

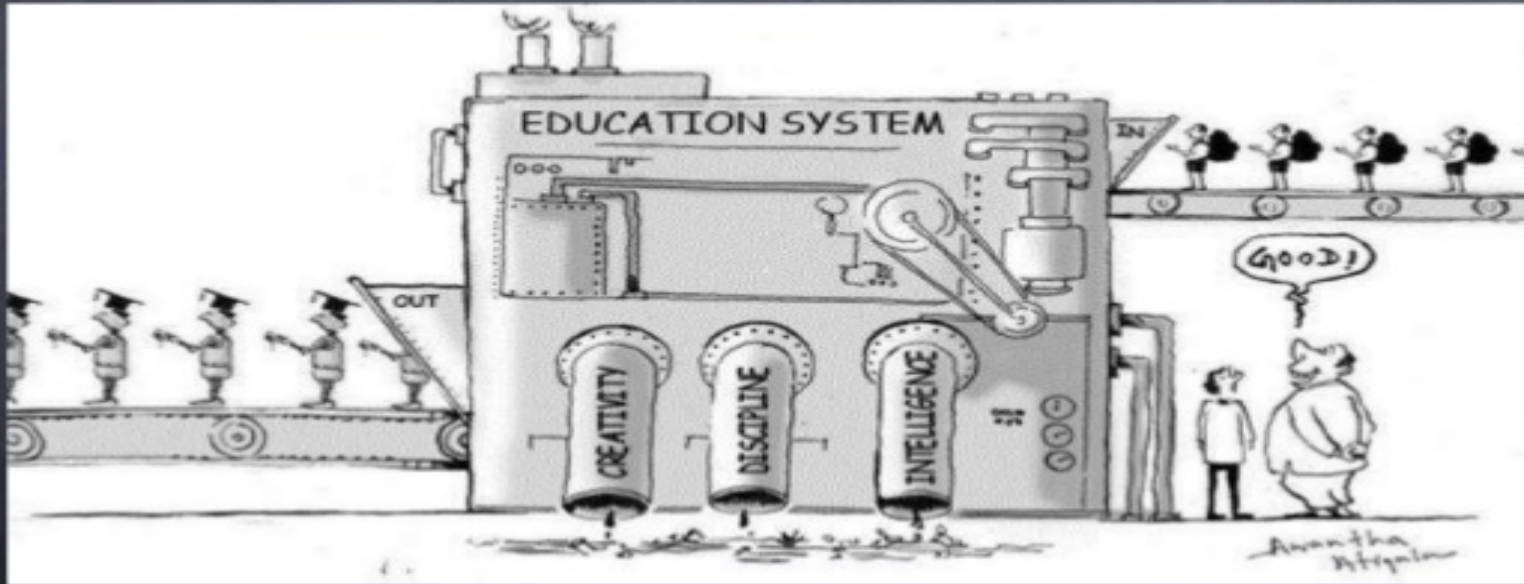
Reaching Critical (Thinking) Mass:

Changing Tomorrow
Through Problem-Solving

Barbara Mossman
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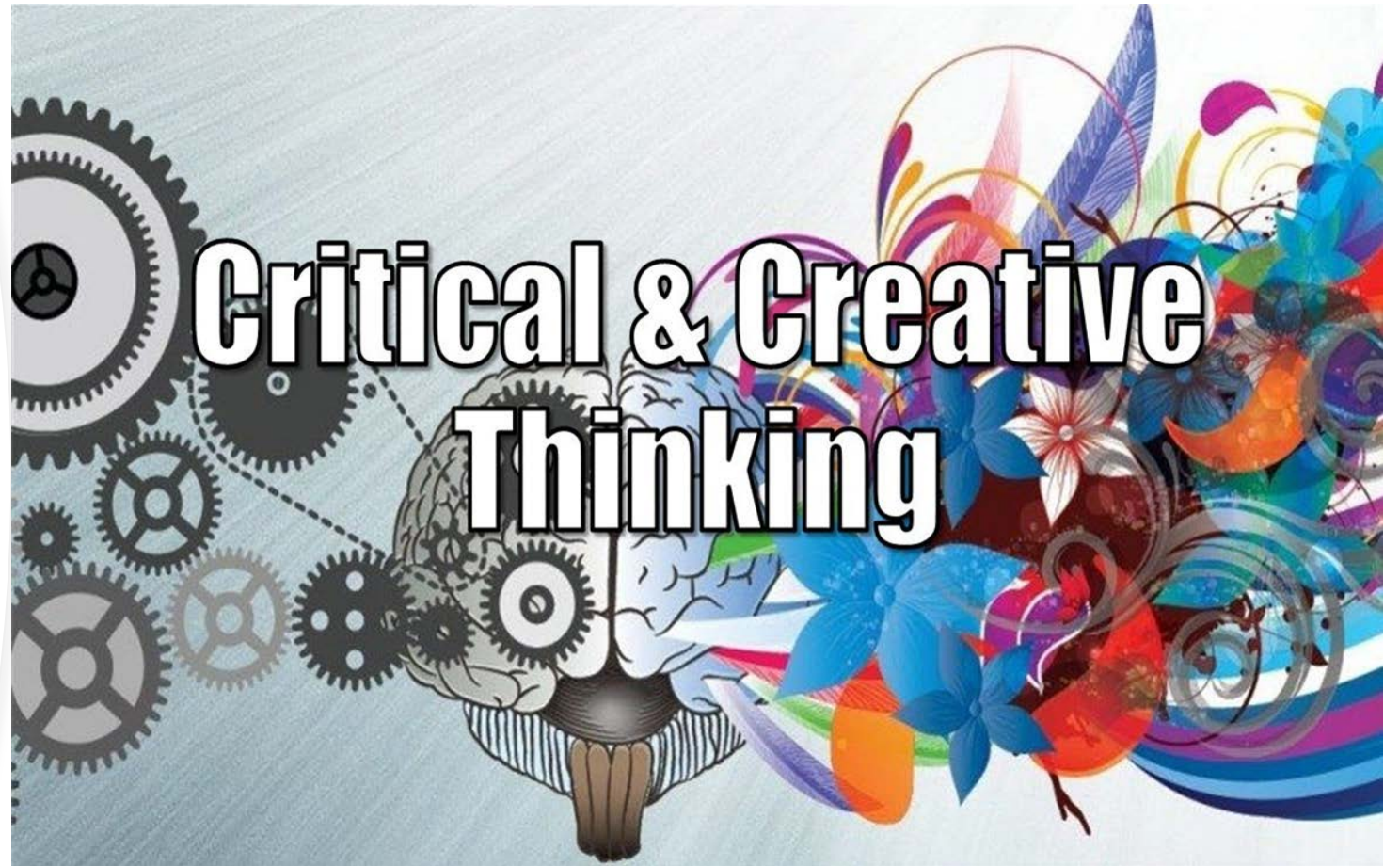


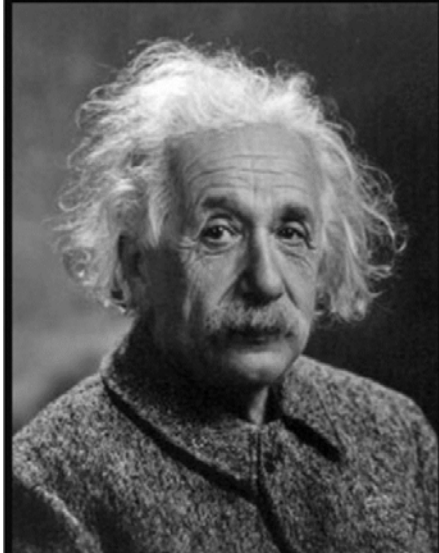
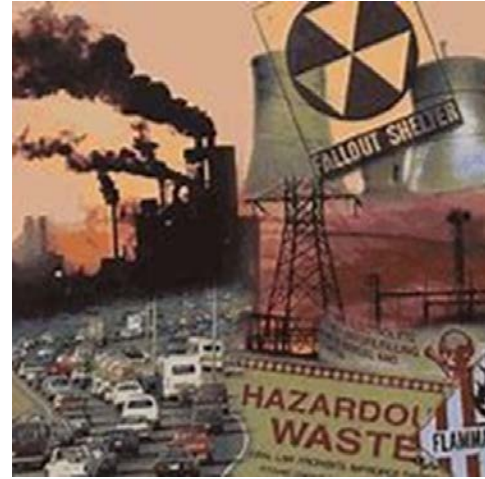
Educational system is outdated



- Was designed for the industrial age

Why do schools
need to focus
on...?





We can't solve problems by using the same kind of thinking we used when we created them.

(Albert Einstein)



Future of Education Principle #1: COLLABORATIVE PROBLEM-SOLVING

“Learning to form clear and purposeful goals, **work with others** with different perspectives, find untapped opportunities and identify **multiple solutions to big problems** will be essential in the coming years.

“Children entering school in 2018 will need to abandon the notion that resources are limitless and are there to be exploited, they will need to value common prosperity, sustainability and well-being. They will need to be responsible and empowered, placing **collaboration** above division, and **sustainability** above short-term gain.

In the face of an increasingly volatile, uncertain, complex and ambiguous world... characterised by a new explosion of scientific knowledge and a growing array of complex societal problems, **it is appropriate that curricula should continue to evolve, perhaps in radical ways.**”



Future of Education Principle #2

LEARNER AGENCY

“Future-ready students need to exercise agency, in their own education and throughout life...

Two factors, in particular, help learners enable agency. The first is a personalised learning environment that supports and motivates each student **to nurture his or her passions, make connections between different learning experiences and opportunities, and design their own learning projects and processes in collaboration with others.**

The second is building a solid foundation: literacy and numeracy remain crucial. In the era of digital transformation and with the advent of big data, **digital literacy and data literacy** are becoming increasingly essential, as are physical health and mental well-being.”

OECD Future of Education Report: Education 2030



Future of Education Principle #3

CREATIVITY & CRITICAL THINKING in COLLABORATION

“To prepare for 2030, people should be able to **think creatively**, develop new products and services, new jobs, new processes and methods, **new ways of thinking** and living, new enterprises, new sectors, new business models and new social models.

Increasingly, **innovation springs not from individuals thinking and working alone, but through co-operation and collaboration with others to draw on existing knowledge to create new knowledge.**”

OECD Future of Education Report: Education 2030



21st century skills

Preparing students for a changing world



Young Queenslanders in the 21st century need to be

Innovators



Entrepreneurs



Lifelong learners



Responsible global citizens



What are the 21st century skills in the General senior syllabuses?

Critical thinking



- analytical thinking
- problem-solving
- decision-making
- reasoning
- reflecting and evaluating
- intellectual flexibility

Creative thinking



- innovation
- initiative and enterprise
- curiosity and imagination
- creativity
- generating and applying new ideas
- identifying alternatives
- seeing or making new links

Communication



- effective oral and written communication
- using language, symbols and texts
- communicating ideas effectively with diverse audiences

Collaboration and teamwork



- relating to others (interacting with others)
- recognising and using diverse perspectives
- participating and contributing
- community connections

Personal and social skills



- adaptability/flexibility
- management (self, career, time, planning and organising)
- character (resilience, mindfulness, open- and fair-mindedness, self-awareness)
- leadership
- citizenship
- cultural awareness
- ethical (and moral) understanding

ICT skills



- operations and concepts
- accessing and analysing information
- being productive users of technology
- digital citizenship (being safe, positive and responsible online)

Deep Learning Competencies – 6 C's

CREATIVITY

Having an 'entrepreneurial eye' for economic and social opportunities, asking the right inquiry questions to generate novel ideas, and leadership to pursue those ideas and turn them into action.



CRITICAL THINKING

Critically evaluating information and arguments, seeing patterns and connections, constructing meaningful knowledge, and applying it in the real world.

COMMUNICATION

Communicating effectively with a variety of styles, modes, and tools (including digital tools), tailored for a range of audiences.



CHARACTER

Learning to deep learn, armed with the essential character traits of grit, tenacity, perseverance, and resilience; and the ability to make learning an integral part of living.

CITIZENSHIP

Thinking like global citizens, considering global issues based on a deep understanding of diverse values and worldviews, and with a genuine interest and ability to solve ambiguous and complex real-world problems that impact human and environmental sustainability.



COLLABORATION

Work interdependently and synergistically in teams with strong interpersonal and team-related skills including effective management of team dynamics and challenges, making substantive decisions together, and learning from and contributing to the learning of others.

Gifted students' critical and creative thinking nurtured through...



CHAC nurtures Critical and Creative Thinking through...

1. Gifted Education Program – Horizons Program

- Curricular acceleration and extension offerings
- A broad range of extra-curricular activities (focus on 4 Cs skills)

2. Enterprise Education Program

- A range of innovative “home-grown” electives and
- A skill-driven Enterprise Program. Both are focused on:
 - Student self-knowledge/emotional intelligence
 - Creativity and critical thinking in problem-solving
 - Collaboration
 - Communication – especially pitching
 - Taking risks to pursue individual passion – student agency

3. Core Curriculum – knowledge, skills, processes and mindsets developed

HORIZONS



CHAC's Gifted Program



CHAC Horizons Program

CHAC is committed to developing gifted students thinking through:

- Curricular extension, acceleration, ability cluster grouping or withdrawal groups in certain subjects
- A broad range of elective subjects
- Self-directed individual projects – learner agency (e.g. The Project, Changing Tomorrow)
- Mentorship in special projects – following passion
- A diverse range of extra and co-curricular activities
- Individual and team competitions
- Early completion of university subjects during Senior School
- Enterprise Program that offers problem-solving opportunities and develops “soft skills”

Horizons Program: Curricular

Extend, accelerate, challenge by engaging diverse gifted students:



- Maths Acceleration pathway (Years 8-12)
- English
 - Extension Creative Writing: Years 8-9
 - Literature subject: Years 10-12
- Exceptional Scientist Program
- Music Extension subject
- Individual Educational Plans
- Electives allowing project choice:
 - Changing Tomorrow (Year 9)
 - The Project (Year 10)

Horizons Program: Extra-Curricular



Multi-Dimensional Individual Challenges

- Public Speaking
- Australian Maths Trust/Maths Olympiad
- History, Geography, Economics Competitions
- ICAS (Maths, Science, English, Writing, IT)
- Creative writing competitions
- Art competitions
- Code Club
- Art Club
- Science Club
- External student scholarships/opportunities
- Music

Horizons Program: Extra-Curricular



Multi-Dimensional Team Challenges

- Da Vinci Decathlon
- Opti-MINDS
- The Ethics Olympiad
- Maths Team Challenge
- Tech Girls
- The Imagine Cup (AI for Good)
- Australian Junior RoboCup
- Australian Brain Bee Competition
- Spaghetti Bridge Building Competition
- Write a Book in a Day Competition
- The World Scholars' Cup
- Debating
- Music bands and choirs, CHAC musicals



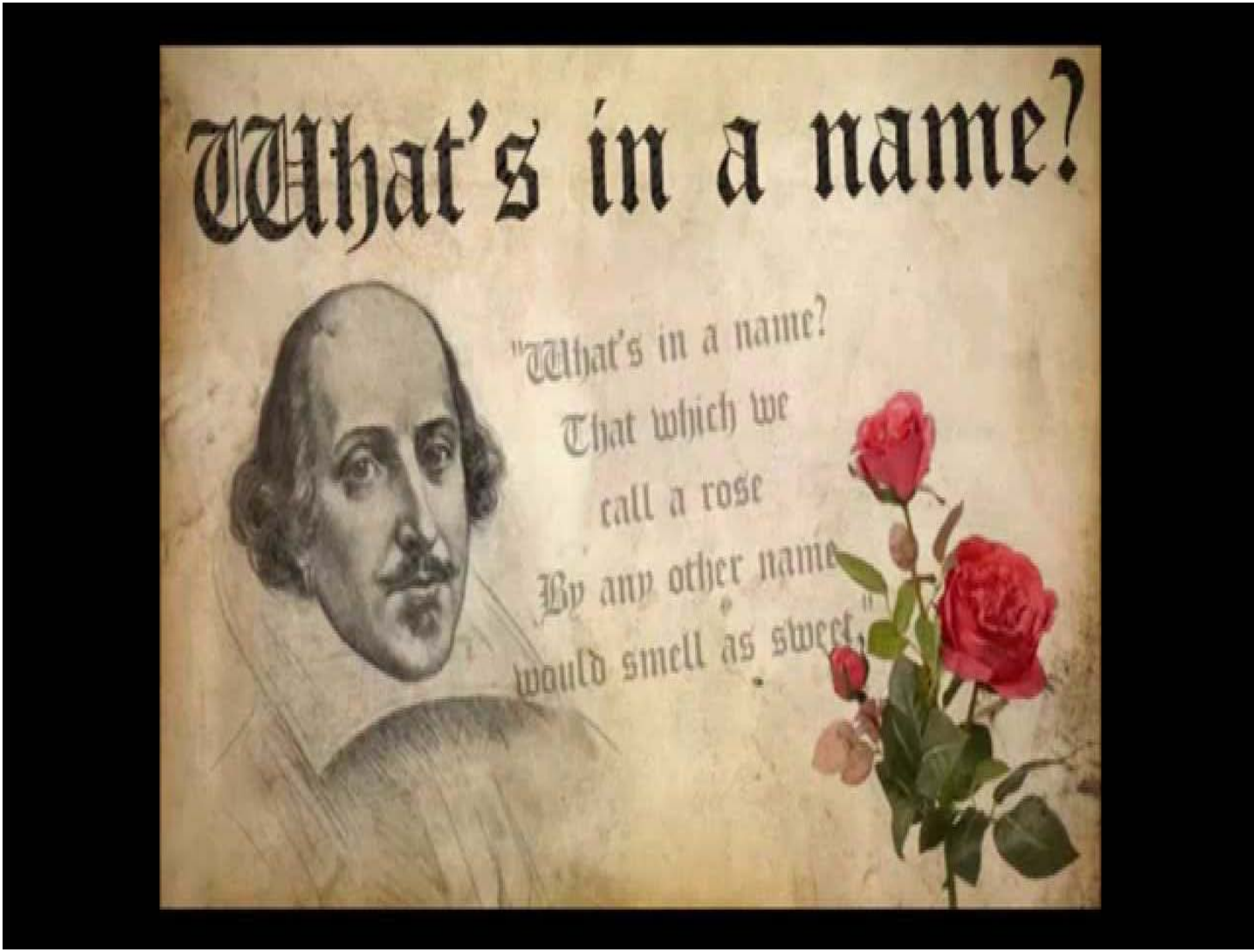
CHAC Enterprise

Nurturing tomorrow's innovators



CHAC's
Enterprise
Education
Program





Enterprise
VS
Entrepreneurship

Intrapreneurial
VS
Entrepreneurial

Value of Enterprise Education for gifted students



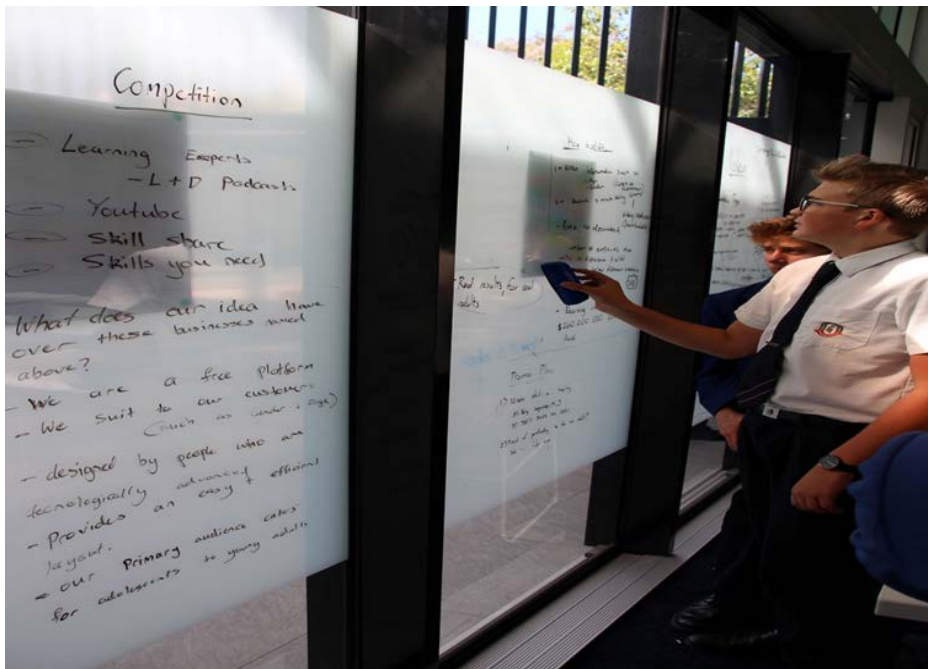
Enterprise education helps gifted students:

- Develop “soft” skills (21st Century skills)
 - Critical and creative thinking – problem-solving
 - Collaboration
 - Communication
- Engage through learner agency and pursuit of passions
- See the real-world relevance of learning
- Be equipped for a rapidly-changing future
- Take (supported) risks – encourages experimentation
- Develop self-knowledge and socio-emotional skills

Thinking Skills Development through Enterprise Education

Continually evolving, agile, innovative

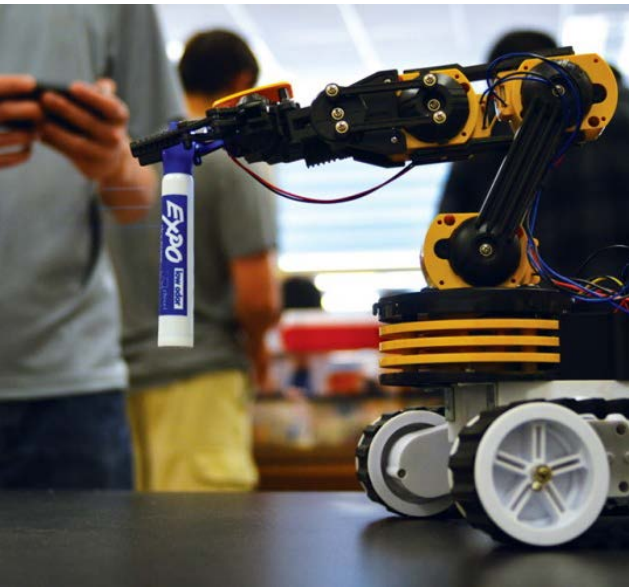
- o Whole cohort programs for Years 5-10
- o 21st Century “soft” skills development focus:
 - o Collaboration
 - o Critical Thinking
 - o Communication
 - o Creativity
- o Cross-curricular electives such as:
 - o Year 9 Changing Tomorrow
 - o Year 10 The Project
- o Responsive to needs and opportunities
- o Embraces tech potential



Critical and Creative Thinking in Enterprise Extra-Curricular



- o Discovery Entrepreneurship Program (Uni of QLD)
- o The Big Ideas Challenge (Advance QLD & Future Anything)
- o The Something School (BOP & Something Digital)
- o Youth Digital Workshop (QUT Creative Enterprise Australia)
- o Somerset Festival of Entrepreneurship (Somerset College)
- o Tech Girls (2019-2020, 2023)
- o Young Women Leaders in AI Camp (2019)
- o Imagine Cup/AI for Good (2020-2021)
- o Impact Youth - forum representation (2021)
- o SheEO Activator – student “scholarships” (2021)
- o Academy for Enterprising Girls (Aust Government & Young Change Agents – 2021)
- o ISQ Big Ideas Summit 2020



Diverse and Innovative Curriculum

Large range of Elective Subjects:

- Gruesome Science
- Changing Tomorrow
- Flight
- Robotics
- Geography: Future Eaters
- Big History
- The Project



Changing Tomorrow

- Year 9 elective
- Collaborative problem-solving focus
- Develops self-awareness
- Focuses on development of an intrapreneurial mindset





Changing Tomorrow Projects

- Climate Cows
- Growing Green Minds

INTRODUCING...

THIS SEMESTER'S CHANGING TOMORROW PROJECTS

Tech n' Tea

By Annelies Alcorn, Chris O'Brien and Luke Pearce



Primary Protect Project

Lets keep our kids safe from bullies

Community Connect Project



Billy Byrne, Harrison Brown, Lauren Jenkin, Will Ewart

The Anxiety Project

A Changing Tomorrow Presentation

By Isaac Reed, Kayla Evans and Breanna Andrews

*Defeat
Anxiety*



THE TECH 'N' TEA INITIATIVE

Focused on addressing the dual issues of elderly isolation and technological disconnectedness, the Tech 'n' Tea initiative:

- Harnesses students to connect and educate elderly citizens in their local area
- Is based on the fostering of mutually beneficial relationships between teenagers and older people needing assistance with technology
- Has developed a website and app to assist technologically illiterate elderly people

Tech n' Tea

By Annelies Alcorn, Chris O'Brien and Luke Pearce



THE COMMUNITY CONNECT PROJECT

Developed by a group passionate about the need to re-connect metropolitan citizens with their neighbours, the Community Connect Project:

- Explores way of re-establishing a sense of community in suburbs
- Proposes a campaign launch and series of initiatives to link neighbourhoods
- Has developed social media – a website and Facebook page – to promote their initiative

Community Connect Project



Billy Byrne, Harrison Brown, Lauren Jenkin, Will Ewart



The Project

- Year 10 elective
- “Passion project”
- By application

THE PROJECT

