

Building critical skills at Rooty Hill High School ^[1]

?Education is a vision of what it is that our children will need if they are going to flourish in the world as we predict it will be: that is to say, in their world, not ours.?[i]

- **Learn how one school is using creative inquiry to enable students to develop the capabilities and dispositions they need for work and life.**
- **Find out how to adopt the same model in your school and more about the Creative Inquiry Cycle by using the links and references at the end of this case study.**
- **Watch the ALL Creative Inquiry video to see the program in practice.**

Data, far from being in opposition to joy is an important ingredient in it.

Sir Michael Barber, Australian Learning Lecture, 21 May 2015, www.all-learning.org.au^[2].

Video of ALL Creative Inquiry Cycle: Rooty Hill High School

 **Download ^[3] the ALL Creative Inquiry Case Study**

What is the problem?

?If we think a new idea will improve the learning trajectory for our students, we?re willing to take the risk? says Christine Cawsey AM, Principal of Rooty Hill High School in Sydney?s west. ?We have a moral contract to help each student do their best.?

Rooty Hill HS is a co-educational school with over 1100 students. In 2016 over 50% of students were from non-English speaking backgrounds, while the Family Occupation and Education Index shows that 70% of students come from families whose educational qualifications and occupations are in the bottom 50%. On arrival at Rooty Hill HS , 60% to 80% of each Year 7 cohort is below grade average. Yet, Christine argues that ?it?s not good enough? to accept that this will set a predetermined path for her students.

The school?s goal is for all graduates of the school to be effective employees, active global citizens and able to identify and build upon their own personal character strengths. Christine and her team of teachers have mapped a trajectory for each student which takes them from entry level ? where they have many skills to learn ? to developing the habits and dispositions which set each student up for work, study and life. Importantly, she has the data to show her students are growing and achieving, with 80% of Year 10s achieving many of the Australian Curriculum Assessment and Reporting Authority (ACARA) capability benchmarks^[ii]

She acknowledges there is more to be done in Literacy and

Numeracy.

Through deliberate and careful design the school has developed the Creative Inquiry Cycle, a model for project-, problem- and inquiry-learning. This model aims to develop student and teacher creativity capabilities and dispositions, so that each Rooty Hill HS graduate fulfils the school's goal for them.

This approach is in line with the school's strategic directions, focussing on a capability driven curriculum, underpinned by strong literacy and numeracy programs. The general capabilities are a key dimension of the Australian Curriculum, covering the knowledge, skills and dispositions that will enable students to thrive in the twenty-first century.[iii] These capabilities derive from the 2008 *Melbourne Declaration on Educational Goals for Young Australians* which set the goal that all young people should become successful learners, confident and creative individuals, and active and informed citizens.[iv]

How did the Creative Inquiry Cycle start at Rooty Hill High School?

Building on the goals of the *Melbourne Declaration*, Rooty Hill HS worked with Professor Bill Lucas to develop the Creativity Wheel.[v] This built on a foundation thinking project to embed the Harvard Visible Thinking Routines, based on the work of Ron Ritchhart, Mark Church and Karin Morrison.[vi] The school knew that the students were already strong in the areas of confidence and intercultural understanding. With an eye to the international focus on problem solving and creative thinking this seemed a sound approach.[vii]

An important aspect of the Creative Inquiry Cycle framework is that students are asked to articulate and evaluate their own capabilities. As Christine explains, 'we measure verbs' and by asking students to think about what they are doing we get a greater insight into what they understand, as well as their misconceptions. This is supported by Ron Ritchhart who says 'When we demystify the thinking and learning process, we provide models for students of what it means to engage with ideas, to think, and to learn' School is no longer about the 'quick right answer' but the ongoing mental work of understanding new ideas and information.[viii]

'It was messy, there was confusion, there was trial, there was risk-taking,' Christine describes the process of developing the Creative Inquiry Cycle, which was led by the school's Human Society and Its Environment (HSIE) faculty who 'had a spirit to change things.' The faculty faced many challenges: what would it look like? How would they bring together design-thinking, project- and inquiry-based learning, build a focus on the creative dispositions, and move from descriptions of behaviour to a teaching sequence and content, to conceptual links to drive curriculum?

The faculty tackled the challenge set by the Australian Curriculum to embed the capabilities into learning programs, without simply overlaying activities. The faculty developed illustrations of practice, with annotated lesson footage, exemplars and student work samples which have been key to helping teachers become familiar with the framework. This also allowed for review and refinement of the Creative Inquiry Cycle framework. Professional Learning sessions with the whole teaching staff have helped to build understanding, and the framework is now being tested by the Science and Mathematics faculties to develop STEM programs.

How does the Creative Inquiry Cycle help?

'The aim of the school's Creativity Wheel is to help students to understand their creativity, and that it's not just about drawing or dancing, even though those are creative forms. It's

really about being imaginative, inquisitive, collaborative, persistent and disciplined? explains Shae Dunbar, the teacher who led the design of the Creative Inquiry Cycle using the Creativity Wheel.

The Creative Inquiry Cycle helps teachers to design programs which allow students to develop their creative and critical thinking. The Wheel emphasises certain dispositions for students and sets out questions for teachers to design higher-order learning and to enable students to self-reflect. The Creative Inquiry Cycle is a product of the Rooty Hill School Plan which focuses on a capability driven curriculum, personalised learning and leadership for innovation.

ACARA says that "In the Australian Curriculum, students develop capability in critical and creative thinking as they learn to generate and evaluate knowledge, clarify concepts and ideas, seek possibilities, consider alternatives and solve problems. Critical and creative thinking involves students thinking broadly and deeply using skills, behaviours and dispositions such as reason, logic, resourcefulness, imagination and innovation in all learning areas at school and in their lives beyond school." [ix]

How is data useful?

Students at Rooty Hill HS have digital portfolios, to which they upload examples of their work, which they assess and map against the capabilities. The students' portfolios enable self-, peer- and teacher-assessment with early evidence pointing to greater capacity for student reflection and growing student confidence in individual capabilities.

Shae Dunbar uses the example of a Year 10 project to create a super park, with students working in teams as urban planners catering to the needs of their local community. The unit was designed using the Creative Inquiry Cycle with explicit focus on the creative dispositions of imagination, inquisitiveness, persistence, collaboration, and discipline. At each checkpoint in the project students could reflect, and peers and teachers could provide feedback. Teachers emphasised throughout the unit that creativity is not fixed, and found through survey data that students' perception of their own creativity grew by over 40% by the end of the unit. In particular, students recognised that they had developed the dispositions of persistence and inquisitiveness (being able to challenge assumptions, being able to wonder and question). As Shae explains, this is important because some students had a tendency to give up, and through self-reflection students understood that they could manage difficulty and uncertainty. "It's powerful for students to know that they can be all of these things when they leave school? these are essential skills to be a functioning adult" explains Shae.

Yasodai Selvakumaran, Humanities teacher at Rooty Hill HS, points to growing student engagement (feedback from student and staff surveys, attendance, and submission of assignments), higher order thinking evident in work samples, and improved collaboration which were outcomes of Year 10 Geography and Year 7 History units where the Creative Inquiry Cycle was used. Importantly, through self-assessment students were able to articulate how they were learning and thinking, a skill they can apply in the future.

The evidence so far

Rooty Hill HS is committed to making the Creative Inquiry Cycle framework part of its teaching and learning approach. As Christine notes, it was a risk for teachers to trial this framework, but the school has seen a real shift in what students can do. They are more collaborative, imaginative and curious, and greater engagement is resulting in improved learning.

The use of the Creative Inquiry Cycle framework is still in its infancy, but the qualitative and quantitative evidence is compelling, and shows real possibilities as the framework continues to be developed. The 2016 cohort of Year 10s were below average on literacy and numeracy measures when they arrived at Rooty Hill HS in Year 7. Forty percent of this cohort were below Grade 4 standard, in Year 7. By the end of 2016 over 70% of this cohort had reached state average on a key external measure, the NSW VALID science examination which assesses all the ACARA capabilities.

Students who participated in the Creative Inquiry Cycle based STEM project in 2016 showed improvements in their results. A comparison of Year 9 grade distributions across semesters one and two in 2016 showed that the majority of students improved their overall science grades by one grade, that is from ?C? to ?B? and ?A?. The cohort who moved from Year 7 to Year 8 in 2016 showed a 60% reduction in ?E? and ?D? grades, which teachers report as an outcome of the STEM project (using the CIC framework).

Imagining better ways to prepare their students has required the school to apply discipline, persistence and imagination to its own ambitions. Christine compares the process to cooking: starting with a recipe and then improving on the recipe, and adapting it for each cohort of students and their particular needs. Reflecting on what the Creative Inquiry Cycle can offer her students, Christine affirms ?If our students can deconstruct knowledge? [and they have the capabilities and skills], and if they can take control and own their own understanding, they can achieve anything.?

Learn more:

 Download the ALL Creative Inquiry Cycle: Building critical skills at Rooty Hill High School [4]

Educating Ruby: What our children really need to learn

- www.educatingruby.org [5]
- Claxton, G. and Lucas, B. (2015) *Educating Ruby: what our children really need to learn*. Crown House Publishing: Carmethen, Wales.

Visible thinking

Visible Thinking is a flexible and systematic research-based approach to integrating the development of students' thinking with content learning across subject matters. An extensive and adaptable collection of practices, Visible Thinking has a double goal: on the one hand, to cultivate students' thinking skills and dispositions, and, on the other, to deepen content learning.

- www.visiblethinkingpz.org [6]
- Harvard?s Project Zero: Visible Thinking - www.pz.harvard.edu/projects/visible-thinking [7]
- Ritchhart, R., Church, C., and Morrison, K. (2011) *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey-

Bass: San Francisco.

Rooty Hill High School

- rootyhillhighschool.nsw.edu.au [8] & telephone: +61 2 9625 8104
-  Rooty Hill High School creativity-wheel_web.pdf [9]

Sources:

ACARA, General Capabilities, www.acara.edu.au/curriculum/general-capabilities [10] (accessed 5 June 2017).

ACARA, Critical and Creative Thinking, www.australiancurriculum.edu.au/generalcapabilities/critical-and-creative-thinking/introduction/introduction [11] (accessed 5 June 2017).

Claxton, G. and Lucas, B. (2015) *Educating Ruby: what our children really need to learn*. Crown House Publishing: Carmethen, Wales.

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA, 2008), *Melbourne declaration on educational goals for young Australians*, Melbourne.

OECD:

- OECD, Programme for International Student Assessment, www.oecd.org/pisa/ [12] (accessed 6 June 2017).
- Csapó, B. and J. Funke (eds.) (2017), *The Nature of Problem Solving: Using Research to Inspire 21st Century Learning*, OECD Publishing, Paris.

Ritchhart, R., Church, C. and Morrison, K. (2011) *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey-Bass: San Francisco.

Rooty Hill High School, (2015) *Rooty Hill High School: School Plan 2015-17*.

Rooty Hill High School, planning documents and data provided by teachers.

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Endnotes

[i] Claxton, G. and Lucas, B. (2015) *Educating Ruby: what our children really need to learn*. Crown House Publishing: Carmethen, Wales. P.66.

[ii] ACARA, General Capabilities Learning Continua, <http://www.australiancurriculum.edu.au/generalcapabilities/overview/learning-continua> [13] (accessed 5 June 2017)

[iii] ACARA, General Capabilities, www.acara.edu.au/curriculum/general-capabilities [10] (accessed 5 June 2017).

[iv] Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA, 2008), *Melbourne declaration on educational goals for young Australians*, Melbourne.

[v] Claxton, G. and Lucas, B. (2015) *Educating Ruby: what our children really need to learn*. Crown House Publishing: Carmethen, Wales.

[vi] Ritchhart, R., Church, C., and Morrison, K. (2011) *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey-Bass: San Francisco.

[vii] OECD, Programme for International Student Assessment, www.oecd.org/pisa/ [12] (accessed 6 June 2017). Csapó, B. and J. Funke (eds.) (2017), *The Nature of Problem Solving: Using Research to Inspire 21st Century Learning*, OECD Publishing, Paris.

[viii] Ritchhart, R., Church, C., and Morrison, K. (2011) *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey-Bass: San Francisco. Page 28.

[ix] ACARA, Critical and Creative Thinking, www.australiancurriculum.edu.au/generalcapabilities/critical-and-creative-thinking/introduction/introduction [11] (accessed 5 June 2017).

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