Stage 3 English, Geography, Science and Technology, Creative Arts:

How does Sydney Metro support the past, present and future needs of our community?

Oatley Primary School is a large metropolitan school located in a high socio-economic part of southern Sydney. The school has 26 teaching staff with a student enrolment of 475. The school has strong relationships with an Oatley Public School Advisory Group and P&C consisting of parents, caregivers, teachers and the wider community. Oatley Primary School has a proud sporting history, provides opportunities in the creative and performing arts, Sciences, Technology and embraces Creativity, Critical Reflection, Communication and Collaboration (4Cs). The school promotes the growth and development of our young people and builds the capacity of our students to develop as a whole child (cognitively, physically, emotionally, socially, morally) and through teaching and learning incorporate capacities which help our students navigate through a changing world of challenges. This unit was developed based on a synthesis of two key research models: **Kath Murdoch's Inquiry Based Learning Model** (2019) and the **4Cs Wonder Web**. Colour coding has been used within the *Teaching, learning and assessment* section of this program to highlight the processes explored within each model.

Overarching Question: *How does Sydney Metro support the past, present and future needs of our community?*

Stage 3 Program: 8 week duration (averaging 6-8 hours per week).

Unit context

This unit was written by Joanne Gadaleta (Stage 3 Assistant Principal), Sarah Kennedy (Stage 3 teacher) and Angela Rozmeta (Stage 3 teacher) of Oatley Public School. The unit is aligned to © NSW Education Standards Authority (NESA) syllabuses specifically the Geography K-10 Syllabus (2015), the Science and Technology K-6 Syllabus (2017), the Creative Arts K-6 Syllabus (2006) and English K-10 Syllabus (2012).

It was created, trialled and peer reviewed as part of a professional development program in inquiry based learning for primary and secondary school teachers. The professional development courses were part of a pilot partnership between the NSW Government's Sydney Metro transport agency and Western Sydney University. Facilitated by Western Sydney University's Education Knowledge Network, the professional development program aimed to develop teacher expertise in inquiry based learning using a real-life example of a major infrastructure project in delivery stage.

Sydney Metro Sydney Metro is Australia's largest public transport infrastructure project in NSW that is fully automated (driverless). Services are being built to operate across the Greater Sydney Region and will be integrated within the established Sydney Trains network. The expected completion date for the Sydney Metro project is 2030).

Syllabus links

Curriculum links **will change** according to the specific direction of the student inquiry and **may** include the following:

General capabilities and cross-curriculum priorities	Outcomes	Skills	Concepts
From the NSW Syllabus for the Australian Curriculum *Cross-curriculum priorities:* • Aboriginal and Torres Strait Islander histories and cultures • Sustainability *General capabilities:* • Critical and creative thinking • Information and Communication Technology (ICT) Capability • Literacy • Numeracy • Ethical Understanding • Personal and Social Capability	By the end of the unit, a student: • **EN3-1A** - communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features • **EN3-2A -** composes, edits and presents well-structured and coherent texts • **EN3-3A** - uses an integrated range of skills, strategies and knowledge to read, view and comprehend a wide range of texts in different media and technologies • **EN3-5B -** discusses how language is used to achieve a widening range of purposes for a widening range of audiences and contexts • **EN3-6B -** uses knowledge of sentence structure, grammar, punctuation and vocabulary to respond to and compose clear and cohesive texts in different media and technologies • **EN3-7C** - thinks imaginatively, creatively, interpretively and critically about information and ideas and identifies connections between texts when responding to and composing texts • **EN3-9E** - recognises, reflects on and assesses their strengths as a learner • **GE3-1 -** describes the diverse features and characteristics of places and environments • **GE3-2 -** explains interactions and connections between people, places and environments	Students learn to: • develop geographical questions to investigate and plan an inquiry (ACHGS033, ACHGS040) • collect and record relevant geographical data and information, using ethical protocols, from primary data and secondary information sources, for example, by observing, by interviewing, conducting surveys, or using maps, visual representations, statistical sources and reports, the media or the internet (ACHGS034, ACHGS041) • evaluate sources for their usefulness (ACHGS035, ACHGS042) • represent data in different forms, for example plans, graphs, tables, sketches and diagrams (ACHGS035, ACHGS042) • interpret geographical data and information, using digital and spatial	Students learn more about the following concepts: **Geography** • Place • Space • Environment • Interconnection • Sustainability • Change

General capabilities and cross-curriculum priorities	Outcomes	Skills	Concepts
	• **GE3-3** - compares and contrasts influences on the management of places and environments • **ST3-2DP-T** - plans and uses materials, tools and equipment to develop solutions for a need or opportunity • **VAS3.1 -** Investigates subject matter in an attempt to represent likenesses of things in the world. • **VAS3.2 - Makes** artworks for different audiences assembling materials in a variety of ways. • **VAS3.4 -** Communicates about the ways in which subject matter is represented in artworks. • **DRAS3.2 -** Interprets and conveys dramatic meaning by using the elements of drama and a range of movement and voice skills in a variety of drama forms. • **DRAS3.3 -** Devises, acts and rehearses drama for performance to an audience	technologies as appropriate, and identify spatial distributions, patterns and trends, and infer relationships to draw conclusions (ACHGS037, ACHGS044) • present findings and ideas in a range of communication forms as appropriate (ACHGS038, ACHGS045) • identify questions to investigate scientific ideas • plan and apply the elements of scientific investigations to answer problems • manage investigations effectively, individually and in groups • employ appropriate technologies to represent data (ACSIS090, ACSIS107) • present data as evidence in developing explanations (ACSIS218, ACSIS221) • examine and critique needs, opportunities or modifications using a range of criteria to define a project • research, identify and define design ideas and	**Science and Technology** • Using and interpreting data • Designing digital solutions

General capabilities and cross-curriculum priorities	Outcomes	Skills	Concepts
		processes for an audience • consider functional and aesthetic needs in planning a design solution • develop, record and communicate design ideas, decisions and processes using appropriate technical terms • produce labelled and annotated drawings including digital graphic representations for an audience (ACTDEP025) • manage projects within time constraints • select and use tools competently for specific purposes • evaluate design ideas, processes and solutions according to criteria for success (ACTDEP027) • examine and determine functional requirements to define a problem • develop solutions through trialling and refining using iterations (ACTDIP019) • develop project plans that consider resources when producing designed solutions individually and	

General capabilities and cross-curriculum priorities	Outcomes	Skills	Concepts
		collaboratively (ACTDEP028) • work collaboratively to share, appraise and improve ideas to achieve design purposes • identify, organise and perform strategic roles within a group to solve a problem • acquire, store, access and validate different types of data, and use a range of software to present, interpret and visualise data (ACTDIP016) • explain how students' solutions and existing information systems meet current and future local community needs (ACTDIP021)	

Teaching, learning and assessment	Resources and technology
Wonder sessions and recording of noticings ('Tune in', 'Inquiring') ➢ Use stimulus on Sydney Metro website to create a catalogue of videos and images for students to view. Allow the students time to document their 'wonderings' and 'noticings'. Students can complete this on a 'graffiti wall' and then conduct a gallery walk to share with each other (*See Appendix A).* ➢ Ask students to document their questions about the Sydney Metro project. ➢ Create a Google Form survey and request the students to rate their areas of interest from 1 (low interest) to 5 (very interested) to determine group formation.	• Sydney Metro website https://www.sydneymetro.info/ • Initial Google Form survey for project areas of interest (needs to be created by the teacher)
Inquiry-based learning (IBL) – what is it? ('Tune in', 'Find out', 'Inquiring') ➢ Pretend that the project is taking a 'U turn'. Tell the students that they are going back to a completely teacher-directed model and that they will be told what areas of the Sydney Metro project they are working on. Ask students to reflect on how they feel about this. ➢ Explain Inquiry-based learning (IBL) and the continuum of student inquiry. Refer to the Sydney Metro Professional Development Past Project Evaluation for more information on the continuum of student inquiry if needed. ➢ Discuss the skills and characteristics needed to succeed with IBL. Capture thoughts in a Google Jamboard or a similar collaborative digital tool *(See Appendix B).* ➢ Reflect as a class on the skills and characteristics that the students will need to demonstrate to be successful with this project. Students also create a separate slide within the same Jamboard to list specific skills that they can contribute to this project *(See Appendix C).*	• Sydney Metro Professional Development Past Project Evaluation • *Inquiry-based Learning* You Tube video
Blooms Taxonomy – what is it and why is it helpful? ('Find out', 'Inquiring') ➢ Define Bloom's Taxonomy (BT). Use printed or video resources to further unpack this model for students (this may be a new concept for some students). ➢ Discuss why BT is going to be helpful with potentially asking 'better' questions about the Sydney Metro project. ➢ Provide the students with the Q Chart template (see Resources) to scaffold and re-engineer some of their original 'wondering' questions.	• Q Chart Template

Teaching, learning and assessment	Resources and technology
Define the overarching question ('Find out', 'Inquiring') ➢ Facilitate a discussion with the students to create the general overarching question for the whole Sydney Metro project. ***Project Group organisation*** ➢ Create another Google Form to again survey the students and ask them for their **top two** areas of interest. ➢ Once the students complete this survey, place the students into groups of 4-5 people based on their interest area. ***Defining initial sub-inquiry questions by each project group ('Find out', 'Inquiring')*** ➢ Students will then work together with their new topic team to create a set of specific lower-level inquiry questions about their topic that they wish to answer during the project. They should use their Q Chart 're-engineered' questions as input to this process. ➢ Finally, students should review this set of lower-level questions and then create **one 'over-arching' question related to their topic.** Explain to students that they will now work towards creating a 'product' which they can use to demonstrate their understanding of their group's overarching question *(See Appendix D).*	• Second Google Form survey asking students for t**op two areas of interest** within the project (to be created by the teacher) • *Optional:* Set up a Google Classroom for the IBL project to share relevant files with students
'Meet the experts' Q&A session ('Tune in, 'Find out', 'Inquiring') ➢ Coordinate with contacts from Sydney Metro for experts to visit the school and provide a 'Question and Answer' (Q&A) session and insight into their work with the Sydney Metro project. Note: it is helpful if you provide a set of topic questions ahead of the visit, so that the experts have an idea of the direction your school is moving towards. ➢ The Q&A session can be organised in group rotations in the hall, depending on how many experts are available on the day *(See Appendix E).* ➢ Students are also given a 'project folder' to store all their notes and worksheets. They should being this, along with a note book to write down the expert responses to their questions.	• Sydney Metro experts (i.e. Project Managers, Engineers etc.)

Teaching, learning and assessment	Resources and technology
Practical skill sessions with digital tools (‘Find out’) ➢ Where possible, offer explicit workshops that demonstrate the use of digital tools that students might consider using for their end-product, such as Apple Keynote, Google Slides, or Minecraft for Education as well as how to use a green screen effectively. Most students may already be familiar with Minecraft, so there is less need to focus on a training session for this tool.	• Access to an Apple Distinguished Educator if needed to train students on how to use with digital tools (this is dependent on the devices being used for the project). • Optional: access to a ‘green screen’
Revisit inquiry questions and refine the inquiry (‘Sort out’, ‘Go further’, ‘Imagine’) ➢ Following the Q&A session with the Sydney Metro experts, allow time for the students to reflect on the information received in their groups and determine if they need to adjust their group’s inquiry question. A reason for adjustment may include not being able to gain sufficient background information or ongoing information about a topic. ***Initial research via Internet (‘Find out’, ‘Sort out’, ‘Go further’, ‘Practising’)*** ➢ Students will begin conducting initial research of their topic via the Internet. Any research can be noted digitally on a device or in a project notebook. ***Reflect: have you found enough information? (‘Sort out’, ‘Go further’, ‘Reflecting’, ‘Practising’)*** ➢ Students should reflect on their initial research and determine if they have access to sufficient information to proceed. This information could be on the Internet or via information gleaned from the Sydney Metro experts in the Q&A session. If students determine that they do not have sufficient information, they should go back and readjust their group’s inquiry focus. ***Organise information in order to make sense of the questions***	• Q Chart Template– for refining questions
End Product Determination (‘Sort out’, ‘Go further’, ‘Reflecting’, ‘Practising’) ➢ Students should decide on the specific audience for their end-product. A possible idea is that the audience may be the students’ peers and that the purpose of the end-product is to communicate the students’ ‘learning’ about their Sydney Metro topic. ➢ Students should now determine their end-product by revisiting the Blooms Taxonomy scaffold and considering what information they have available. Teachers to provide direction and support, but not decide any details of the end-product for the students. ➢ Students should refine the high level plan for the details of their end product and how it will represent their understanding of what they have learned. The teacher’s role in this part of **Go Further** is to facilitate and support but not tell the students what the end-product should look like, or force the choice of a digital tool (if product is digital).	• Blooms Taxonomy • High Level Plan document

Teaching, learning and assessment	Resources and technology
'Design and Production' Cycle - building the product ('Go further', 'Reflecting', 'Practising') ➢ Students should work together to build their end-product *(See Appendix F).* ***Completion of regular 'Group Check-ins'*** ➢ Teachers to make sure that each team completes a regular group check-in document. The purpose of this group check in document is to make sure the students stay on track with their project and that each member of the group is contributing equally *(Appendix G).*	• Group Check-in document
Students review other groups' end-product (when it is near completion) and give peer feedback (*'Go further', 'Reflect & Act', 'Reflecting', 'Practising'*) ➢ *Peer review* ✓ **Who:** the peer review will be conducted by each group's peers, who are also participating in the project. ✓ **How:** Students will effectively 'swap' products with another group for the review to occur *(See Appendix H).* Constructive feedback sentence starters can be used as a scaffold to support students with giving feedback *(See Appendix I).* Each pair of groups will present their product to each other and then allow the group reviewing to provide feedback via the Peer Review form. ✓ **Timing:** This peer review should take place about a week prior to the deadline for completion of the students' end product. It is important for the peer review to take place about a week out from the end of the project, even if the end product is not in its final state. This will allow sufficient time for the students to make changes if they wish following the peer review. ✓ **Purpose:** for peers to swap products and determine *"How effective is this team's product (so far) in showing their learning of their chosen topic?"* ➢ *Refine end-product* – once feedback is received, students should spend the next few days refining their end-product and determining as a group if they are going to implement the suggested changes. This is NOT a time for wholesale changes but more just making slight adjustments and improvements. ➢ *Prepare for the expo* – as well as having their completed product to present, students need to create posters and signage for their 'stand'. The signage should include each group's inquiry question that they were aiming to answer, as well as their specific Sydney Metro topic. Teachers should make sure that they have sent out invitations to the visitors that they would like to attend the expo. Potential visitors for the expo could be: parents of those students who completed the project; community members; other students at the school, the Sydney Metro	• Peer Review Form

Teaching, learning and assessment	Resources and technology
experts who visited early in the project and the school's executive team. **Sydney Metro expo – presentation of end-product to an authentic audience (*'Go further', Reflect & Act, 'Practising', Enabling, Reflecting*)** ➢ Once the students complete their end-product, it is very important to give them the opportunity to present their end-products to an external audience outside the school environment. The expo setup involves students setting up a 'stand' in the form of a table, with signage about their product and question that they were answering *(See Appendix J)*. The expo audience then walks around the expo and reviews the products, talking informally to students. This is also an opportunity for the visitors to provide feedback via the Expo Visitor feedback form. Community members that attended the expo included: *The Sydney Metro experts, Sydney Metro Public Events & Education Managers, Associate Professor Catherine Attard and Dr Nathan Berger from Western Sydney University, Science & Technology NSW Curriculum Advisor, Stage 3 parents, Oatley Lions Club, Year 6 students.* ➢ Example end-products can be found in *Appendix K.* ➢ *Final reflection and review* – students should complete any final reflection surveys or reflection journals on their experience with the Sydney Metro project *(See Appendix L)*.	• Student Reflection Journals

Assessment

Diagnostic

- ➔ Wondering questions
- ➔ Observations of student involvement in Sydney Metro expert visit

Formative

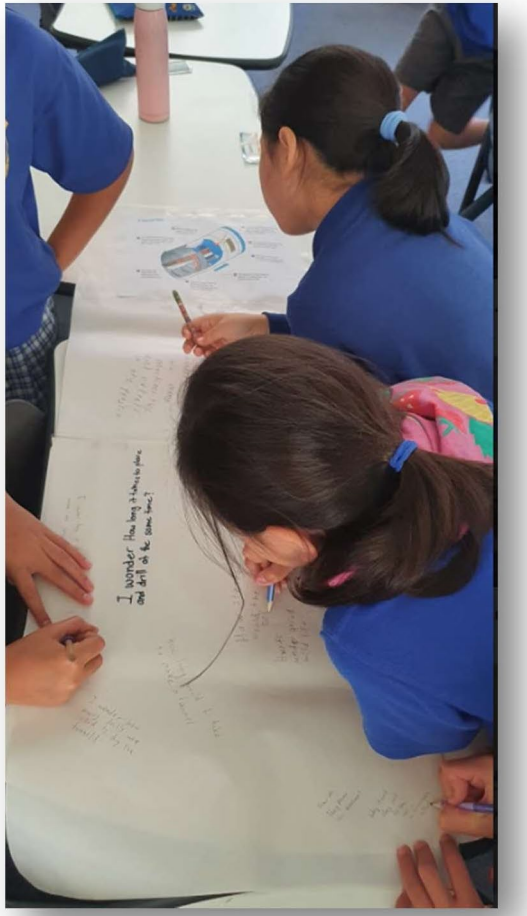
- ➔ Teacher observations of student teamwork and contributions throughout building of end-product
- ➔ Student check-in worksheets
- ➔ Peer review feedback forms

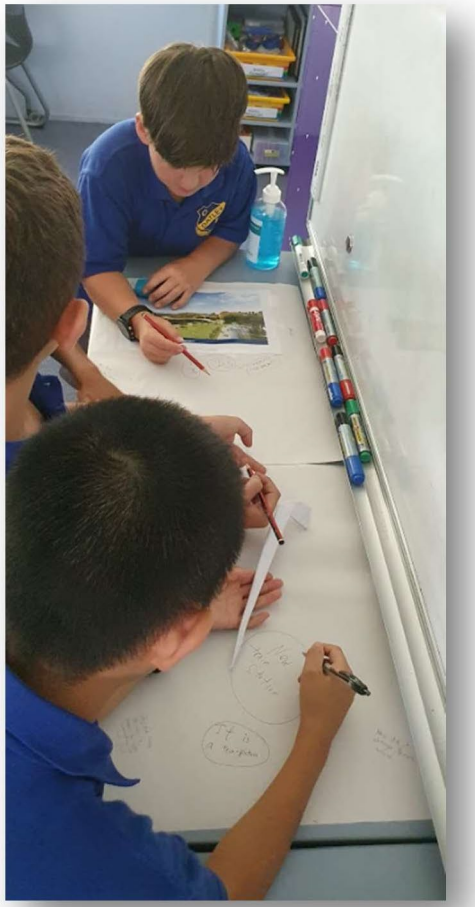
Summative

- ➔ Group end-products
- ➔ Student presentations during the Expo
- ➔ Expo Visitor Feedback
- ➔ Student Reflective Journal

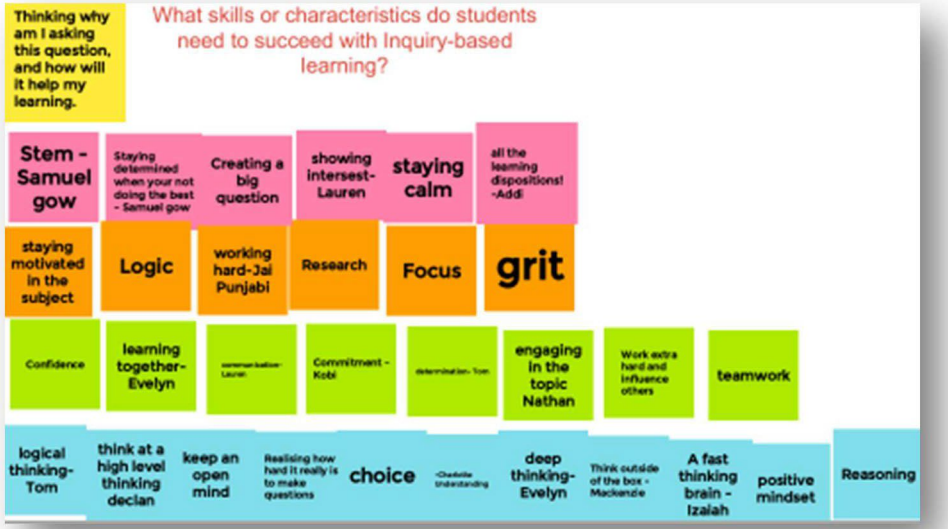
Appendices: Work samples and photos

Appendix A: Wonder sessions and recording of noticings on a Graffiti Wall

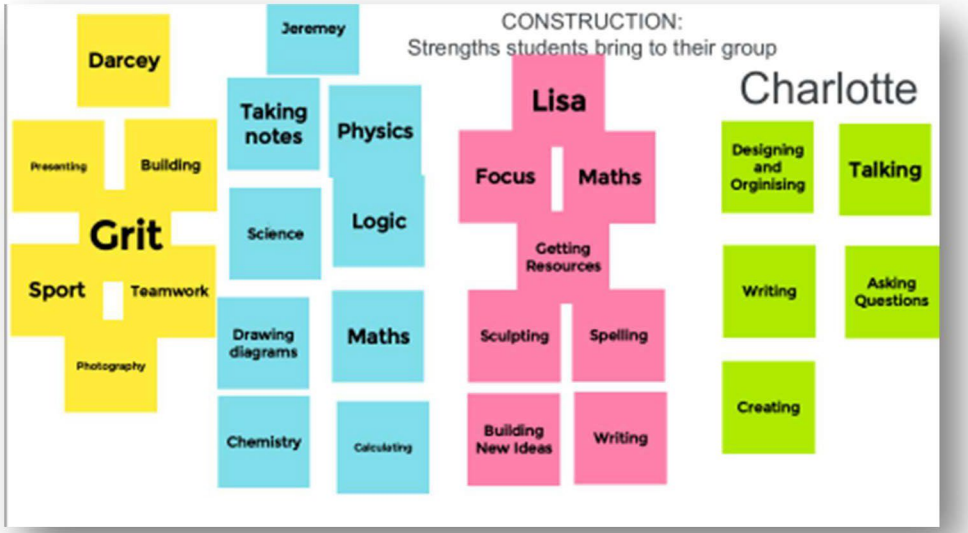




Appendix B: Skills and characteristics needed to succeed with IBL – using Google Jamboard



Appendix C: Student strengths and skills that they can offer – using Google Jamboard



Appendix D: The overarching question and sub-inquiry questions

Appendix E: ‘Meet the experts’ Q&A session

Appendix F: Design and production phase

Appendix G: Completion of regular ‘Group Check-ins’ to stay on track with the project

Group Members: Mackenzie, Evangeline, Luke, Samuel, Bach

Topic: Physical Trains Date: 5.5.2021

High Level Product Plan

Please describe your group's high-level plan for creating a product to show your learning in your specific Sydney Metro topic.

We are making a diorama of the interior of the train with a current & new part and we are going to do a Keynote to go with it. We will also be surveying year 5's & 6's to get their opinion and make changes to the trains. Luke and Bach will do Keynote about the differences between Sydney Metro trains, and normal Sydney Trains

What tools and materials will you use to create this product? Please clearly justify why you chose the tools (e.g. Minecraft).

We chose keynote so we can use the animation and masking techices to display the information.

We chose to make a diorama to easily display the layout of the train. We are going to make 1 diorama to show what the current interior & another ~~project~~ one to show improvments to the metro with information from a survey.

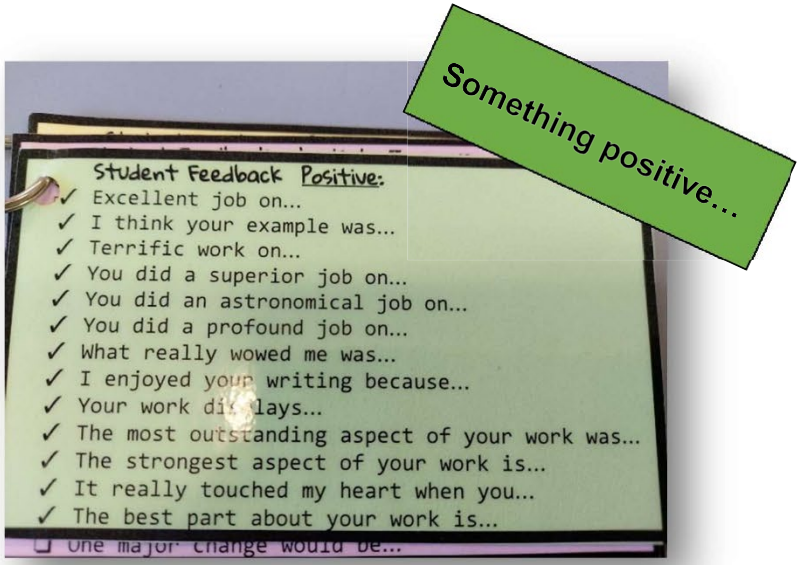
IPads, Keynote, Glue, Cardboard, lights, google forms

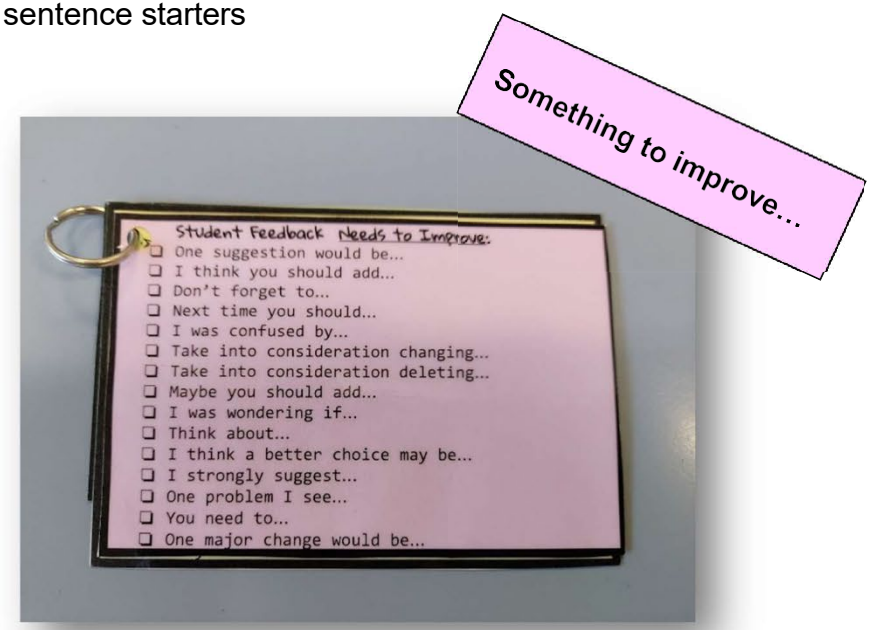
Do you need teacher assistance?

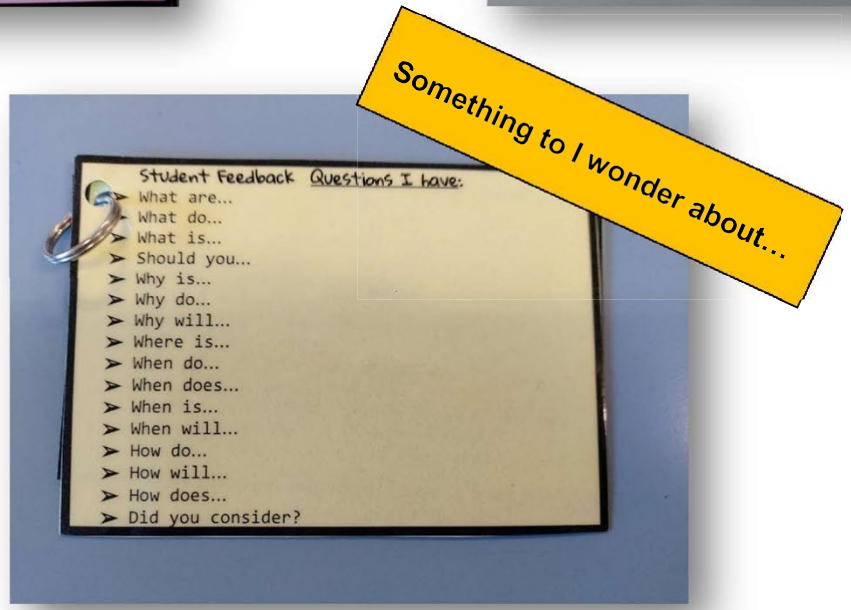
We will need some teacher assistence with ~~edit~~ editing the survey we will make so we get the answers we are looking for.

Appendix H: Students giving constructive peer feedback to other groups

Appendix I: Constructive feedback sentence starters







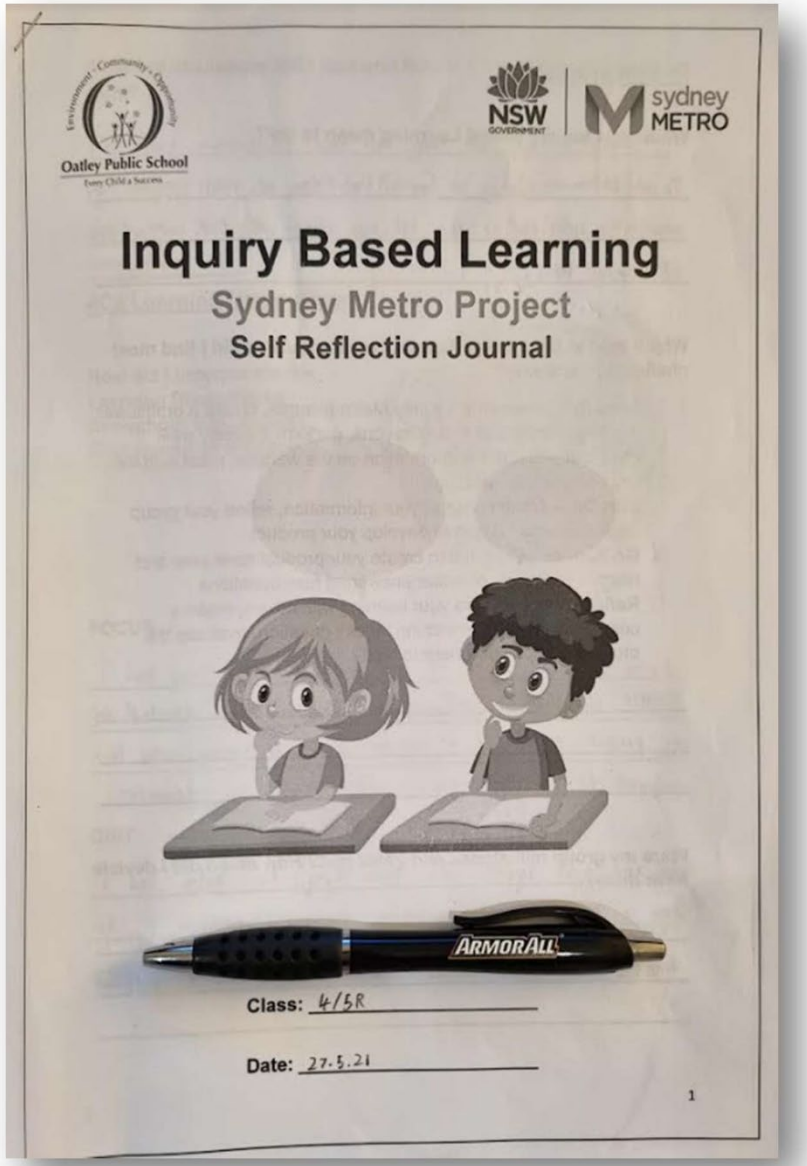
Appendix J: Sydney Metro Expo – Students presenting their end-product to an authentic audience

Appendix J (cont.): Sydney Metro Expo – Students presenting their end-product to an authentic audience

Appendix K: End-product examples created by student groups

Topic area	Sub-Inquiry Questions	End-Product
Construction	*What structural and design components have been used to improve our travel experience?*	Minecraft & iMovie replicating the design of a Sydney Metro station
Artworks	*What is the significance of the artworks chosen for the Sydney Metro stations?*	Minecraft & Keynote explaining the process of artwork selection and placement
Physical trains	*How does the train design enhance the performance of the Sydney Metro?*	Sydney Metro Train model showing the interior of a Metro Train and a Google form used to survey students on future design improvements.
Tunnel Boring	*How do Tunnel boring machines work underground?*	Minecraft & Informative posters explaining how the machines operate
Employment	*What are the key skills required to work at Sydney Metro?*	Employment advertisement using iMovie & Information cards about job roles and skills
Finance	*How will the Sydney Metro project strengthen the economy for NSW?*	Keynote & Minecraft explaining the construction costs
Information Communication Technology	*How will the technology for Sydney Metro make our lives easier?*	Minecraft & stop motion showing the control centre and explaining how technology is used in stations and on the train
Sustainability	*What practices has the Sydney Metro put in place to reduce the impact on our natural environment?*	Keynote & Scratch coding used to explain minimal disruption during tunnel boring and landscape replenishment
Safety	*What measures has Sydney metro put inn place to ensure the safety of all passengers?*	iMovie – role play scenarios during emergency situations

Appendix L: Student reflection journal (work sample)



Oatley Public School

Inquiry Based Learning

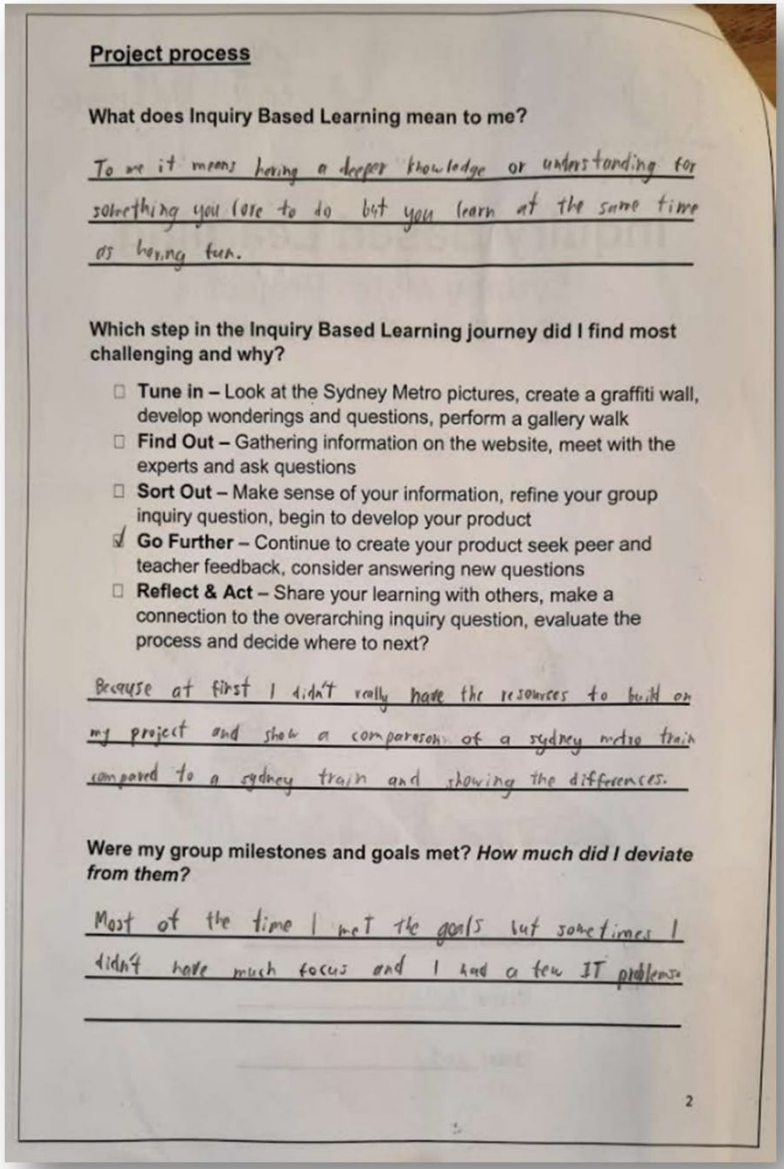
Sydney Metro Project

Self Reflection Journal

Class: 4/5R

Date: 27.5.21

1



Project process

What does Inquiry Based Learning mean to me?

To me it means having a deeper knowledge or understanding for something you love to do but you learn at the same time as having fun.

Which step in the Inquiry Based Learning journey did I find most challenging and why?

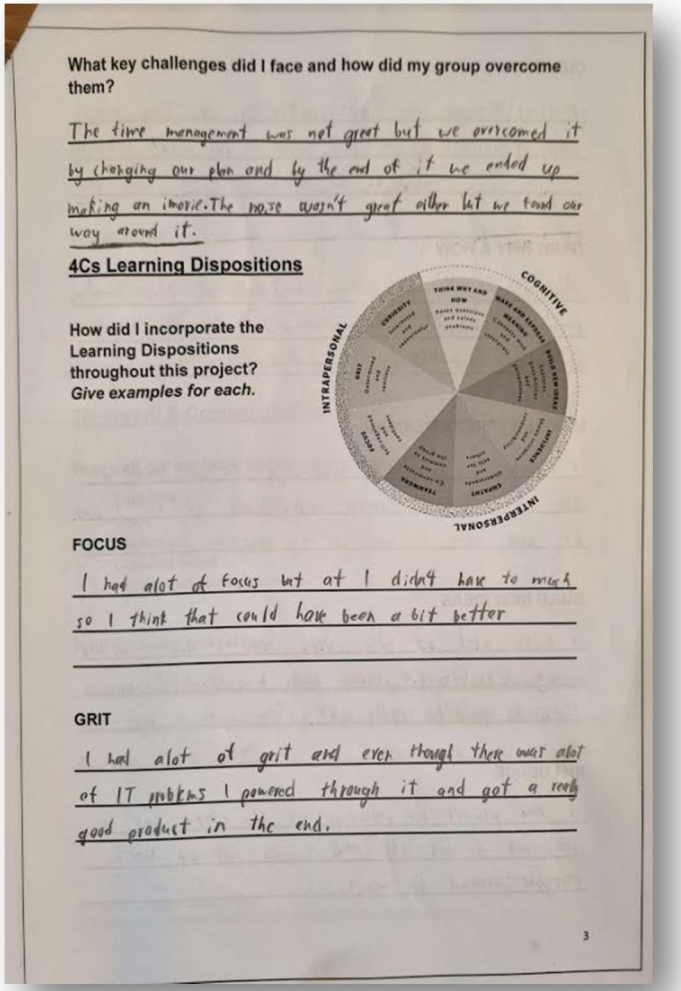
- ☐ **Tune in –** Look at the Sydney Metro pictures, create a graffiti wall, develop wonderings and questions, perform a gallery walk
- ☐ **Find Out –** Gathering information on the website, meet with the experts and ask questions
- ☐ **Sort Out –** Make sense of your information, refine your group inquiry question, begin to develop your product
- ☑ **Go Further –** Continue to create your product seek peer and teacher feedback, consider answering new questions
- ☐ **Reflect & Act –** Share your learning with others, make a connection to the overarching inquiry question, evaluate the process and decide where to next?

Because at first I didn't really have the resources to build on my project and show a comparison of a sydney metro train compared to a sydney train and showing the differences.

Were my group milestones and goals met? ***How much did I deviate from them?***

Most of the time I met the goals but sometimes I didn't have much focus and I had a few IT problems

2



What key challenges did I face and how did my group overcome them?

The time management was not great but we overcomed it by changing our plan and by the end of it we ended up making an imovie. The noise wasn't great either but we found our way around it.

4Cs Learning Dispositions

How did I incorporate the Learning Dispositions throughout this project? *Give examples for each.*

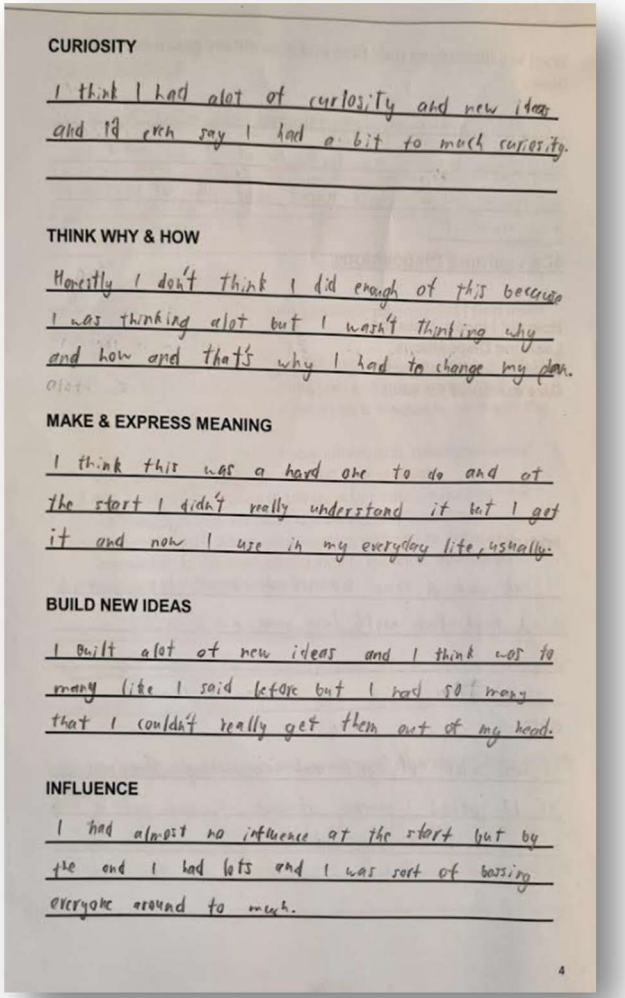
FOCUS

I had alot of focus but at I didn't have to much so I think that could have been a bit better

GRIT

I had alot of grit and even though there was alot of IT problems I powered through it and got a really good product in the end.

3



CURIOSITY

I think I had alot of curiosity and new ideas and I'd even say I had a bit to much curiosity.

THINK WHY & HOW

Honestly I don't think I did enough of this because I was thinking alot but I wasn't thinking why and how and that's why I had to change my plan.

MAKE & EXPRESS MEANING

I think this was a hard one to do and at the start I didn't really understand it but I got it and now I use in my everyday life, usually.

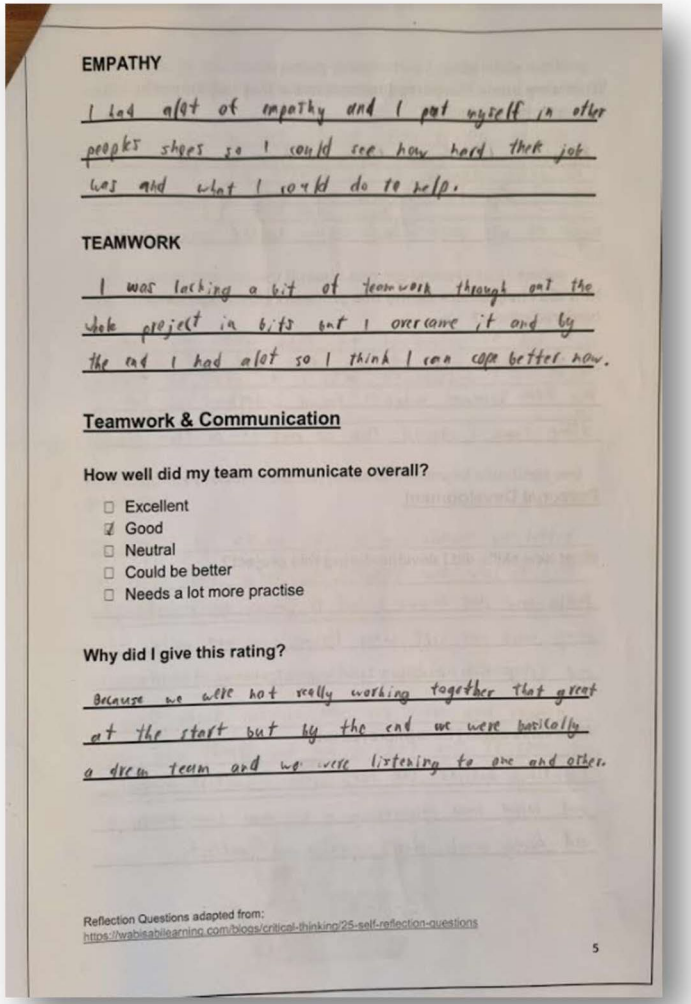
BUILD NEW IDEAS

I built alot of new ideas and I think was to many like I said before but I had so many that I couldn't really get them out of my head.

INFLUENCE

I had almost no influence at the start but by the end I had lots and I was sort of bossing everyone around to much.

4



EMPATHY

I had alot of empathy and I put myself in other people's shoes so I could see how hard their job was and what I could do to help.

TEAMWORK

I was lacking a bit of teamwork through out the whole project in bits but I overcame it and by the end I had alot so I think I can cope better now.

Teamwork & Communication

How well did my team communicate overall?

- ☐ Excellent
- ☑ Good
- ☐ Neutral
- ☐ Could be better
- ☐ Needs a lot more practise

Why did I give this rating?

Because we were not really working together that great at the start but by the end we were basically a dream team and we were listening to one and other.

Reflection Questions adapted from:
https://wabisabilearning.com/blogs/critical-thinking/25-self-reflection-questions

5

What were some things my teammates did that helped me to learn or overcome obstacles?

Probably when I was trying to find a app to use for my project they gave me lots of ideas of apps to use and that really helped me.

How did I help others during this process? *How may I have hindered others?*

I gave them lots of my ideas and not only to my team because when I found information for other teams I showed them or sent it to them straight away.

Personal Development

What new skills did I develop during this project?

Building new ideas because I had to change my project alot, using much more grit when things were not going my way and using more teamwork within my team.

What skills could I have improved on?

Thinking outside the box, having a positive mindset and being more encouraging, a bit more time management and doing much more research and creativity.

6

What were the most interesting discoveries I made while working on this project? (about the problem, about myself, about others)

I found I can get things done really quickly if I tried my hardest so I'm probably going to be doing that more often now.

Could I teach this *Inquiry Based Learning* process to someone else? *Why or why not?*

I don't I'm really good at explaining it but I would do okay if I tried explaining I think I'd be okay at it.

How does my product/solution relate to real-world situations and problems?

It relates by asking if the new changes are better or worse and what is different and what it will be like on the train.

If I were to do this project again, what would I do differently?

I would think outside the box more and explain things more clearly and use different apps to show my knowledge.

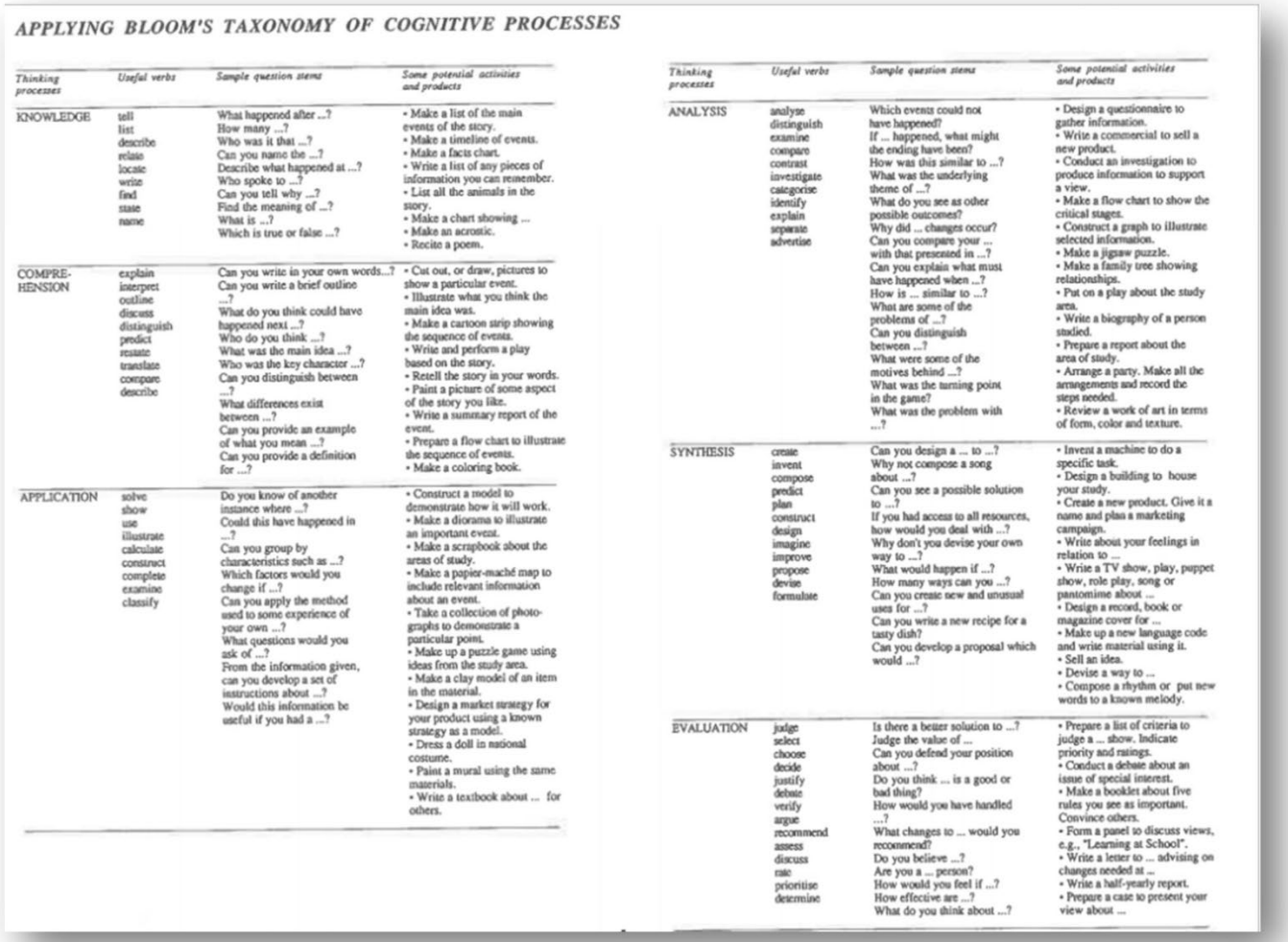
7

Other Useful Resources

Kath Murdoch's 'Model for designing a journey of Inquiry'

https://www.kathmurdoch.com.au/s/A-MODEL-FOR-DESIGNING-A-JOURNEY-OF-INQUIRY-5n52.pdf

Bloom's Taxonomy of Cognitive Processes



APPLYING BLOOM'S TAXONOMY OF COGNITIVE PROCESSES

Thinking processes	Useful verbs	Sample question stems	Some potential activities and products
KNOWLEDGE	tell list describe relate locate write find state name	What happened after ...? How many ...? Who was it that ...? Can you name the ...? Describe what happened at ...? Who spoke to ...? Can you tell why ...? Find the meaning of ...? What is ...? Which is true or false ...?	• Make a list of the main events of the story. • Make a timeline of events. • Make a facts chart. • Write a list of any pieces of information you can remember. • List all the animals in the story. • Make a chart showing ... • Make an acrostic. • Recite a poem.
COMPRE-HENSION	explain interpret outline discuss distinguish predict restate translate compare describe	Can you write in your own words...? Can you write a brief outline ...? What do you think could have happened next ...? Who do you think ...? What was the main idea ...? Who was the key character ...? Can you distinguish between ...? What differences exist between ...? Can you provide an example of what you mean ...? Can you provide a definition for ...?	• Cut out, or draw, pictures to show a particular event. • Illustrate what you think the main idea was. • Make a cartoon strip showing the sequence of events. • Write and perform a play based on the story. • Retell the story in your words. • Paint a picture of some aspect of the story you like. • Write a summary report of the event. • Prepare a flow chart to illustrate the sequence of events. • Make a coloring book.
APPLICATION	solve show use illustrate calculate construct complete examine classify	Do you know of another instance where ...? Could this have happened in ...? Can you group by characteristics such as ...? Which factors would you change if ...? Can you apply the method used to some experience of your own ...? What questions would you ask of ...? From the information given, can you develop a set of instructions about ...? Would this information be useful if you had a ...?	• Construct a model to demonstrate how it will work. • Make a diorama to illustrate an important event. • Make a scrapbook about the areas of study. • Make a papier-maché map to include relevant information about an event. • Take a collection of photographs to demonstrate a particular point. • Make up a puzzle game using ideas from the study area. • Make a clay model of an item in the material. • Design a market strategy for your product using a known strategy as a model. • Dress a doll in national costume. • Paint a mural using the same materials. • Write a textbook about ... for others.

Thinking processes	Useful verbs	Sample question stems	Some potential activities and products
ANALYSIS	analyse distinguish examine compare contrast investigate categorise identify explain separate advertise	Which events could not have happened? If ... happened, what might the ending have been? How was this similar to ...? What was the underlying theme of ...? What do you see as other possible outcomes? Why did ... changes occur? Can you compare your ... with that presented in ...? Can you explain what must have happened when ...? How is ... similar to ...? What are some of the problems of ...? Can you distinguish between ...? What were some of the motives behind ...? What was the turning point in the game? What was the problem with ...?	• Design a questionnaire to gather information. • Write a commercial to sell a new product. • Conduct an investigation to produce information to support a view. • Make a flow chart to show the critical stages. • Construct a graph to illustrate selected information. • Make a jigsaw puzzle. • Make a family tree showing relationships. • Put on a play about the study area. • Write a biography of a person studied. • Prepare a report about the area of study. • Arrange a party. Make all the arrangements and record the steps needed. • Review a work of art in terms of form, color and texture.
SYNTHESIS	create invent compose predict plan construct design imagine improve propose devise formulate	Can you design a ... to ...? Why not compose a song about ...? Can you see a possible solution to ...? If you had access to all resources, how would you deal with ...? Why don't you devise your own way to ...? What would happen if ...? How many ways can you ...? Can you create new and unusual uses for ...? Can you write a new recipe for a tasty dish? Can you develop a proposal which would ...?	• Invent a machine to do a specific task. • Design a building to house your study. • Create a new product. Give it a name and plan a marketing campaign. • Write about your feelings in relation to ... • Write a TV show, play, puppet show, role play, song or pantomime about ... • Design a record, book or magazine cover for ... • Make up a new language code and write material using it. • Sell an idea. • Devise a way to ... • Compose a rhythm or put new words to a known melody.
EVALUATION	judge select choose decide justify debate verify argue recommend assess discuss rate prioritise determine	Is there a better solution to ...? Judge the value of ... Can you defend your position about ...? Do you think ... is a good or bad thing? How would you have handled ...? What changes to ... would you recommend? Do you believe ...? Are you a ... person? How would you feel if ...? How effective are ...? What do you think about ...?	• Prepare a list of criteria to judge a ... show. Indicate priority and ratings. • Conduct a debate about an issue of special interest. • Make a booklet about five rules you see as important. Convince others. • Form a panel to discuss views, e.g., "Learning at School". • Write a letter to ... advising on changes needed at ... • Write a half-yearly report. • Prepare a case to present your view about ...