collected revealed that some info is not updated.
8	Information is scattered	**Process walkthrough** revealed that info are mostly available online and in emails which are not available centrally.

A table of possible root problems and challenges

So together with some second and third year DAVE students, we were able to conceptualise, develop, iterate, and improve on a powerful search engine that has dynamic filter and search capabilities.

This is a one-stop online match-making system with geocodes to allow end-users to geolocate their ideal overseas programme choices. We also tap into existing e-Learning tools such as Padlet to allow us to share our resources online with all students.

Concept ideation



Concept ideation using mind map

Huge tangible and intangible benefits in a nutshell

1. Empowering our students by giving them access to the database with its spectrum of global connectivity and opportunities and resources available at their fingertips.
2. Improve students' selection and probability of landing their Overseas Internship Programme and Overseas Student Exchange Programme choices.
3. Gain knowledge and access to available travel grants and other financial assistance funds for overseas programmes.
4. Easy adoption and proliferation of system to other schools. Currently, we have merged our systems with the School of Design.
5. Data captured over time for smart analytics and tracking. Automation to create Geocodes using a Visual Basic for Applications script based on Microsoft Excel and a Robot Processing Automation to data-mine information from LinkedIn-listed companies.
6. Discovery of new funding programmes and industry participation previously unknown to us.

STORY

51

Designing Reflections to Facilitate Learning from Self & Peers

Tina Soo, Nur Sahlawati Bakar, Adeline Lau, Chua Wee Khim, Hassan Hasaa'ree Ali, Thurga Rajendran, Noor Afiza ALI, Yew Kong Tan

Ngee Ann Polytechnic

Singapore

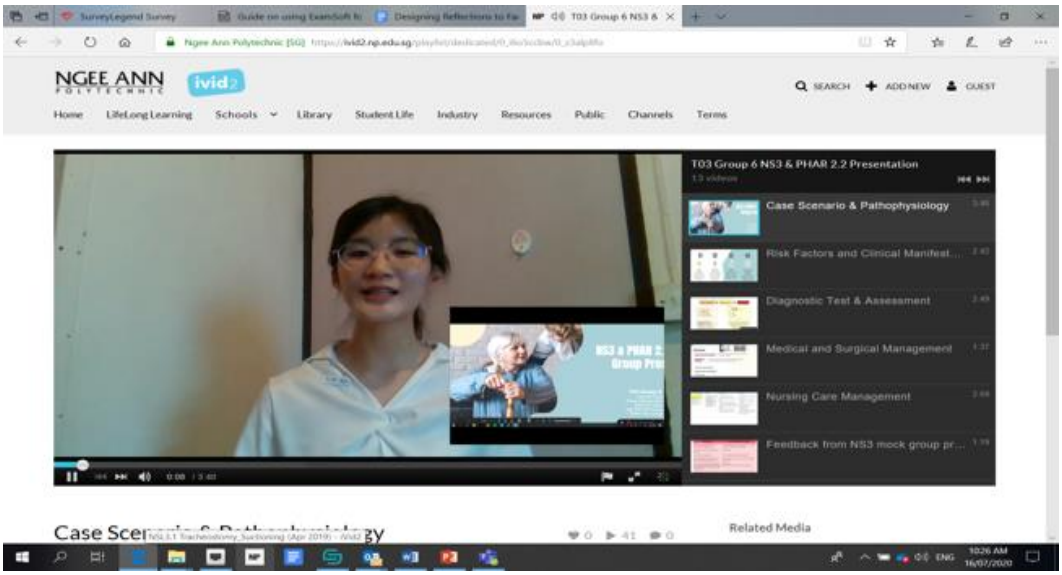
Design rationale and student users. Reflective practice is a critical part of nursing education. This could facilitate the development of professional nursing knowledge, skills and values. The Diploma in Nursing (HSN) is a three-year course that trains professional nurses in the School of Health Sciences at Ngee Ann Polytechnic. HSN has a huge cohort of around 600 students per level. While most of the students have completed 'O' levels, HSN also consists a substantial number of foreign students whose first language may not be English. Hence, our team of lecturers for the Nursing Sciences 3 module explored designs of reflective activities that can be efficiently administered for a large cohort of students and yet effective in facilitating development even for students who may not have a strong grasp of the English language.

Design ideas for reflection tool and process. G2I is a simple instrument designed to facilitate self-reflection on three key areas of Glow (strength), Grow (improvement), and Intervention (suggested strategies for improvement). This aims to enable students to take action for their own learning. G2I allows students to simply list their strengths (Glow), areas they would like to improve (Grow), and how they plan to improve themselves (Intervention). The team built in peer feedback to provide opportunities for students to develop and extend their critical lenses beyond self-reflections to provide constructive feedback to their peers. This also enriched students' self-reflections with different perspectives from their peers.

Design pilot test and findings. We piloted and incorporated the use of G2I for a mock group presentation in Week Four. Using G2I, students reflected on their mock group presentations to identify strengths, areas for improvement, and ways to improve for the actual group presentation in Week Seven. Their peers also provided feedback using G2I. The use of G2I provided opportunities for the students to learn and improve through self-reflection and peers' feedback.

While G2I is an instructional design incorporated into the module, students are expected to be self-directed in working on their performance gaps and to seek guidance from lecturers (if needed). This encourages students to take responsibility for their learning and facilitates the management of students' learning in a large cohort. Students' favourable comments supported the effectiveness of G2I including "I can track my own learning through the G2I feedback"; "I enjoy learning from my peers and like the peer assessor role"; "I am more confident in giving feedback to my peers to help them [improve]".

Design team reflections. While G2I is not graded, its use is driven by students' motivation for the actual group presentation assessment. This could have contributed to students taking ownership to track and enhance their learning. Building in peer feedback enhances students' ability to critique and provide constructive feedback to others, which in turn can sharpen their self-reflections on their own performances. Hence, more modules may explore the use of G2I to encourage peer learning.



Catching student in action through their recorded presentation

STORY

52

Misconceptions about the Roles of Examples in Promoting or Inhibiting Novelty and Appropriateness of Design Solutions

Georgios Koronis, Arlindo Silva, Nilanjan Raghunath

Singapore University of Technology and Design

Singapore

The current study focused on a short design task and inferred from its outcomes which strategies might best work to foster different aspects of creativity. We explored ways of constructing design briefs and identified the best formats among undergraduates in the 3.007 Introduction to Design course. The early-stage ideas of 235 student designers were assessed in an empirical study using a mix of quantitative and qualitative methods. Based on the design brief input given to each class, each student was assigned to a group of five to six members, depending on cohort size, and tasked with completing a Collaborative Sketching exercise. They were briefed on the conditions of the exercise and given 10 minutes to pen three different sketches in one colour. Subsequently, students were told to swap their sketches with their adjacent partners for value-added sketch improvements with a different coloured pen.

One of the stimuli provided in the form of a visual prompt and physical prompt led students to think they were enhancing the novelty of their designs by seeking out more example solutions. However, their final scores reflected the opposite. Students that looked at existing products for inspiration during the idea generation stage tended to produce fewer novel results. This implies that educators should dispel the notion that existing solutions help students come up with more innovative ideas.

Student using physical stimuli in class and the idea in which the example fixated the student

Our focus was on students' perceptions of how examples affected creativity metrics in responding to the question:

"What would help you to enhance your creativity in an exercise like this?"

Our results from our post-experimental survey demonstrated that a sizable group of students had misconceptions about how examples promote or inhibit novelty. In view of that, educators should consider addressing the role of examples in influencing the creativity of their design solutions and investigate whether dealing with these issues can promote students' ideation to enhance the creativity of their outcomes. Students tend to believe that if instructors provide them with examples related to previous years' assignments, they have a higher chance of obtaining a better score. Findings of the present study to some extent disprove this notion. We have disclosed the outcomes of this study as evidence that creativity can be fostered in multiple ways, hoping that students take this knowledge and make use of it in their line of work.

Student examining physical stimuli in class

Based on our findings, we conclude that educators should consider the following: a) avoid visual props of existing solutions in design briefs if they wish to promote novelty, b) introduce quantitative product requirements and video examples if they want to enhance appropriateness, and c) address student designers' misconceptions about how examples affect the creativity of their design outcomes. In the next few years, we intend to use the main findings to better help students become more creative designers.

STORY

53

Progressive Learning Experience in Design Innovation & Enterprise

Shirlyn Goh, Larry Seow

Nanyang Polytechnic

Singapore

Exposure and awareness: Paradigm change in design

Design education needs to be changed. Several authors (Assadourian, 2017; Dawson & Oliveira, 2017; Manzini, 2011; Silveira, 2016) have pointed out that designers should not merely be designing for today's world, but we should also be prepared for the challenges of the future. In fact, design can become an agent of change, and design educators must include strategies with tools for questioning the status quo. We should try to spur critical thinking in proposals by addressing social and political issues, systems and services.

This programme is designed for a collaborative dialogue between learners and educators.

Investigate and analyse: Initiative and leadership through innovation and enterprise mindset in collaborative projects for social good.

The NYP curriculum prepares youths with real-world learning experiences, to develop a passion in design and improve core skills such as communication, collaboration and critical thinking. We want learners to engage in challenges at both macro and micro levels. Thinking tools and critical reflective blogs are used to help learners to further learn (think), create (touch) and present (feel) new possibilities. This leads to heightened collaboration and empathetic inquiry-based problem solving.

Learners during simulation lessons immersing in empathy study

on different types of users

Instead of memorising pieces of knowledge, we seek to make learning a process. We see mistakes as building blocks for learning and encourage students to have an innovative mindset. At the start of their polytechnic education, we introduce freshmen to real-world scenarios, and ask them to keep in mind the United Nations' Sustainable Development goals. We also build innovative and enterprising traits through the curriculum across their three years in the polytechnic.

Synthesis and global inference: Global awareness to broaden perspectives, with interpersonal communication preparing them for "Disruptions of the Future"

A survey of our learners' blogs and their project management tools show that they have delved into authentic problems, and found solutions for these problems within a VUCA (Volatile, Uncertain, Complex and Ambiguous) world. Additionally, our learners go on a learning journey as part of their programme. We have held the Helsinki Innovation & Enterprise Experience Trip in Finland annually, but it has been put on hold with the COVID-19 situation.

During the trip, learners meet up with start-ups and expand their mindsets about innovation. With these trips, students are able to better appreciate design from a global perspective and understand the practical issues that designers from other countries face. They also realise the importance of building contacts and networks.

Learners engaged in a design dialogue with award-winning designers and entrepreneurs in Finland

Also, part of their diploma experience involved taking part in the Design-Make-Sell Showcase, an annual event to give designers a chance to get feedback from actual customers.

In addition, they regularly participate in the Industrial Design Cares initiatives. These refer to community service activities to help students learn empathy and gain a better understanding of their users.

STORY

54

Rethinking Industry Design Projects in a Post-COVID-19 World

Daylon Soh

CuriousCore

Singapore

Industry collaboration design projects are a part of every post-secondary design student's Final Year Project (FYP). The current model has worked for decades and provides invaluable experience for students entering the workforce. This has also been one of the cornerstones of my design education at Nanyang Polytechnic between 2004 to 2007.

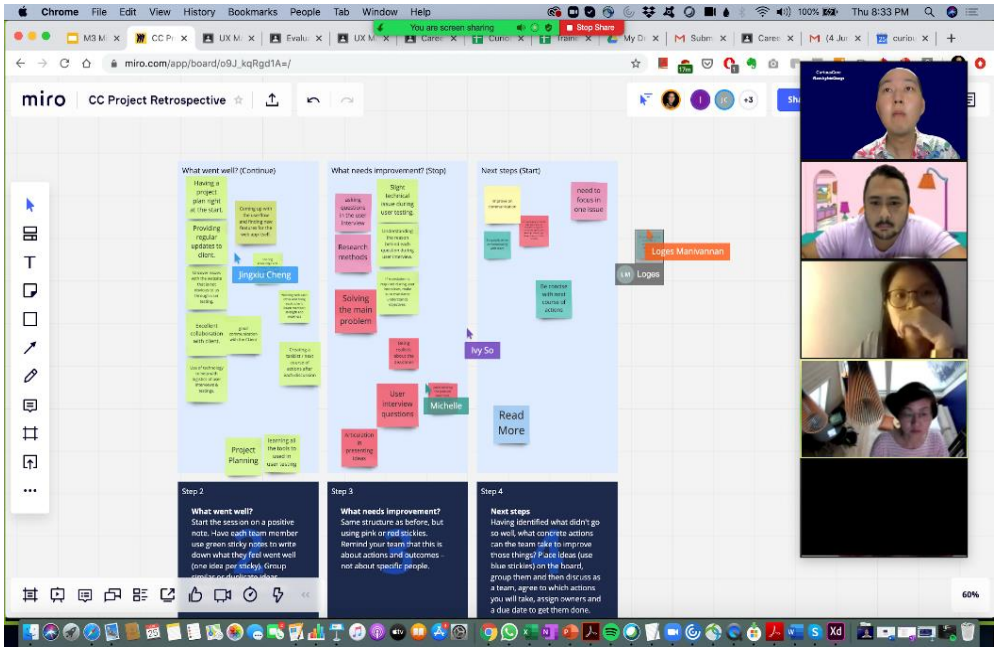
However, COVID-19 has brought about unprecedented changes in the way we work and teach. As a result, we are noticing a shortfall of local industry projects for the students to attempt. This often leads to a scaled-down project with the school as the client or a design competition submission without constant feedback from a real client throughout the design process. Yet as design professionals, we know that feedback from users, prospects, and business stakeholders is key to driving improvements to the design output.

How might we continue to make FYP relevant for our design graduates so that they are well prepared to enter the workforce and meet the demands of working remotely?

At General Assembly, every User Experience Design bootcamp student has a real client industry project at the end of their programme. For example, in 2018, I assigned a project for bootcamp students while working at Razer's eCommerce business unit. Students have commented that the exercise was the most valuable and challenging part of the bootcamp.

At CuriousCore, a company I founded, our four-month part-time coaching programme matches mid-career professionals to four real clients around the world (including the United States, Brazil, United Kingdom, and Singapore) ranging from non-profits to Start-ups/Small Medium Enterprises (SMEs). We are also in conversations to do the same for AirAsia, an organisation that is transforming its business unit to be more technology and customer centric as the airline business slumps. The experience, since June 2020, has been invaluable for both the client and the students and the entire programme has helped the students understand how to do their research and design remotely without sacrificing collaboration.

In a post-COVID-19 era, we have the opportunity to groom our students to shine globally as designers as SMEs and non-profit organisations around the world struggle to enlist the help of professional design talent to help improve their organisation's digital products and services. As clients get used to the idea of working remotely, we should also prepare our design students to work remotely and not just learn remotely. This is enabled through software tools like Miro (for brainstorming), Figma (for collaborative wireframing), and Otter.ai (for transcribing).



Project retrospective applying Agile SCRUM practice

STORY

55

Student-Led Sugar Rocket Design Activity

Li Ling Apple Koh, Mei Xuan Tan, Maggie Pee, Mei Chee Tan

Singapore University of Technology and Design

Singapore

At Singapore University of Technology and Design (SUTD), an interdisciplinary design activity, named 2D, is integrated into the curriculum to help students reinforce the concepts learned. Each 2D activity has a theme that ties two or more courses in the study term together. An SUTD student experiences his or her first 2D in Term One, which focuses on the application of Chemistry, Physics, Mathematics, Humanities, Arts and Social Sciences (HASS).

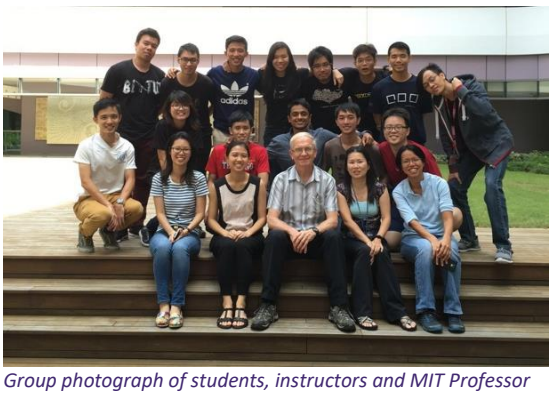
The problem statement in the 2D activity of Term One in 2012 and 2013 revolved around a chemical launcher and a pneumatic cannon. New 2D activities were needed for the following years such that a variety of projects was available to keep 2D relevant and interesting for the students. This led to the creation of a new activity on hydrogen fuel cell toy car in 2014. The implementation was challenging with comments that the toy car was too slow and not exciting enough, and the link between all the subjects was weak and contrived. Modifications were made in the following year based on students' suggestions in improving reliability and speed.

Working together with students who had first-hand experience in improving the toy car was an enriching experience. These students also demonstrated that they knew the elements required in executing a good 2D project. Thus, sophomore and junior students were invited to work with instructors in Term Two 2015 to develop a new 2D activity from scratch involving a sugar propulsion rocket.

To prepare for the task, the students attended a series of workshops on the design and implementation of past 2D activities and water rockets. The students then did a literature search to better understand the chemistry and physics of sugar rockets. Together with a group of Massachusetts Institute of Technology (MIT) faculty members and drawing experiences from previous activities, students brainstormed and shared various ideas and designs on the rocket motor, body, guiding system, and thrust test jig before proceeding to prototype and build the entire system in 12 months.

Trial test of an early iteration cable-guided rocket body design

This cable-guided sugar propulsion rocket 2D activity was successfully launched in Term One 2016. It was rewarding to see that these students contributed to SUTD's curriculum and developed the activity with minimal advice from the faculty. The students understood and addressed the faculty's concerns on various aspects, primarily on the severe consequences of mishandling a sugar rocket and giving a strong connection between the subjects. Their genuine interest in working on an interdisciplinary project and creating a fun yet educational 2D experience for their juniors enabled a student-centred design project experience.



Group photograph of students, instructors and MIT Professor Kim Vandiver who worked on the cable-guided sugar propulsion rocket

STORY

56

Applying Design Concepts to an Engineering Project

Maggie Pee, Apple Koh, Mei Xuan Tan, Massimiliano Colla, Chee Huei Lee, Dario Poletti, Wei Lek Kwan

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Singapore

Singapore University of Technology and Design (SUTD) has many labs and facilities that allow students to make anything they want. However, with this convenience, many students tend to start building as many 3D-printed or Styrofoam structures without much planning. The course instructors for Engineering in the Physical World in Term Three made two significant observations in the previous years: students had (1) difficulty defining the problem and (2) the tendency to build a prototype, often using a 3D printer, right away through a trial-and-error approach before any theoretical analysis. As a result, material wastage was frequently observed during project weeks.

In 2019 and 2020, our effort was focused on reinforcing the design thinking process, where students were tasked to employ the design model introduced in the Introduction to Design course in Term Two to build a working prototype. In this graded project work, known as 1D designette activity, students worked in teams of three to four, over a period of four weeks, to demonstrate their understanding of the concepts learned in class by delivering their solution to a problem. We employed in-class pre-analysis sessions to facilitate the use of the design thinking method taught in their design course.

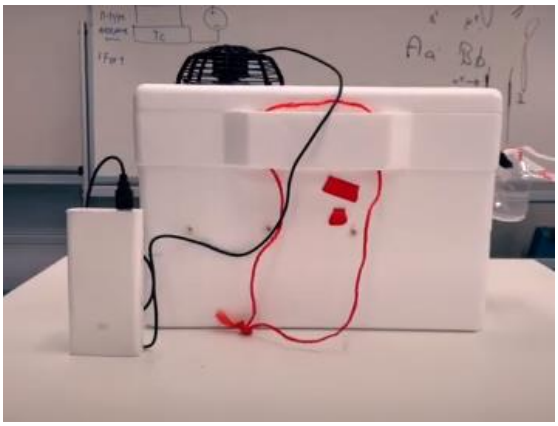
Students were asked to create a working prototype that can provide a conducive studying environment. To guide students in analysing the problem, a pre-analysis worksheet was provided, and in-class time was allocated for the student teams to define the problem and constraints, to perform needs finding and benchmarking, and to brainstorm and make a back-of-the-envelope calculation to verify the feasibility of the proposed solution. It appeared that the students were generally engaged in such pre-analysis sessions. However, a few students expressed their frustration as they were accustomed to a well-defined problem with a single solution. The instructors also observed a few groups seeking inspiration on YouTube and Google.

To encourage innovative solutions, the novelty of the prototype was graded using the rubric shown in Table 1. To prevent solutions that can be novel but impractical or not working, the prototype was also graded with an equal weightage on practicality and workability that was demonstrated using a two-minute video.

Based on the grading rubric, about a third of the groups scored full marks for novelty but only six groups out of 97 groups scored fully for novelty, practicality, and workability.

Table 1 Innovation was graded as follows:

# of teams with same solution from same cohort	Marks out of 2
$\geq$ 5 teams	0
2 – 4 teams	1
Only team	2



Student prototypes shown in video

The overall learning outcomes that we hope the students achieved are the ability to define their problem and constraints as well as making some pre-analysis using physical principles before building their prototypes.

Students were expected to have gained a better understanding of the importance of reframing the problem and pre-analysis for better execution of the solution with minimal wastage.

STORY

57

Learning Experience Design (LXD) in Nanyang Polytechnic

Shirlyn Goh, Florence Teoh, Kok Jim Seah, Leo Wee, Gayle Quah, Jason Chui, Joanne Chua, Flex Tio, Tina Jailani, Cheryl Cai, Sherlyn Tang, Dawn Foo, Melissa PH Tan

Nanyang Polytechnic

Singapore

Introduction of LXD to Nanyang Polytechnic community

Since 2017, Nanyang Polytechnic (NYP) has been promoting the use of Learning Experience Design (LXD). The NYP LXD workgroup defines LXD as creating meaningful, motivational, and memorable learning experiences that address the needs of learners and achieve the intended learning outcomes. This is based on NYP's philosophy of creating engaging teaching and learning with LXD as one of the pillars.

It is the objective of the NYP LXD workgroup to transform the education experience through learning experience design.

Contextual application of LXD

NYP has six Schools. Given the diverse nature of courses – ranging from engineering to health sciences – the Schools have had to contextualise their use of LXD to different disciplines. The following case studies are examples of LXD applied to different contexts.

Drawing tool to address learners' pain points

In a perspective drawing class for diplomas in the School of Design & Media, our lecturers made use of LXD principles to uncover the pain points of our learners in learning perspective drawing. The result was the creation of a physical perspective drawing kit – comprising tools such as strings and wooden frames – to help learners. Students also took drawing lessons from their peers. All these helped our learners to visualise and better understand perspective drawing. Over 90 per cent of our learners responded that the hands-on learning activities and collaboration between peers motivated them to learn, and enhanced their understanding and retention.

Learning empathy

Simulation can help our learners learn the importance of empathising with others in society, in order to be more inclusive. To help our learners truly appreciate the importance of what users go through, simulations need to be realistic and relatable to our learners. In this course, our lecturers considered the learners' profile, learning outcomes, and learning environment to develop a simulation that put our learners in situations that reflect in real-world scenarios. Taking the simulation further through a combination of debates, online discussions and self-reflection, this specially crafted simulation learning created a meaningful and thoughtful learning experience for learners, with more than 85 per cent of our learners rating the lesson as realistic and an excellent way to learn empathy.

Bringing immersive learning experiences to a higher-level using simulation in empathising with the less-privileged when designing a product

Fostering active learning communities

Learning can be challenging especially when learners try to grasp a wide spectrum of technical knowledge within a short time. Hence, active learning communities are formed for learners to benefit from collaborative learning. Such communities also help learners cope with learning demands and stay motivated. Learners draw from the collective wisdom of everyone. Most of our learners felt that they were more resourceful, independent and competent. In fact, they were able to come up with different creative solutions than what a single lecturer would otherwise offer.

Collaboration among educators

The larger objective is to further the use of LXD in NYP by encouraging the formation of a professional learning community, where collaboration across schools helps to enhance and promote LXD. The NYP LXD workgroup meets regularly to share ideas on creating engaging lessons. With the COVID-19 situation, collaboration among the lecturers has evolved to working with LXD tools online.

Future plans

Moving forward, the LXD workgroup will enhance the LXD Strategies and Framework to better cater to the needs of our academic staff in designing memorable, motivational and meaningful lessons. There are plans to leverage technology by developing lesson planning resources based on the LXD methodology. These resources will facilitate lesson planning and, at the same time, act as a repository for best practices and exemplars which will effectively drive knowledge management among staff.

STORY

58

Drawing Systems, Drawing Experiences, Drawing to Design

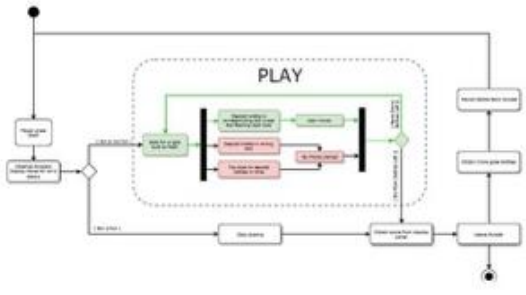
Christine Yogiaman, Arlindo Silva

Singapore University of Technology and Design

Singapore

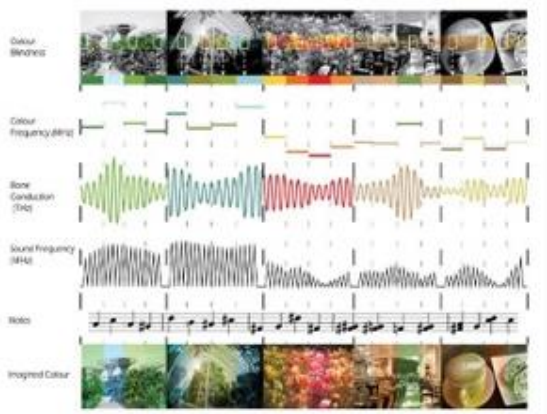
This is a story of two faculties from different disciplinary backgrounds that collaborated for over four years to implement a common foundation design course involving 500 students and 20 faculty members each year. The Singapore University of Technology and Design (SUTD) continues to innovate its multi-disciplinary design approach for education since its inception in 2009. It was within this environment that the Mechanical Engineering and Architecture faculty were asked to co-create a non-discipline-specific design course that is required for all first year SUTD students. The first version of the foundation design course, implemented in 2015, was an immersive experience for both faculties who were new to the SUTD culture and the context of a multi-disciplinary design education. It became clear that faculty from different disciplines and first year students do not possess a "shared language" that allows for productive design feedback and development. This inability to communicate was exacerbated by requiring students to work in teams. Student teams often resorted to a strict division of roles and promoted a singular "leadership/voice" in each team that discouraged co-creation and inclusion of diverse perspectives.

In response to these observations, the faculty duo implemented a two-week-long jump-start/conditioning session at the beginning of the foundation design course that simultaneously immerses students in contemporary multi-disciplinary design culture and helps them quickly gain the capacity to communicate through drawing. We cross-referenced many different types of representations from both Engineering, Art and Design that have the capacity to enable the generation of design activities and feedback loops. After much discussion, it was decided that the students will be exposed to two main forms of representation --- the Functional Activity Diagram and the Montage Sequence Drawing.



Example of an activity diagram that enables students to identify the continuous loop of activity sequences

At the beginning of the jump-start session, student teams were exposed to 50 different examples of what their design course projects could be. The teams were randomly assigned a case study. The aim of these two weeks was not to align their team's interests to the selection of the case to study, but rather, through these random pairings, to allow teams to be exposed to a wide range of design works that they otherwise might not gravitate towards. The student teams were asked to research multiple aspects of the case and to deliver three outputs: 30- to 50-word summaries of the case, Functional/Activity Diagrams, and Montage Sequence Drawings.



Two montage sequence drawings of the same case study

The short case summary allows the faculty to establish the team's grasp of the case's design intent, context, and relevance. In the classroom, the writing was requested twice, once at the start of the jump-start session and once at the end.

The evolution in the writing was evidence that teams had gained a deeper understanding of the cases through these modes of drawings. The objective was for the acquired drawing capability to facilitate the team's ability to engage in productive design activities for the rest of their semester.

STORY

59

Virtual Tour for Teaching Participatory Design, Wayfinding and Place-Making

Kong Chee Chiong, Jose de Castro, Neumann Xiao

Republic Polytechnic

Singapore

Due to COVID-19 and safe distancing measures, our Spatial and Environment Design lessons became online lessons. This presents a unique problem when we are teaching participatory design, wayfinding, and place-making, because these require the students to interact with the community on-site to co-create solutions. When we moved into Phase Two with Safe Distancing measures and some practical lessons were allowed on campus, we crafted a design brief based on the Republic Polytechnic (RP) campus.

The design brief was as follows:

"With the opening of Woodlands North MRT, Republic Polytechnic has a new entrance at the north. Unused spaces now have the potential to become important places. The school management is exploring these seven sites for a community-based design to improve the experience of students, staff and visitors."

But even then, there were not enough people in the RP campus for students to conduct participatory design research meaningfully.

With the help of my colleague, Jose de Castro, we took 360-degree photos using a special camera and created a Virtual Tour of the route from the new Woodlands North MRT (Mass Rapid Transit) entrance to Admiralty Park, using Theasys. This gave the students the opportunity to be in the RP campus virtually and design signages for the wayfinding lessons.

When some students were allowed to have place-making lessons on campus, we taught them how to take 360 photos of their chosen sites and add to the Virtual Tour using Google Streetview. The students created online survey forms that were linked to the virtual tour to get users' views of each site, as they go through the virtual tour.

Users are encouraged to suggest ideas and co-create solutions to problems identified by the students. The students will then visualise and prototype their designs and insert them into the virtual site as Gallery Walk for the users to vote, evaluate and comment.

Both students and users can develop empathy by experiencing the user journey. Students can visualise the designs on-site and gauge how they fit or stand out from the surroundings. This is particularly important for wayfinding and place-making solutions which need to be visible yet part of the environment.

Virtual design

The use of Virtual Tour helps the students to reach out to more diverse users, despite the COVID-19 measures. It is also a novel idea that attracts and engages the users beyond a simple survey and brings them to the actual journey and site. Unlike other participatory design methods, the community can be involved in a non-threatening manner with the freedom to comment anonymously.

The Virtual Tour link is live and evolving with the designs, much like the User Experience Design process. We have plans for the students to propose to the school estate office, using the Virtual Tour link, for their designs to be implemented. This use of virtual reality technology helps design students to go beyond their limits. We plan to extend this to work on overseas projects with foreign partner universities.

STORY

60

The 2D Project in Term 2 @ SUTD: A Multidisciplinary Project across Mathematics, Physics, Humanities, Social Science & Design

Arlindo Silva, Christine Yogiaman

Singapore University of Technology and Design

Singapore

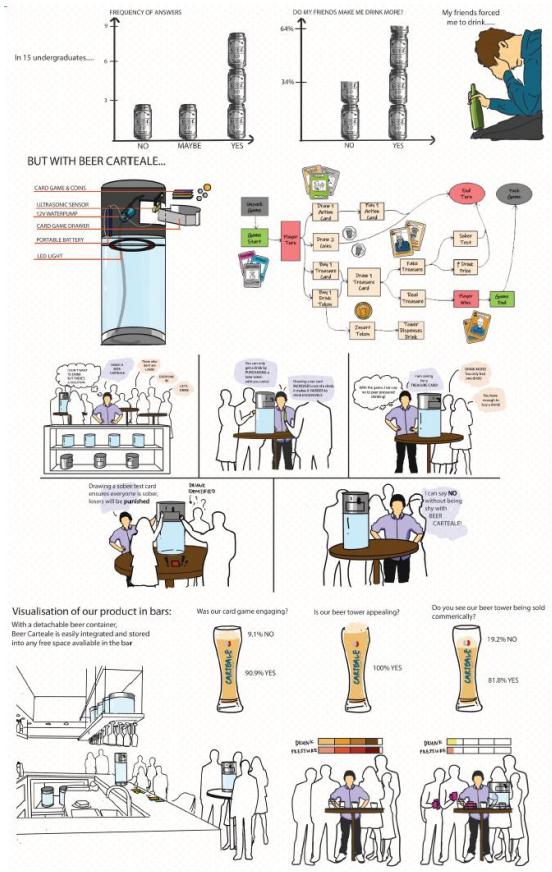
Teaching design in the foundational years of engineering and architecture education has been growing in popularity in recent years, posing some difficulties along the way. This story analyses these perceived difficulties and presents a case of design teaching in which Mathematics, Physics, Humanities and Social Sciences (HASS) explicitly come together in a design project at the freshman level. The experience of setting up this project and assessing the outcome is described, from the perspective of the mathematics, physics, HASS, engineering, and architecture instructors involved. Students take four required subjects out of the following five: Theorising Society, the Self and Culture (TSSC) or World Texts and Interpretations (WTI), Introduction to design (ID), Advanced Mathematics II (M2), and Physics II (P2). Of the four subjects, they choose two to pair with their design project under ID.

Historically, the bridging of subjects has been mostly left to students to figure out by themselves. The 2D project in Term Two at SUTD has tried to tackle this, by explicitly instructing the students to bridge this gap between subjects. Students are explicitly asked, in the context of their own design project, to show how mathematics, physics, and HASS have influenced their projects or conversely, how their project has helped them understand those subjects in greater depth.

Developing a rubric for multidisciplinary assessment of the 2D project

A project with this breadth is quite difficult to assess and grade. The rubric must work across M2, P2, TSSC, and WTI because the two topics that each individual team would choose to develop during their design project are not known at the start. Therefore, the rubric has to lend itself to interpretations that make sense in each of the subjects. The team that steers the 2D project and the rubric is composed of a 2D project lead coming from the ID faculty team and a 2D lead from each of the other subjects. This team comes up with a top-level rubric that is then further detailed if needed for each of the specific 2D subjects. This top-level rubric contains four main topics: information, insightfulness, creativity and clarity. The students are made aware of the rubric in week one, and they know that each subject instructor for the subjects they choose will look at their 2D project poster (this is a deliverable for the 2D project) together with their design poster, and grade it independently.

Typically, the end-of-term ID exhibitions generate a lot of excitement among students and faculty alike. On average, this exhibition involves 400-500 students spread across 80 to 90 design teams, 15 to 20 ID instructors, four to five P2 instructors, seven to eight M2 instructors, and eight to nine WTI and TSSC instructors. A total of roughly 40 to 50 instructors are involved in this grading on exhibition day. The figure below shows an example of an ID poster on a single project.



An example of a student team ID poster

The overall feedback about the way the 2D project was run, from informal conversations with students, were mixed. Some students appeared unclear about their 2D project goals at the beginning of the semester but were quite happy with the way in which the 2D project was conducted in the overall context of term two, while others felt otherwise throughout the term. Some comments from students include "what exactly do we need to do? And how should we do this in a meaningful way?". The general reactions amongst the faculty team members initially mirrored the students' feelings, but several iterations of this project in consecutive years have made it a hallmark for term two and students have converged towards a better understanding of the project's deliverables.

STORY

61

HCD for Adaptive Learning

Joppa Lydda de Guzman

Eastern Visayas State University

Philippines

This is the story of our humble tertiary interior design class. It makes use of an empathetic approach in instruction where students are at the centre of each teaching-learning episode. For them to fully grasp the function of the profession they are aspiring for and have a better understanding of its role in our society, a Human-Centered Design (HCD) approach is used.

Empathy. Changed the mindset of students through the realisation of the power of design when they develop a sense of who they are designing for, because oftentimes, they regard interior design as something purely aesthetics.

HCD approach

Practice and motivation. HCD has also provided the students with the simple solution of changing their behaviour towards learning by making them actively experience the true work of the profession they are aspiring for.

Fun and inspiration. Constant use of feedback resulted in a harmonious class atmosphere and improved students' level of participation through inspiration.

Participatory. Through HCD, students are recognised as co-designers of the subject contents and partners in every teaching-learning episode. Most importantly, it helped in the continuity of our education amidst COVID-19.

When the pandemic hit globally, the education sector was greatly affected especially when face-to-face class sessions were discouraged. Through the transformational flexibility of HCD's feedbacking mechanism, the entire class was able to come up with solutions as to how their creativity and learning might continue when all physical social activities were put to a stop.

We were able to design learning modes (offline/online) that the class has so as to continue with their learning but also to help cope with the stresses brought by the uncertainties of the pandemic. Students' daily quarantine posts served not just as their historical yet significant creative outlet, but also as their psychosocial support to help everyone through continued online social activities. Most importantly, it taught them the positive impact of the internet and social media. Their empathetic nature continued as they showed concern and support to the front-liners and patients through card-making, putting their creativity to good use while they reflected on the power of art and design.

HCD helped us to adapt to this pandemic to improve and innovate around existing best practices to form a new one. It did not just help our students achieve the intellectual capacity they need, but most importantly the heart and attitude to be successful lifelong learners and future designers.

HCD in class

STORY

62

Design Centre for Excellence

Wayne Ketchen

Gordon TAFE

Australia

Local industry tells us they want their employees to be more connected with real-life industry issues. They want staff to have an awareness of the value of collaborative work across disciplines, and to have greater exposure to this prior to joining the workforce.

Graduates are often not equipped to work in multi-disciplinary teams which is so often the nature of a modern creative work practice. In an increasingly competitive world, these skills add to a graduate's employability skillset. Recent global events have pivoted a workforce to new ways of working that must be factored into design education.

Through a Victorian State Government aligned grant programme (WorkForce Training Innovation Fund), funds were secured to develop new ways for industry and educators to work together in a design-centred response to solving this challenge.

What was developed was a two-prong solution:

- Create a Design Centre of Excellence to create the right incubator and resourcing conditions for cross-team collaboration to occur. The Centre is located in the heart of the Gordon's Visual Arts cluster and provides an environment for students and staff to come together and utilise state-of-the-art equipment and software workflows.
- Create a Course in Multi-Disciplinary Design that provides a curriculum framework for individuals to come together as a team and provide solutions to industry-led, real-world problems.

Design centre of excellence programme commencement

Students will develop and/or expand their design capability through the application of a collaborative, multi-disciplinary approach to creative thinking in the design process. The course is the first of its kind in vocational design education and recognises that learners already have expertise in their own design field. They are expected, through their activities and assessments, to bring this expertise and capability to a multidisciplinary design project they will work on with learners from other design fields. Over a 13-week programme, students will learn about discipline boundaries, and how to collaborate effectively to overcome them to improve design outcomes. Students will apply a range of online learning and project management tools to aid the collaborative process.

Workshop sessions

The programme also recognises the value of design thinking to a range of business groups outside of the design sphere and as such, the programme is currently being rolled out to other industry sectors to give them a greater understanding of how to work together in cross-collaborative teams to solve real-world problems.

STORY

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The Tinkerer’s Toolkit

Tulip Sinha

Srishti Manipal Institute of Art, Design & Technology

India

As a faculty member teaching industrial design, using making as a way to think, visualise and make design decisions to arrive at solutions would be the most normal mode to consider. However, what does one do…

- When ideas are expressed in words, but never visualised in sketches or made into models?
- When there is nothing tangible to see, debate about or evaluate?
- When writing ideas makes owning them easier?
- When ownership becomes more important than sharing physical ideas for feedback?

It is perhaps the inability to engage with materials early on that becomes a handicap and eventually, a fear of creating imperfect ideas takes over, preventing students from being hands-on. I turned to Matt Ratto's concept of Critical Making (combination of 'critical thinking' and 'making'). I had all the above-mentioned challenges to conquer, which got me wondering:

- Could 'making' be used as a tool of 'investigation' by asking 'critical questions'?
- Can it then be used to 'respond' in diverse ways and not only to manifest solutions?

Making could become a tool for dialogue between the various participants involved in the design process.

The Tinkerers' Toolkit was conceptualised as a simple card-based gameplay that employs 'making', 'critical thinking', 'critical questioning' and 'design process'. Developed in 2017, it has undergone three iterations, to expand and validate its scope as a pedagogical tool.

The card game consists of three types of card decks: Process, Enabler and Disruptor. Each deck acts as a prompt for the participants and guides them to generate divergent questions, followed by impromptu making. Those questions and responses are used for peer critiquing. I have used it in two very different contexts:

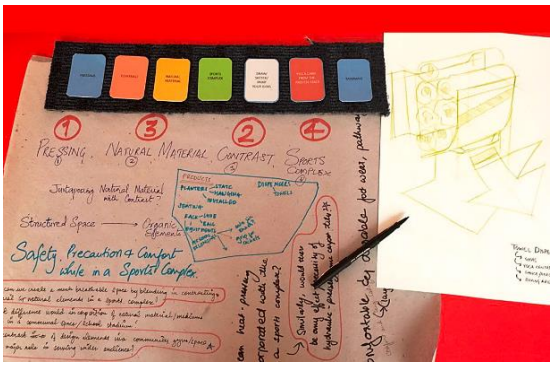
1. As a tool for idea generation when there is a 'creative block': The learners produced varied ideas from scratch for a course on 'Lifecycle of a material'. They were to revitalise waste carpet tiles but did not know how to ideate individually beyond a point, so the toolkit helped reconfigure their design process. They generated questions, drew furiously, made quick prototypes, debated on them, and did all this collaboratively, without getting bored or feeling pressurised. Thereafter, they were inspired enough to ideate individually and even made models fearlessly.

2. As a tool for research for early design learners: The toolkit was used to unpack notions of disaster, island, home, loss and resilience, and ask questions related to them before and after an expedition we took together to the world's biggest river island called Majuli, an area that experiences devastating floods each year. Having asked and iterated on pertinent questions, the students responded to them creatively using scavenged materials and not necessarily resolve the matter. The depth and the variety in the questions and their exhibits displayed a rare maturity.

The toolkit is adaptable across disciplines, contexts or type of investigation. It is reconfigurable with changeable card content to suit the subject and the teacher, and flexible across short and long duration play.

And as a pedagogical tool,

- It teaches to ask 'critical questions' through sensorial engagements.
- It helps situate creative practices within a socio-cultural-ecological context.
- It necessitates unselfish collaborations and collective ownership across various stages, without the fear of failure.



Collaboratively generated critical questions for ideation

STORY

64

COVID-19: Plight of Teachers? Not Really

Kaukab Abid Azhar, Nayab Iqbal

Salim Habib University

Pakistan

For Pakistan, value through innovation in design will play a key role in enhancing competitiveness in global markets. Pakistan's education system's score on education innovativeness is quite low; however, the recent pandemic has caused disruption and challenged how the educators have responded to the situation. COVID-19 presented a unique situation in which all educational institutes were shut down suddenly in March. Reopening of the educational institutes was hard to predict as experts forecasted that it could take even more than a year. The situation got worse day by day.

The educational landscape of Pakistan is quite different as it relies mostly on private education institutes to provide quality education. Public sector institutes lack financial and technological resources so people who can afford have the opportunity to get quality education. With COVID-19 forcing all institutes to shut down, the private education model lost its sustainability. With a looming economic crisis and uncertainty in middle-class groups, parents could no longer afford to pay fees for closed educational institutes. This forced the institutes to shift to online education without much technological infrastructure and required training for the teachers.

My fellow Assistant Professor, offering the course of Creative Education, is 55 years old and had strong reservations about this decision. He had relatively low knowledge of technology and no prior experience of online teaching. He somehow managed to learn the basics of online learning. After tireless efforts and sleepless nights, he finally logged in to his first online class. Unfortunately, he did not learn to manage privacy settings online and some students took advantage of the situation and hijacked his class. Those students continuously muted other classmates' mics, used abusive language and disrespected the teacher. He called me immediately after the class. I have not heard him so sad in the three years that I have known him. If I were in his place, I would have quit but he was a fighter. He learned the privacy settings and did not give up. In each class, he had to learn something new, but he never gave up. Just recently, the semester ended. Although he could not achieve similar ratings that he used to get in physical classes, he made it through.

How did he learn something this complex so quickly? He reimagined education. He knew that it was not possible to make the entire shift so quickly. So bit by bit, he integrated different techniques in his online classes. He was an experienced teacher, so he knew how to conduct classes, but he had to realign his teaching strategies along with students' expectations when doing it online. These were the exact same things that he had to teach in creative education. It is about thinking differently and applying the theory to real-world problems.

The importance of design education is of great importance in this era of endless possibilities and increased competitiveness. Educators have the power to ingrain values by being role models and transforming the mindset of young generations through actions.

Such actions have empowered individuals to think creatively and collaborate efficiently. There will always be challenges and limitations so instead of blaming the external forces, we should focus on getting things done.

STORY

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President's Challenge: Innovation at the Heart of Miriam College Education

Norman M. Diaz, Ma. Cristina L. Ibanez, Joy S. Arrogante

Miriam College

Philippines

Marking the 90th year of Miriam College (MC) in 2016, the Philippines' First Integrated Maker space, the Miriam College – Henry Sy, Sr. Innovation Center (MC-HSSIC) was launched. In continuing the legacy of its founders and embracing innovation, it launched the campaign "Innovation at the heart of MC Education". And to support that, the centre launched the President's Challenge, an annual competition on innovation, design thinking, and project development. It recognises the community's hard work in generating big and bold ideas, which will lead to creative solutions that have an impact on the community, and possibly, the whole country.

The President's Challenge is a fun and exciting platform for members of the Miriam College community to think of innovative solutions to real-world problems. They take centre stage as they design and implement projects that hone the 21st-century skills of creativity, critical thinking, collaboration and communication. With the help of industry experts and mentors, the President's Challenge serves as a means for the institution to show that Miriam College is an empowering hub for trailblazers, rooted in our founders, the Maryknoll Sisters of New York.

Project pitching

Innovative ideas and designs

Through the President's Challenge, Miriam College can stay true to its mission of providing quality and relevant education that prepares students to become effective leaders, lifelong learners, and productive citizens. The competition allows students to apply what they have learned inside and outside the classroom by designing products, programmes, and services that are beneficial to the Filipino people.

For the President's Challenge 2020, students were given the freedom to choose and address a problem, issue, or concern related to COVID-19 in various aspects. It may be based on their experiences at home, at school, within their communities, or in other relevant contexts. Students may opt to enhance a task or project that they have previously developed or are currently doing in their online classes. It is expected that each project entry should yield a specific product or service that has the potential for implementation and scaling.

Student ideas and designs showcased in President's Challenge

Innovation at work

With the support of the Philippines' Department of Science and Technology, Miriam College was able to establish its very own Technology Business Incubator that supports the Philippine government's initiative for inclusive economic growth by providing an ecosystem for learners, aspiring entrepreneurs, and startups. The Miriam College - Technology Business Incubation (MC – TBI) supports the President's Challenge by translating the students' ideas and designs into marketable products/services. MC-TBI's enabling ecosystem provides a rigorous six-month incubation programme called "The Nursery" and the Extended Residency Programme filled with mentoring, training, networking events, capacity-building activities, business classes, and the likes for accepted teams, incubatees, or startups.

Transforming education through design is a difficult task but making it happen is possible. With the different initiatives and programmes of Miriam College, through MC-HSSIC, and in collaboration with the various Philippines government agencies, we can develop and improve the empathetic and critical thinking skills of the students and make learning more meaningful and relevant. Thus, "*In the future, it is not the competition of intelligence, but the competition of creativity and innovative thinking*" (adapted from Jack Ma).

STORY

66

Role of Technology in Creative Practice & Education

Emanuel Maia

Pearl Academy

India

There is a need for a changing curriculum that is industry-friendly and stresses on the importance of developing cognitive skills.

The ongoing pandemic has affected the daily routine of people and touched every aspect of their lives. With an unavoidable economic slowdown across industries, the pandemic has also affected the education system in the country. Higher education may end up embarking on a new learning curve. New-age learning seems to be settling a long ongoing debate on how best to deliver education to prepare students to be industry-ready.

The pandemic has changed the way educators connect and teach creatively in a short period of time. In many ways, it has been an opportunity to understand students better and find ways to prepare them for the future. There is a need for a changing curriculum that is industry-friendly and stresses on the importance of developing cognitive skills.

Hard skills related to technology

The most in-demand hard skills today are predominantly related to technology, such as Internet of Things (IoT) and Artificial Intelligence (AI), reflecting the increasing knowledge and demand for the wider applications of these skills. It is the combination of creative practice with the potential of emerging technologies that will qualify design graduates for fast-growing opportunities in a variety of industries. Creative practice prepares students to be conscious of their decisions when creating new products for the markets. The relation of creative development and the environment is one focal point that enables the students to understand sustainability, managing resources, human landscapes, outdoor and indoor behaviour, technological advancements - how these can co-exist and promote innovation. With this knowledge, students can establish relations on how a product flows in the market. Often, students are unaware of exposing their products or ideas to the public without getting a patent on it. Design education must ensure that students are well-informed about the patenting process and the international standards norms while selling products internationally.

Role of creativity

To create a sustainable country, the transition from a linear to a circular economy is a necessary precondition. Many companies believe that the more environmentally friendly they become, the more efficient their products will be. To achieve long-term sustainability, it is necessary to strive for a circular economy and come up with innovative products and solutions. The integration of technology with design allows the product to be more sustainable. To achieve these goals, companies need professionals who are trained in sustainable innovation and innovative thinking. The industry relies on partners like educators and educational institutes, who can enhance the diversity of cultural expressions, contribute to developing and disseminating knowledge, and foster creativity and a sustainable environment. Higher education plays a leading role in supporting sustainability by promoting student innovation-driven thinking towards solving socio-environmental challenges and creative problem-solving.

Reinventing education for the post-COVID-19 era

Every challenge is an opportunity. COVID-19 has made institutions of higher learning switch to creative education and technology that delivers great content and engages students effectively. While several educational institutions have resisted change in the past and followed old-school methods of learning, current times have compelled them to do what is needful.

Innovation and creativity in education can help our existing generation of students in getting quality education, no matter the disruptions. The use of new technologies such as IoT and AI translates into unique needs that students require to hone their skills and deliver the best solutions for the evolving needs of the markets.

STORY

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The Conversation Toolkit

Tulip Sinha

Srishti Manipal Institute of Art, Design & Technology

India

My students often used design research tools that required passive participation. They came back with very little insights even after interviews or interactions with people, and I always wondered why. Though digitally connected, their interactions with their peers were also on a 'need only' basis.

The humble art of making conversations was fast becoming an uncomfortable affair, risking disappearance. Consequently, the art of listening and engaging attentively was dying too. The loss of this most natural mode of communication disengaged students from their immediate environment, affecting their practice as young designers.

Cultures with a wealth of ancient knowledge systems (as in India) rely a lot on oral transmission (called 'Shruti'). The practice of meaningful communication, therefore, becomes a necessary means to build an ethos of investigation, knowledge creation and sharing.

As a response, I developed the Conversation Toolkit to foster active communication, socio-cultural connections, and mine the knowledge borne out of social interactions. It works on the premise that:

- Conversations are a form of 'intellectual capital' that can be used as a simple tool of investigation for the practice of design and life.
- Critical questions can emerge from meaningful conversations because learning may not always take place from exchanging or eliciting the right answers alone.

The Conversation Toolkit and its contents

The content of the toolkit is anchored on understanding the concept of 'culture', since as change-makers, designers need to be able to place their offerings within socio-cultural realities and sensitivities. The toolkit, therefore, facilitates conversations that help decode the complex concept of culture and then helps them brainstorm on creating a new culture by the end of the game.

The toolkit consists of:

- One instruction manual
- Four colour-coded decks of Category cards with the following headings: + Icebreaker, + Memory, + Awareness, + Creation

The game is played in groups of four to five and is meant for a class of 25 to 30 people. Each Category deck represents a category of conversation and consists five variants. The four Category cards must be used in the same order as listed for effective engagement.

Each Category card has three rounds, which are to be completed, before moving onto the next category, since they are meant to operate as scaffolds for the conversations that transpire. As an option, a 3-dimensional framework consisting 'turn-taking', 'domain awareness' and 'generative capacity' has been developed, to assess the nature of conversations.

I used the toolkit prior to an expedition to an unfamiliar rural area with my students and the observations were as follows:

- My role as a facilitator stopped at initiating the game. Thereafter it was co-managed, so I was able to listen more and participate also. We had finally created a non-hierarchical, unthreatening space for communication.
- Mobile phones were not in use for two long hours. They enjoyed 'listening to each other' and wanted to finish the game. We had 'slowed' our classroom at last.
- What started with a lighter, more 'familiar world of the self', which is subjective, moved to the 'unfamiliar outside world', which is objective, and hence the responses needed more deliberation.
- The conversations often steered away to very interesting directions that had not been anticipated.
- The newly designed cultures were very well-scaffolded with solid reasons for their existence.

STORY

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Matter of Perception!

Neha Dimri, Ashish Dhaka, Sonika S. Khar

Pearl Academy

India

In March 2020, we were about to begin our ambitious International Lab Experience module for the Undergraduate Fashion Design course. We had spent months preparing for it --- all the speakers and participants were ready and excited to embark on the journey when the lockdown was announced. Although part of the module was planned to be online as we were collaborating with an international university, we were not prepared to not see our students in a physical space. There were visits planned and live demo sessions lined up. Now what?

With the country going under lockdown, there was no other way but to shift everything online. The college had invested in an online Learning Management System (LMS). We also relied on online meeting platforms.

We started conducting our online classes. We also added a few guest lectures by subject matter experts from the field of sustainable fashion. Little did we know that the lockdown would turn into a blessing in disguise!

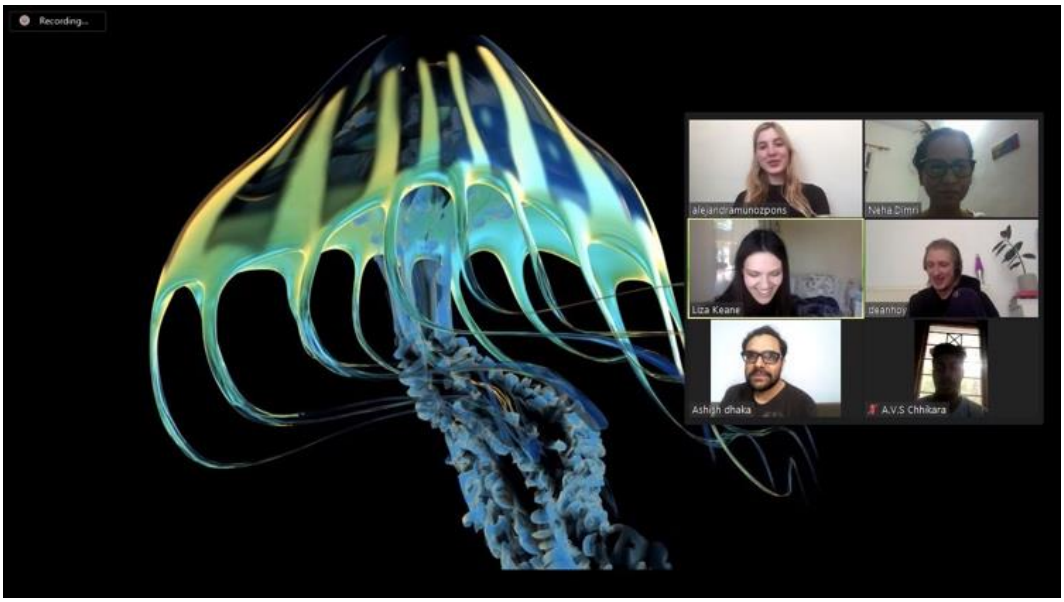
Since we had to cancel our face-to-face interaction, we started reaching out to crafts persons, designers, and practitioners to interact with our students. As the lockdown had cleared everyone's busy schedule, most generously accepted to share their experiences with students. There were Indian crafts persons, sustainable brand owners and designers who spoke to our students. Indian students got the opportunity to talk, interact and learn from sustainable fashion professionals from the United Kingdom and New Zealand.

Our collaborators from United Kingdom also started online interaction with students. We used Instagram to quiz students and had quick polls to get the pulse of the class. We also used Trello to collaborate online. I was surprised by the agility and quick adaptability the students and tutors showed.

Ultimately, due to the lockdown, we were able to provide the opportunity to our students to meet the brightest minds from the field of sustainable fashion across the globe.

Working day and night, by managing three different time zones, we concluded the modules with flying colours.

The best reward was that the partner institute and their students were also happy, and our students showered us with messages of gratitude. They loved what they learned and enjoyed the online experience despite being in total lockdown! So maybe it was not that bad after all!



The last day with the UK faculty!

STORY

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Create a New World

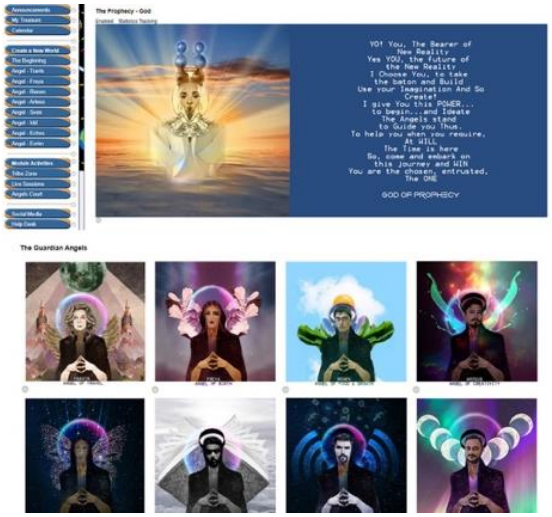
Debabrota Das, Sabbah Sharma, Aamir Nayyar, Gaurav Sharma, Ishi Shrivastava, Kanupriya Sharma, Rahul Rabha, Pankaj Arora

Pearl Academy

India

Learning should never stop - with this belief, the planning and execution of the module "Create a New World" started. The core idea behind designing the module was to involve freshman year students from Design, Fashion, Business, and Media in a learning experience coupled with playfulness. Knowing the constraints that the COVID-19 pandemic brought, the core purpose of the module is to bring in collaboration, empathy, openness to students in a joyful and gamified experience.

Create a New World is an eight-week module that started in July 2020. The module starts with a hypothetical prophecy where students are introduced to a higher power, who has chosen them to plan a few things for a new world. The module aims to grow ideation and innovation among the students. Education builds on scaffolding, where the learner is provided with resources and guidance to make the journey of these new creators eventful. Eight different characters were made, and one was assigned each week. These characters, termed as "Angels"— mentors from the Academy – had tasks and activities planned for students to complete. For example, Angel of travel – "Travis" – designed tasks where students ideate on the mode of travel that they choose for the new world.



Create a new world of prophecy and angels

As students were in diverse remote locations in lockdown, collaboration was indeed a necessity to build a learning community. The module divided all students into 11 tribes for ease. A Tribe provided a sense of belonging to students and helped them to identify their team members from diverse locations. Moreover, the design of the module also looked at components like "Joy, Play & Surprise" and facilitated digital badges connected with weekly quizzes as rewards. Eight digital badges such as 'Innovator', 'Collaborator', and 'Thinker' help students to move further in the playful learning experience. Along with the idea of gamification, it is also important to consider peer collaboration. Thus, we incorporated a discussion forum in the module where students could discuss, access, comment, and submit their work, initiating the process of knowing and appreciating one another.

Meanwhile, the module is ongoing on LMS (Learning Management System) Blackboard. Though it is primarily a virtual platform (Asynchronous), planned weekly live sessions (Synchronous) with the 'Angels' have established the bridge between digitisation and humanisation. The engagement in the first week has been an overwhelming experience to see an increased level of participation, ideas and openness.

COVID-19 has brought everyone on a shared ground. This global situation presents an opportunity to find new ways to facilitate teaching and learning. Thus, it goes without saying, that learning should never stop; it can happen in all circumstances and scenarios.

Student work

STORY

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Because Learning Should Never Stop

Punkaran Singh, Smita Singh, Anupam Tomar, Tushar Juya

Pearl Academy

India

Nothing seems to have escaped the effects of the COVID-19 pandemic, and education is no exception. When educational institutions were asked to lock up their gates in the second week of March 2020, not many had imagined that it was actually the beginning of a prolonged period of school and college closures. While on the one hand, it has been a period of considerable distress for both the students and the educators, there are some new opportunities waiting to be explored as we move forward.

The pandemic forced a shutdown upon us just as we were nearing the end of the academic term and this meant that we had to respond to the situation by adopting a quick change in course. In the initial days of the pandemic, the challenge was to ensure a smooth closure of the ongoing modules. For example, the graduating batch was encouraged and helped with preparing for an online presentation of their work. The pandemic offered us an opportunity to invite experts as members of the jury. These experts, from different parts of the country, ordinarily would have found it difficult to attend in person. Similarly, when overseas travel plans for a certain module had to be called off, we quickly changed track and instead invited professionals, educators, and students online from across the globe for exchanges on cultural and and experiences. This once again gave us an opportunity to connect with more people than we had earlier hoped, thereby offering a more enriching experience for everyone involved.

A special COVID-19 policy was introduced to help students cope better with the situation. The first step in this direction has been to redesign the timetable for the present as well as next semester in a way that the focus shifts to subjects with very little or no dependence on labs and workshops. Special home toolkits have been designed and are being sent out to the students to enable them to create basic prototypes from the safety of their homes. The new timetable has also taken into consideration the challenges of sitting for very long hours in front of the computer screens. Sessions have now been planned in a way that students do not spend more than four hours in learning synchronously and continuously. This ensures that students have enough time to not just relax but also help with household chores if need be. We have deviated from our policy of capping the referral submissions at 40 per cent and have allowed these to be marked out of a full 100 per cent, which helps students redeem their academic performances.

Another bright side of online teaching has been the opportunity to have a closer cross-campus connection with both students and educators. Our subject experts are no longer limited to teaching in a specific campus; students across our three campuses can benefit from their expertise.

It was important to continuously motivate the students and keep their morale high. This was achieved through a series of light-hearted online engagements.

A series of masterclasses and webinars has offered our students a window of opportunity to interact with design professionals, artists, and students enabling them to interact, learn and express themselves. These initiatives on our part have ensured that even in these difficult times, we have been able to surge ahead with renewed energy and vigour and embrace the “new normal”.

Virtual certificates

Virtual certificates

STORY

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Pre-Semester Learning Experience

Abhijeet Rahut, Deepti Seth, Kunal Dutta, Priya Mathew, Debabrota Das

Pearl Academy

India

In March 2020 when we entered a total shutdown in the country due to the COVID-19 pandemic, a lot of us were anxious about the current batch finishing their semester as well as the upcoming new batch which usually commences in August each year. Although we had a robust Online LMS (Learning Management System) in place which we were running partially in the last five years as a hybrid model of delivery, we were still skeptical about the full application of the online model. Eventually, we managed to end the semester with the current batch using the online LMS seamlessly since the students were familiar with it.

The next part of the challenge came in May 2020 with new admissions already processed in the first cycle and about 200 odd students already enrolled as the new batch. We were working with mainly three things in mind:

1. Engaging students who are uncertain and worried about their new academic year.
2. Immersion into creativity and preparation for digital learning.
3. Social engagement and becoming a part of a learning cohort.

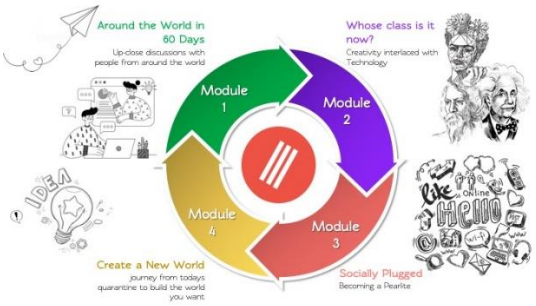
Guided by our senior management, we formed a team of five members to develop a cohesive and never before seen Immersive Learning experience for the new batch of 2020. The background is taken from a week-long ice-breaking workshop every year before the start of the academic session for freshmen. The thought was to adapt a similar model online and yet be innovative enough to make it stand out as a programme. Hence, we deliberated on the idea of the PSLE: Pre-Semester Learning Experience.

We created a unique, completely immersive, pre-semester programme for all students who enrolled with us. The programme is a melting pot of four modules that will prep up young minds to enter the world of creativity.

The series of super crazy tasks with several multi-sensory, spirited, and multidisciplinary activities were driven by the need to express and nurture students' creativity within the four walls of their own homes – *virtually*.

The four modules creative

The class of 2020 will enjoy simple things, reflect on their approach to life with anticipation, enthusiasm and respond in a clever, intelligent, sharp, and playful way, eventually shaping their foundation and later years of higher study at Pearl Academy. The enrolled students will get access to Blackboard Collaborate, the Pearl LMS, with a unique code. They will get access to four modules of PSLE.



The four modules of PSLE. Instructions are given at every stage.

The modules, though led by different faculty teams, are intertwined with each other so that students experience a harmonious orientation into Pearl's way of learning. It is featherweight: light and easy to navigate. Pastoral care by mentors will ensure that all timidity typical of freshmen students will vanish into thin air.

Scan to learn more about this story!

STORY

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Experimental Design: Vision Post-COVID-19

Penha Anderson, Gagneux Benjamin, de Andrada e Silva Luiza, Martins Pedro, Neves Heloisa

L'École de design Nantes Atlantique:
Brazil Studio

Brazil

2020 will definitely go down in history as the year the planet stopped! The paralysis caused by the COVID-19 pandemic changed social relationships and the pace of interactions in cities and homes. And that has completely redefined what we mean by habitat.

With the quarantine imposed by the coronavirus, it was possible to dedicate time to rethink our layers and this led us to a situation of “auto-poiesis”, because when co-creating new ideas, we co-created new ideals about the multiple relationships in which we live with.

Projecting ideas for the future and having a social acceptance of these new possibilities tend to take time. The potential audience for these emerging ideas lives in an “absolute” reality and the only way to accelerate acceptance is to create models that make that reality obsolete, as Buckminster Fuller rightly pointed out.

Experimental design works precisely at this point, giving life to speculations, inserting knowledge, and reducing the friction caused by new concepts in a culture’s ingrained belief system. Experimental and/or conceptual models are designed to provoke, impact, and thereby assess the readiness of an entire ecosystem for something new.

However, we saw that COVID-19 created a gap in our reality, and we felt that people were more likely to rethink things, discuss new ways and try out new possibilities. For this reason, we decided to face the scenario experienced as a laboratory for building new legacies for post-COVID-19 issues and the class experience itself.

It was in this spirit that we replanned the semester considering the constraints and all the challenges to connect and develop a plausible future with students from three different countries (Belgium, Brazil, and France) to work on it. The seminar was attended by students from L’École de design Nantes Atlantique and College of Art and design from Brussels, in an exchange programme in São Paulo, in partnership with FAU-MACK, Instituto le Ville Movement (Brazil), and We Fab (a digital maker space).

We then decided to move on, adjust the timezones, change the entire course to a new format, answer an international call from the Global Grad Show in Dubai for design projects that mitigated side effects of the pandemic as a final class project, and turn our official programme around. All the classes were on a virtual platform with regular meetings to guide students to figure out about the future, develop concepts, products, and services and then make a series of physical prototypes using materials they had at home (low-fidelity) to finally create a well-finished prototype (medium-fidelity) in an immersive workshop, operated by "makers" technicians (that respected all the sanitary protocols) focused on bringing to life some ideas.

Virtual presentation of concept ideas

Online meeting to discuss prototyping experience

It sounds crazy and it was! But we had the perfect moment to try it. Everyone was open to experimenting with new ways, overcoming all the challenges, and as part of a digital classroom culture, we could measure the student journey experience with data and User Experience information.

Scan to learn more about this story!

STORY

73

No Problems, Only Solutions

Benjamin Gagneux

L'École de design Nantes Atlantique:
Brazil Studio

Brazil

"In response to the WHO (World Health Organisation) pandemic announcement, the campus will be closed from Friday, March 13 until further notice."

São Paulo, March 11, 2020. It is official, the COVID-19 isolation measures came into effect.

There are no problems, only solutions.
After all, before I was director of studies of 32 French-speaking Master students in design, I was a designer! Finding solutions is my job!

Thirty-two students from three different schools joined the Transcultural Design Master programme of the Brazil Studio by L'École de design

First things first, what's the problem?
On the one hand, to allow the continuity of the semester's content while ensuring the quality of teaching. On the other hand, to do remote courses over two time zones between France and Brazil, while maintaining a group dynamic.

New practices in approach, new tools in perspective: New paradigm in sight!
Design methodology brings an incredible capacity for analysis, experimentation and resilience. This health crisis is upsetting established teaching models and serves as a life-sized case study. Therefore, it is a question of being methodical.

First step, analyse the context, the situation, and the existing situation to clearly define the problem. Then, respond in a coherent and viable way. To do this, mobilise the collective intelligence of all the pedagogical and administrative teams at L'École de design.

The first observation is that the distance learning tools and platforms used must allow synchronous and asynchronous operation. Zoom, Skype, Slack, Discord, Loom, Twitch... If some tools are for intended use, (videoconferencing, discussion channels), others could go beyond their primary use and prove useful.

It is also necessary to evolve the content and the usual methodology to the new format, that is to make courses interactive and engaging despite the distance.

During one of the classes, we did a fun exercise for everyone to tell the rest of the group how they were feeling during the quarantine, using dog pictures

Second step, an instant and continuous iteration.
Try, fail, try again, succeed. Fast.

With the participation and support of students, aim to achieve the best possible functioning. Reduce the course duration to alleviate the fatigue due to screen monitoring. Therefore, we aim to create a balance between lectures and "practical" interventions. Feedback after each session allows for adjustments as we go. In practice, this means showing even more empathy, a notion inherent to the human-centred design approach. We thus consider that not all students or teachers have conditions to participate from home (due to issues such as poor internet connection and family environment).

Thanks to this methodical and thoughtful approach, we were able to carry out four projects, two workshops, and two lectures during the semester. We were able to adapt immediately to respond to the problems generated by COVID-19 to come up with actual solutions. We deal with social distancing in different ways as a project. From this one project, we managed to create a magazine, organise a webinar, and even came up with tangible prototypes made remotely with fabrication labs.

In the end, this unexpected crisis turned out to be an amazingly enriching experience both from a design and a pedagogical perspective, showing once more the undeniable role design plays to make the world a better, safer, and more resilient place.

STORY

74

Craft is an Important Sector of Design Education

Bela Gupta

Pearl Academy

India

The craft industry has been an important segment of the Indian economy and is the second largest employment generator after agriculture. Over the last few years, craft has taken an important place in the creative design industry and has become extremely important to widen the knowledge base and craft ecosystem.

Due to the COVID-19 pandemic, the craft industry has faced major issues like receiving orders, cancellations, and fear of dealing with the disease. Laila Tyabji, chairperson of Dastkar said, “Small, mainly self-employed, and dependent on seasonal retail sales and direct orders, (craftspeople) have received huge blows in successive years first with demonetisation, then GST. Many thousands have left the sector,” she adds. “Now the Coronavirus. If it continues beyond the next month or so, it seems likely to deal a death blow." There are approximately 200 million artisans, including a large number of women artisans belonging to the weaker section of society, especially in rural communities.

A visit was made to eight villages in Gujarat with a group of students who have young brands, just before the breakout of COVID-19 in India with an aim to support and educate artisans in product development. Simultaneously, we desired to sensitise young designers towards the craftspeople and artisans. The visit was made to well-known Non-Governmental Organisations (NGOs) and artisans’ houses to understand their lifestyle and needs. Artisans are very skilled but lack design, colour, material and product knowledge.

Glimpse of production of masks

After the lockdown, one of the few NGOs was approached to enquire about work and if online training was needed. There was sadness, confusion, and little hope. There was a need for encouragement and motivation to restart. Artisans were confused about the product range to restart as there was no demand for bags, garments and upholstery that they were making. They were told that the product should be developed as per the market’s demand. They were given the hope with orders to prepare masks and shower caps - it was important to cover the hair during COVID-19. The first order, which was quite motivating for artisans, was commissioned by a chef who was bored of wearing white masks and caps in the kitchen.

Design and shape derived from shower cap for the first prototype during COVID-19 when material was limited

Today, more than 50 women artisans are working in a village to produce masks and caps and have started earning their livelihood. Some of the challenges faced are:

- They need close monitoring and there is limited availability of technology in individual artisan houses.
- A middleman, with limited design training, conveys requirements to artisans.
- Limited raw material during COVID-19 pandemic.

To conclude, there is ample scope for collaboration and training in this sector. This project is a live story where design education has given employment to thousands of people.

STORY

75

Reformation and Rehabilitation through Fashion Design Education in Prisons

Bela Gupta, Antonio Maurizio Grioli

Pearl Academy

India

Pearl Academy, in collaboration with the largest prison complex in Asia, Tihar Jail, started a fashion laboratory to help female inmates to gain relevant skills, experience, and mentorship opportunities through a new fashion design programme. The team hoped that the inmates who participate and take training in fashion design will gain more tools to build a holistic, independent life inside as well as outside prison. These programmes also impact inmates in their rehabilitation as the programme involves skills using their hands, mind and creativity. The project started with the setting up of a lab and also focused on the development of modules.

A fashion lab in the prison provides all the essential facilities and tools necessary for learning the basics of design, pattern making, construction, and finishing, enabling inmates to get ready for employment post-release. They also start to get work from within the prison. This fashion design education is imparted to fill the gap between designers and the market. As an outcome of the programme, the inmates get the opportunity to design and produce collections for various fashion shows. Additionally, the trained inmates also get a brilliant opportunity to produce costumes for Bollywood movies.

Inmates are more confident of themselves, and emphasis is on changing their mindsets through skill and design-based programmes. Jail authorities reported that such training has reduced the return cases by almost half, and design-based programmes have helped inmates to a larger extent to better their earnings post-release and rebuild a meaningful life.

Ex. Dg Prisons Mr. Sudhir Yadav said, “A criminal is brought to prison for three reasons after he commits a crime, first to seek punishment, second to isolate him from society as people around him may get scared of him and third for his correction. We consider prisons as correction centres.” Fashion education is seen to bring about positive change in their behaviour, impacting the inmates in their rehabilitation.

Design classes conducted by faculty Varun Goel, Pearl Academy in prison

To date, more than 200 women prisoners have been trained and each woman trained is a unique story in herself. Fashion design education has imparted new hope in each of them, and helped in the empowerment of women inmates who have earned their freedom and livelihood via this venture both inside and outside Tihar Jail.

Trained prisoners designed a collection for spastic children from Tamana School

As Andy Dufresne in the Oscar-nominated movie Shawshank Redemption enters the prison and said - “*Hope is a good thing, maybe the best of things, and no good thing ever dies*.”

STORY

76

Organising an Engaging Online Class: Empathy is All You Need

Liu Junhua

Singapore University of Technology and Design & Qlassroom Pte Ltd

Singapore

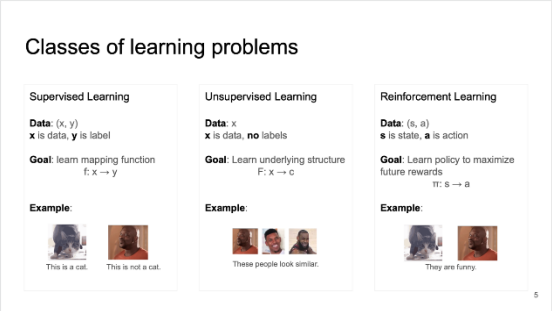
Earlier this year, I conducted an online class as part of a six-week graduate course at Singapore University of Technology and Design, on the topic of Reinforcement Learning (RL). The audience came from a vastly diversified background, from computing to architecture to engineering.

Beginning with the end goal, I aimed to help the audience gain knowledge of what RL is about and what are the common applications of RL in real life. Designing the class was challenging as RL is an advanced topic in Artificial Intelligence. How can I effectively communicate with the well-diversified class within a short time, while making sure that everyone learns something?

Architecting the content

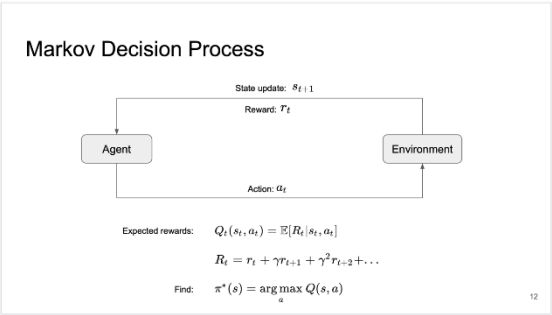
Classes of learning problems

I started by introducing the various classes of learning problems with simple mathematical representations and examples to give an idea, followed by a quiz of close-ended multiple-choice questions.



Classes of learning problems

Seeing over 90 per cent of the class getting the correct answers, I was then confident to move on to the next section of the class.



RL model

After the light content, I introduced the Markov Decision Process (MDP), bringing them through the notations with step-by-step explanation, where I intentionally made it more mathematical to 'exploit' the excitement built.

Next was a discussion-based section on formulating two real-world examples, namely the Super Mario Bro game and a Cleaning Robot, where the students formulated them into RL models. It resulted in an engaging discussion where the students constructed interesting models.

The finale

Having covered all the learning objectives set for the class, I ended the lesson by illustrating an unconventional example with reference to a hilarious video clip.

I deliberately modelled the plot into an RL problem with a sense of humour. Whether or not the formulation actually works, it certainly fulfilled its mission, that is, exciting the audience.

Food for thought

Focus on the audience, not the content

Pushing all the prepared content to the audience is perhaps the easiest way to conduct a class, but not necessarily effective. Focusing on the audience is really important, especially for online classes. Be aware of whether the majority of the audience is following and being engaged, e.g., are they paying attention, taking notes, or responding to probing?

Orchestrate the flow of emotion

Designing a class is like planning for a music performance — we need to anticipate the emotion of the audience through the whole play to create an impact. We can variate the rhythm and intensity of the content to orchestrate the audience's emotion to keep them engaged.

Use of real-world examples, with humour

While knowledge is developed constructively, connecting abstract and non-trivial content to real-world examples will tremendously help the audience create connections and see the purpose of learning. Furthermore, making the content light-hearted and fun will certainly boost the engagement — who does not like humour?

Student Entries

"It is building a generation of creative thinkers who can and are able to solve the problems of the future, even as the rapids of the world are swirling and hitting them."

Tang Soo Yin

Deputy Director
Media, Arts & Design School
Singapore Polytechnic

STORY

77

Reimagining the University Course Selection Process using Design Thinking

Darryl Goh, Lye Jia Wei

Nanyang Technology University

Singapore

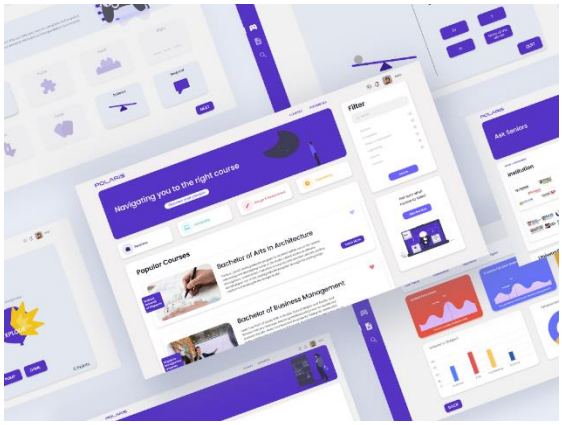
We are two undergraduate students passionate about using design to solve problems around us. Coming from a design thinking background in polytechnic, we believe this methodology is an effective tool in solving problems to sweeten user experiences.

Due to the COVID-19 pandemic, students in Singapore were unable to get the physical university open house experience, unlike previous years. With a myriad of courses available, the decision-making process can be overwhelming for many students, leading to frustration and indecision. To solve this problem, we leveraged design thinking and came up with Polaris, a one-stop portal that utilises gamification to help students discover their dream course.

Social distancing measures meant that we had to conduct ethnographic research online. Singaporean students often shared their course research struggles on a Reddit forum and we contacted them individually to get to the root of the problem.

The ethnographic research revealed that course information is scattered across the Internet with little consolidation. Thus, students find the course research process dry and unnecessarily tedious.

Through remote ideation meetings, we came up with a one-stop portal 'Polaris' which utilises gamification and streamlines the entire university course searching process to three steps: Self-discover, course exploration and selection.

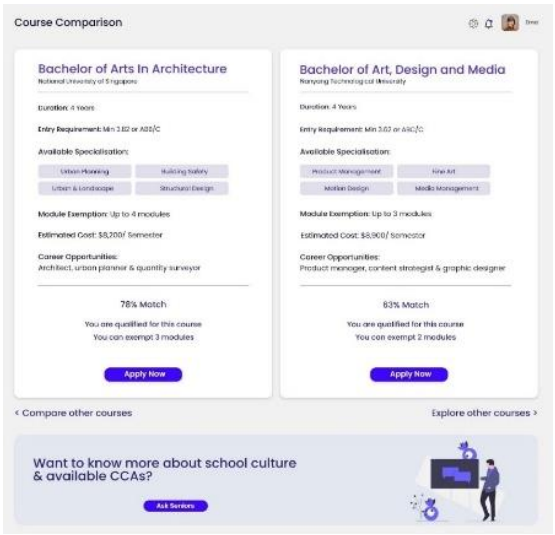


Mock-up of Polaris user interface

Self-discovery
Leveraging gamification and behavioural science, students play eight mini games which help identify their areas of interest as well as their personal strengths and weaknesses. Upon completion, a self-report assessment will be generated for each student.

Course exploration
From the result of the self-report assessment, relevant university courses that suit their skills and preferences will be presented to the student. A dedicated forum is integrated into the portal for seniors to share their personal experiences. This function was added after realising that students prefer a human touch to supplement their decision-making process. Forums allow students to delve deeper into course-specific questions and share about school culture which is not readily available on the Internet.

Course selection
In order to make informed decisions, students can compare their top course options. These include what modules they are exempted from, the estimated semester costs and career opportunities. These features will eventually assist the student in making their final course selection.



Polaris' Compare Course Feature provides a side-by-side comparison of university courses tailored to the user's strengths

While the pandemic posed challenges in the design thinking process, we pivoted to connecting online with research participants. Digital tools allowed us to stay on track as we were able to prototype quickly and conduct user-testing.

Polaris is an example of how Design Thinking can be used to solve real-life problems in a short period of time. We empathise with students who face course selection challenges, as we have been in their shoes before. We hope Polaris will change the way students research for university courses in the future.

STORY

78

The Key is to Draw!

Harshika Chopra

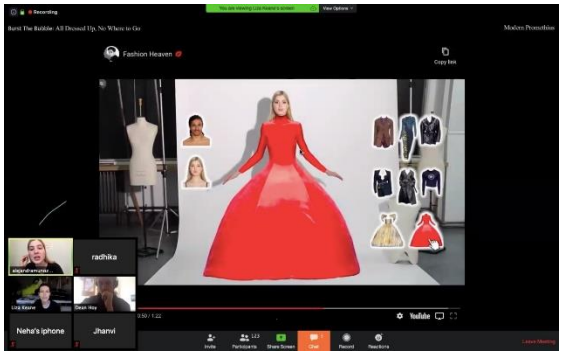
Pearl Academy

India

Amidst the lockdown, the decision made by our institution to resume classes online and conduct learning a new environment had us in a daze. I was shocked, scared and surprised all at the same time.

As a fashion design student, many questions started popping up in my head. We engage in practical, hands on work. What about pattern making? How will the garment be constructed? What about the machines and tools? My mind was taking a negative turn as more disadvantages were visible initially.

There were both difficulties and ease. The classes started with great enthusiasm and enjoyment. Online classes brought a lot of changes in the semester. We were exposed to more webinars and there were a lot of interactive sessions with designers.



Online international study week with three professionals, alumni from Central Saint Martins, learning about how technology and fashion are inter-related

Every year, we have a project and this year, the project was based on Fashion in the Future. It was during this time that we had an international study week, the topic being 'Fashion Future' where we got to learn that ever since 1960s -1970s, the future was predicted to be innovative technology. The aim of the project was to build a prototype. We realised that we had no tools, no materials and to top it off, the markets were sealed so purchases were also not possible.

At first, I thought of developing concepts that can be built easily. I started to have a creativity block and was not able to come up with a solution. This was the point where I chose comfort over creativity and planned on having things easy and effortless.

While having a one on one discussion with our mentor, I came up with all kinds of excuses that I had planned a night prior to the class. She heard me patiently and then asked me a simple question: "What do you mean by the word 'Draw'?"

I replied 'drawing'---the first thing that clicked in my mind. She explained that other words with the text string 'draw'--- such as 'drawer' or 'withdraw'----meant 'To pull out/To bring out'. She encouraged me to pull out even the silliest idea and to come up with improvised ideas rather than giving up. After that, I decided to try hard and think of different solutions rather than quitting.

The lockdown restrictions brought a huge change in the process of material exploration. Earlier, we used to search for readymade textiles or materials, but now we had to develop these on our own.

This expanded my horizon of experimentation and innovation. This also led us to constrain ourselves to the resources at home and come up with something new. During this process, I realised that the future of fashion is sustainable. I tried techniques such as natural dyeing, paper making and repurposing earlier products.

Pattern making - dart manipulation on one-fourth scale

Despite the assignment deadlines and hours of digital learning, our institution made sure that we felt relaxed. It came up with interesting competitions, entertaining musical evenings, and thriller movie nights. Though we were all in separate locations, these small activities never made us feel distanced. It was definitely a roller coaster ride but the development throughout this experience was like magical pixie dust.

STORY

79

Lesson for Life

Priyanka Erry

Pearl Academy

India

It is said that everything happens for a reason. Sometimes it hurts. Sometimes it is hard. But in the end, it is all for the best.

I completely agree with this thought and why shouldn't I? Change has always made its presence felt since the beginning of time. People are hesitant to change, especially when it makes us uneasy, exposes our vulnerabilities, or when it gives us the reality check.

COVID-19

Everyone was expecting a new beginning at the start of 2020, but nobody would have imagined that within a few months, a deadly virus would grip this whole world of ours' and leave all of us in a state of turmoil.

Along with my friends, I was supposed to graduate in fashion designing this year, but everything came to a standstill in mid-March. As an outstationed student, when I came to know that my college had closed due to COVID-19, I packed my bags and went home. I first thought that I would return in a few days' time and that everything would get back to normal soon.

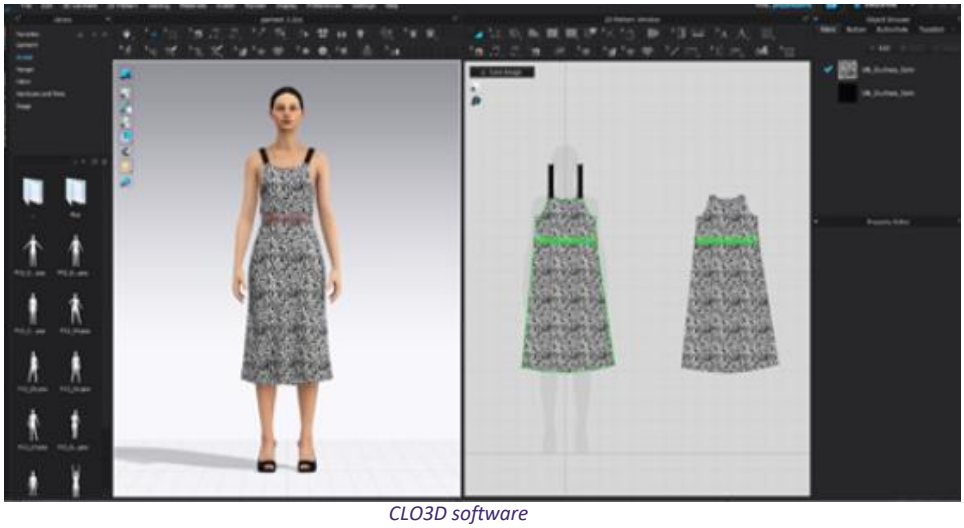
There was a lot of uncertainty. How was I going to finish my semester? Would there be exams? What would happen to my career? My college team and mentors helped to calm me down. In April, I attended my first virtual class. It filled us with hope and the zeal to complete our final graduation project even with limited resources.

Design evolves with changing times and so did our design process. From using conventional hand-based methods to using mixed media and going fully digital, we used various techniques to make our portfolios and process books.

I enrolled in online webinars and courses through Business of Fashion, Future Learn, and Coursera which gave me better insights into the design and fashion industry. I got the opportunity to interact with experts from the field.

Recently, I came across CLO3D: a 3-D software that creates virtual, true-to-life garment visualisation with cutting-edge simulation technology. It not only allows students to visualise the actual garment before stitching, but also saves time and money in the production process.

Design education has changed phenomenally because of the pandemic. The lockdown forced me to learn and upskill as now, more than ever, it is important for everyone to be multidisciplinary.



CLO3D software

STORY

80

Path to Endless Possibilities

Preksha Aggarwal

Pearl Academy

India

In a world of infinite potential and creativity, there are very few things that can bring us to a complete standstill. History has shown various instances where everything was brought to a halt but each time, we found innovative ways to move ahead.

One such event occurred in 2020 with the global pandemic, COVID-19. It brought the whole world to a standstill, and various feelings of uncertainty and anxiety along with it.

As students, we felt anxious about our studies and future. How will we work? Will we graduate during the pandemic, or will we have to wait?

Our institution, Pearl Academy, came up with ingenious ideas to deal with such issues. One of these involved a collaboration with the students and faculty of United Kingdom and New Zealand.

We exploited the power of technology to communicate via video conferencing and our state-of-the-art online platform called Pearl Blackboard.

During this period, our teachers were very supportive and approachable. They helped us in maintaining a steady pace in virtual learning by taking online assessments and providing feedback on a regular basis.

An opportunity presented itself when we learnt about sustainable fashion with various brands. Regardless the location, we attended many workshops arranged by our college faculty members, which was previously not possible due to constraints like seating capacity and scheduling.

We met around 20 sustainable brands globally. This module helped us in cultivating our drive towards sustainability and opened new ways to seek the answers we were always looking for. It also helped us to develop time management and teamwork skills, as we coordinated with group members across various time zones.

I appreciate and really want to thank the faculty members in my institute, who made it possible for us to continue developing our creativity during this tough time. They helped to ease the pressure and uncertainties that we initially faced.

STORY

81

Beauty Lies in the Eyes of the Beholder

Simran Jain

Pearl Academy

India

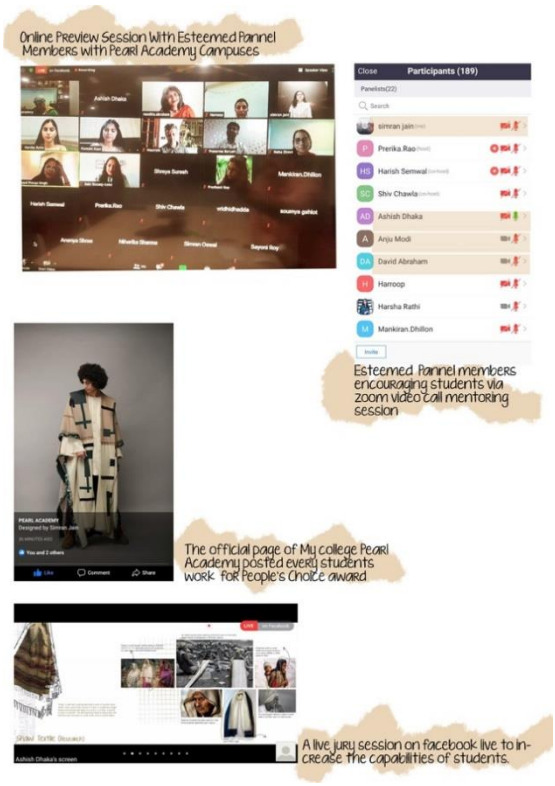
As a person, I believe in staying agile and being flexible. This has always enabled me to be a better version of myself because I believe that change is the only constant.

Online learning is a new reality for all of us. More and more people choose to improve their skills through online courses. It allows easy access to course materials, class discussions and comments. The ability to connect with tutors and other students through online channels makes me more active as a participant.

This new form of learning allows me to work independently and move forward at my own pace. The e-learning process brings about strong teacher-student relationships as well as tools such as discussion boards to connect with fellow students. We take inspiration from one another's work; we appreciate and critique one another's work. Digital learning not only helps to cultivate the ability to appreciate others' work but also allows us to look at different perspectives with an open mind. When we share personal experiences and feelings while improving design projects, learning becomes more interesting.

In addition, our jury, the formative and summative assessments are also conducted through online platforms such as Zoom and Blackboard, which has helped me to develop my technical skills. Communication skills are also very relevant to online learning and virtual presentations. These soft skills are very important for our growth as designers. Online portals enable us to practice these skills. The biggest advantage of online learning is that we can work as planned from the comfort of our homes. We can manage our time by complying with the deadlines given to us. How can I forget that it has saved a lot of traveling time and exertion too? Which now could be utilised on more productive tasks.

Besides this, we also got a chance to learn other platforms to share our work and get feedback, which helped us to expand our influence in the industry, build trust and inspire students to move forward in such difficult times. This boosts confidence and encourages students to keep going. It acts as a motivation for us, which probably would not have been possible without an online learning portal and other platforms. Students were fortunate to have valuable opportunities to showcase our final project on various international platforms. We received feedback from celebrated professionals which was very inspiring.



Online sessions

The pandemic quickly affected all aspects of our lives, both positively and negatively. But as it is often said: "Beauty is in the eyes of beholder." So, it depends entirely on onlookers, if this pandemic is seen as a misfortune, or as an opportunity for change.

STORY

82

A Generation of Pandemic

Kriti

Pearl Academy

India

In my experience, the COVID-19 pandemic is the most difficult event to have happened in my generation. Of course, pandemics have hit previous generations, cultures and societies but it has been exceptionally difficult for our generation that was born into technology, globalisation and social media.

A lot of people in my generation would rather visit the local mall instead of having a stroll in the park. It is the perfect example of today's capitalistic economy at play, that my metiér, Fashion Design, exploits. From clothing to homeware to what you eat, fashion has taken over every aspect of life - so it is not surprising when they call fashion a lifestyle.

Architecture

Chennai - The coastal city is known for its beaches. Its people thrive amidst harsh conditions with humility and grace that are unique to them. Chennai is home to Tula - a sustainable, eco-friendly, non-profit organisation that works with organic cotton. That is where I was to spend two months as an intern, working with people who live a life at odds with other metropolitans. But the trip was cut short due to the COVID-19 pandemic. I had to return home due to an arduous lockdown.

Working in the industry was a way to be a part of the trade. The pandemic made this crucial step in my education difficult. Online classes took centre stage, and "Work from Home" became the norm with the whole world coping with the change.

The lockdown gave me a chance to hone my digital skills. My illustrations and communications with industry became key foci of my work experience. Inspiration came from within and issues close to home. I worked on web design, didactic handbooks, digital collection and fabric sample books.

Fashion found promise in digitisation. From making digital swatches to designing a complete digital collection, technology helped in more ways than one.

Web design is the most important part of branding, and a good design goes a long way. We promoted our brand through targeted strategies. Digital didactic handbooks on organic cotton generated awareness about the brand, whereas fabric sample books provided the customer with choices. This was the first time we explored the scope of a digital collection. Finding a common thread with the brand's sustainability and the digital platform was a happy exercise.

Digital collection

The pandemic has been tough and in these complicated times, no one has the perfect solution. But with a little help and perseverance, we can perhaps elevate our conditions.

STORY

83

TeEMo - Embracing Chaos

Harshit Thareja

Pearl Academy

India

It was time for my graduation project, and I decided to pick a topic in the education industry. I wanted to design a product that could teach primary children of age four to eight years the relevant skills which are required when they enter the workforce in 2035+.

I realised that the need for digital, social and emotional skills will increase by the year 2030. I decided to reverse engineer the skills which are with me and will be with me for the years to come. These were soft skills and life skills such as communication skills, presentation skills, and empathy.

Stakeholder research

Then, I wanted to know where and how these skills could be learnt. I realised that I gained most skills when I was learning design. To be precise, I learnt 26 different types of life skills that I could name. For instance, I imbibed skills such as empathy, perseverance, reflection, or leadership during the design thinking process. Also, these skills will be relevant for any employee in the future.

Now, I wanted to design something which taught children problem-solving through design thinking and experiential learning. I came to my second roadblock, which was, how do I do that?

After six months of living with children, teachers and parents, TeEMo was born. TeEMo is a plug-and-play energy-based life-size prototyping kit. It can be used in classrooms during life skills classes to amplify learning and channel chaos into productivity without compromising the fun of building blocks.

Crazily enough, there is one thing common between kids and designers: both groups have chaotic minds. Designers just know how to embrace chaos into meaning for people, and children use chaos to enjoy their creativity.

In a life skills class, children are taught empathy, communication and leadership every week. For example, in a “Green week”, children will be taught how to keep their surroundings clean. To do so, they are split into groups and asked to develop ideas. This is where TeEMo is used. Instead of finding a solution in the form of a sketch, they will make life-size problem-solving products. For example, if a group found a solution as having more dustbins, they can use the kit to design life-size dustbins within their limited time frame and start testing it.

Through iterative design, they subconsciously learn how to research, ideate, prototype, and test.

Understanding child behaviour

STORY

84

Creativity Out of Limitations

Mehak Garg

Pearl Academy

India

The ongoing pandemic has affected all of us in more ways than we could have ever imagined. Initially, it seemed like a summer break that would be over in a blink of an eye, but it did not.

It is the perspective of a person that decides how the journey is going to be during hard times --- whether you see a glass of water half full or half empty.

Mentors from our college always believed in pushing us to believe in ourselves and not be disheartened or discouraged. My college was a strong pillar in these difficult times. One major step that it took was collaborating with Whitecliffe University (New Zealand) that enabled us to connect with students and teachers overseas.

Initially, everyone was sceptical as teaching through online classes was a new concept in India. But gradually, everyone started to get a hang of it, and we began to feel more connected to one another.

Nevertheless, this was not a cakewalk. Our mentors from both countries spent days and nights to make this journey smooth for the students.

I had the opportunity to work with peers in New Zealand. All of us were divided into groups and had to choose a topic on 'sustainability'. We had to deliver an infographic as our final submission. With my international peers, I had the opportunity to study in-depth about sustainability and especially, its importance in the fashion industry.

My group and I decided to work on the fashion supply and value chain. We studied the levels of sustainability in the supply chains of both countries. This was made possible with the co-operation and enthusiasm of my team members from New Zealand. We got to know a lot about their home-grown brands, especially insights that are not available on the Internet. I will always be grateful and count this experience as a blessing.

I believe in making the most of what we have. Out of limitations emerges creativity which drives us during difficult times.

STORY

85

Living through the Pandemic

Bandgi Kaur

Pearl Academy

India

COVID-19 barged in at the most unexpected time and became a “new normal” for us. It quickly spread across the world and forced us to stay indoors. The current scenario has brought a lot of mental health issues in people. The education sector was especially affected.

But whatever tries to bring you down, raises you up. In the initial days, when all activities shifted online, I was quite sceptical about how design could be taught virtually. It seemed quite tedious to sit in one place and stare at your screen for hours, especially when you value interacting with peers, socialising, and just having fun. But in order to evolve, one must take action! And so did my college.

Appropriate steps were taken swiftly to provide students with quality education using e-learning. The college as well as our mindset adapted. My college provided us with live and recorded sessions, online certificate courses, feedback sessions, and counselling services. Additionally, “home studio kits” were delivered to our homes to address the learning objectives of the upcoming semester.

Of course, there was a feeling of incompleteness as educational institutes not only impart knowledge but also provide human connection with teachers and peers that exposes students to a range of ideas. Students need this connection for their growth. It was quite a task to exchange that warmth and comfort with your peers virtually rather than physically.

But I soon realised that the pandemic might not end soon. I accepted and started adapting myself to the new circumstances.

Apart from virtual classes for my studies, I also attended online events and masterclasses by experts in various fields, which widened my knowledge and broadened my perspective.

The semester was completed after two months of virtual learning. Although I had my doubts in the beginning, slowly and steadily, online classes became my routine. And now I am geared up for the next semester.

I will conclude on the note that when you face difficulty in one direction, then you begin to see light in other directions. A healthy outlook is very important to achieve something in uncertain conditions.

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