

Planning Rigorous Inquiry Based Learning

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Intentions of Today

- To create the context that makes a difference to think and plan from as you develop rigorous inquiry units
- To continue developing your practice of planning and developing engaging, authentic learning tasks and units
- To have you plan so as to develop students as selfregulated learners



What **YOUR** job is today



Be open, honest and participate

Try the ideas on



Clock Buddies





Sharing about Inquiry Based Learning

What is working? WHY?

Challenges? WHY?

Do Differently?





What is the purpose of Inquiry Learning?





Today's workshop

Powerful Learning – The Power of Habits

Powerful Learning – Self-Regulation

Planning Process for Powerful Learning

Planning



Some things to think about

You are **ALWAYS** building learning

Some times it is **intentional**, mostly it is unconscious

- It is in the language you use,
 - the structures you have in place,
 - · the habitual practices,
 - the beliefs you have about learning,
 - the type of complaints you have,
 - the way you organise yourself (or not),
 - the things you love doing and the things you avoid.

None of this is bad or wrong.



Design of Brain

- To ensure the survival of the body
- To take shortcuts to save energy usage
- To make what is conscious
 unconscious
- Use it or lose it.





Learning in its Essence



Consulting

21st Century Learning

Enriching mental models requires habits

- Whatever we systemically ritualise we embed
- To shift an ingrained mental habit /belief
 - first become conscious about it
 - challenge it
 - ritualise the new behaviour / practice / thinking



Point #1 – Habits and Rituals



Powerful learning is built upon rituals and habitual practices that develops people to think, view and interpret the world in particular ways







Meet with your 2 o'clock appointment

Habit What it builds Intentional/Unconscious?

- Honestly look at your habits
 - How you **begin, run and end** your classrooms,
 - How you plan and design your sessions,
 - The language you use,
 - The types of activities and assessments,
 - The visual structures in your classrooms,
 ... everything.



Scaffolding and Frameworks



WHAT? (What is the learning?)

*** SO WHAT?** (What does this learning mean to/for me?)

*** NOW WHAT?** (What do I need more help with? What do I not understand? What do I find easy? What do I need to work on/improve? What is the next step in my learning?)

1. Bloom's Cognitive Taxon omy	2. Thinking Skills Verbs	3. Some Sentence Starters
At which level will the students be thinking?	What do I want the students to be doing (generally)?	What do I want the students to do (specifi
DESIGN acting like Thomas Edison, always improving, designing, planning	creating, devising, embellishing, extrapolating, forecasting, formulating generalising, generating, hypothesising, improving, inventing, modifying, planning, predicting, proposing, synthesising,	Design an improvedfor Formulate a set of criteria to judge Compose a song, jingle or rap to Modifyin order to create a fairer Develop an argument to persuade people Generate key questions for Create a role play/experiment to Devise a new code for
EVALUATE	arguing, assessing, concluding, deciding, critiquing, debating, determining, grading, judging, justifying, prioritising, ranking, recommending, selecting, verifying	To what extent Which of the twowould be better for Justify the decision of Determine which is the more effective Evaluate the effectiveness of Select which is the best optionor Rank the following fromto most Debate the issue
ANALYSE ANALYSE acting like a Sorting Tray, examining and breaking up an issue into its component parts	analysing, arguing, categorising, comparing, contrasting, critiquing, debating, deducing, differentiating, discussing, distinguishing, examining, explaining, identifying, inferring, investigating, separating	From at least 4 peoples' viewpoint, analyse Discuss the similarities and differences betwee Compare and contrast Investigate all the factors that could influence. Summarise the reasons for Deduce how the parts interact in Conduct research on the issue of in order to a deeper understanding of List the pros and cons of

Scaffolding and Frameworks





Point #1 – Habits and Rituals



Meet with your 4 o'clock

- What habits and practices do you want the students to develop?
- What rituals and habitual practices could you embed in <u>your</u> practice to develop the students in these areas?



Example – Austin's Butterfly





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Rank from 1 to 11 with your 9 o'clock

Approach	Rank (associated with the most student improvement)
Peer-Assisted Learning / Tutoring	
Explicit teacher-led instruction / Direct Instruction	
Concrete feedback to parents	
Emphasizing real-world applications	
Worked Examples	
Problem Solving Teaching	
Provide feedback or recommendations to students	
Ability Grouping	
Ability Grouping for Gifted Students	
Attitude to Subject	
Expectations	
	et Interv



Rankings and Effect Size

Approach	Rank	Effect Size (Hattie)
Peer-Assisted Learning / Tutoring	5	0.55
Explicit teacher-led instruction / Direct Instruction	3	0.59
Concrete feedback to parents	7	0.43
Emphasizing real-world applications	11	-0.04
Worked Examples	4	0.57
Problem Solving Teaching	2	0.61
Provide feedback or recommendations to students	1	0.73
Ability Grouping	10	0.12
Ability Grouping for Gifted Students	9	0.30
Attitude to Subject	8	0.36
Expectations	6	0.44



Our goal is to develop self-regulated learners



learning if they are to truly develop the capacity to be powerful learners



	Teacher Centred	Learner Centred	Learner Driven
	Environment	Environment	Environment
•	High Effort by Teacher		
•	Passive Learners		
•	Low motivation and resilience		
•	Low learner responsibility		
•	High content focus		
•	Low skill development focus		
•	Differentiation is driven by teacher and hard work		

Teacher Centred	Learner Centred	Learner Driven
Environment	Environment	Environment
High Effort by Teacher	High Effort by Teacher	
Passive Learners	prior to learning to develop the scaffolding	
Low motivation and	(Medium effort during)	
resilience	Co-construct rich task	
• Low learner responsibility	learning with learners	
High content focus	• Growing Active Learners	
 Low skill development focus 	 Varying Motivation and Resilience 	
 Differentiation is driven by teacher and hard 	 Increasing Learner Responsibility 	
work	 Focus on developing skills in preference to just delivering content 	
	Differentiation is co- constructed	
	Backward planning	

Teacher Centred	Learner Centred	Learner Driven
Environment	Environment	Environment
High Effort by Teacher	High Effort by Teacher	Lower Teacher Effort –
Passive Learners	prior to learning to develop the scaffolding	now focused on guiding the learners into the right
Low motivation and	(Medium effort during)	directions or the most
resilience	Co-construct rich task	effective learning – more
Low learner responsibility	learning with learners	model
High content focus	Growing Active Learners	• Learners drive learning
Low skill development	Varying Motivation and	according to their needs
focus	Resilience	Active Learners
Differentiation is driven by teacher and hard	 Increasing Learner Responsibility 	 High Motivation and Resilience
WOLK	 Focus on developing skills in preference to just 	• Learners are responsible
	delivering content	High skills of learning
	Differentiation is co-	requirea
	constructed	Students differentiate for
	Backward planning	tnemseives

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Successful Learners are Self-Regulated

High Achievers

- are clear that it is the application of strategies and effort that lead to success.
- failure = incorrect application of a strategy or lack of effort
- formally USE lots of strategies

Low Achievers

- attribute success to luck and failure to lack of ability
- are very informal or don't use specific learning strategies



Learners that are Self-Regulated

- Know what they are trying to achieve they are clear what they are working on
- Have identified a strategy they are going to use to achieve that goal
- Monitor their progression towards that goal



 Use self, peer and teacher feedback to adjust their strategies to more effectively progress towards their goal



Our Goal – be explicit

- Clearly articulate the student learning goals
- Support students to identify their beliefs about learning (growth versus fixed mindset)
- Provide students with strategies to achieve those goals
- Provide students with sufficient opportunities to monitor their progress, receive feedback and, modify their strategies





Building Understanding and Skills



Lynbrook PS Core Skills

Nov 2012 Skills v3		F	1	2
	Learning How	O.F.1 I can ask my teacher to show me how to do this O.F.2 I can respond to my teacher's prompts	O.1.1 I can ask people I know how to do this	O.2.1 I can try a strategy my teacher has shown me O.2.2 I can ask a range of people how to do this
ise	Time	O.F.3 I can finish a task in a set time	O.1.2 I can get the things I need before I start	O.2.3 I can say what I am going to do before I do it O.2.4 I can estimate how long a task will take
Organ	Information	O.F.4 I can use my senses to get information O.F.5 I can spotthings that are similar and things that are different O.F.6 I can record information on a template	 O.1.3 I can sort the information that I find O.1.4 I can make and record observations O.1.5 I can find information in more than one place 	 O.2.5 I can try different ways of sorting the information O.2.6 I can find the information that matters O.2.7 I can respond to teacher questions about what I have found out (conclusions) O.2.8 I can record my observations in a way that suits the information I have O.2.9 I can state the main idea from information I have collected
	Questions	Cr.F.1 I can ask 'why' questions	Cr.1.1 I can create 'I wonder' questions to explore Cr.1.2 I can use class questions to decide what I want to explore	Cr.2.1 I can make a list of questions about the thing I want to explore
Create	Answers	Cr.F.2 I can answer questions by explaining my own ideas	Cr.1.3 I can put what I have discovered into words and pictures	Cr.2.2 I can work with others to find a solution to a problem Cr.2.3 I can check whether my solution makes sense

Critical and Creative Thinking Progression

Australian Curriculum General Capabilities (Thinking Progression

	Skill	F	1	2	3	4	5
	Pose questions	I can ask a question to obtain an answer I can ask 'why' questions	I know the difference between a question and a statement I can ask or write (list) questions to find out more information	I can ask appropriate how and why questions	I can turn 'I wonder' ideas into questions to investigate who, how, what, when and why I know that all of my questions won't be answered	I can ask questions to compare and contrast I can ask questions to make connections	I can ask questions that challenge points of view I can develop questions to clarify and interpret
and Creative Thinking	Identify and clarify information and ideas	I can group things that are similar and things that are different I can say my opinion	I can compare to find similarities and differences I can talk about the difference between fact and opinion	I can explore information and ideas from sources provided by my teacher I can tell the difference between fact and opinion	I can identify main ideas from a text I can use a graphic organiser to identify and clarify information and ideas	I can select information from a range of sources I can put the information into my own words I can identify multiple perspectives	I can select an appropriate graphic organiser to prioritise and clarify information and ideas

Building Understanding and Skills





Sequence of Progression

Term 1	Term 2	Term 3	Term 4
Me Focus on Learning to Learn and the Individual, rules, rights, responsibility. Set up routines and habits for year	We Focus on how we fit together in community and groups	Us Focus on our impact on the world and each other	All Focus on what we create and build and how it links together and connects our world



Building Understanding and Skills

TEACHER RESPONSIBILITY







The Learning Pit





Today's workshop

Powerful Learning – The Power of Habits

Powerful Learning – Self-Regulation

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Planning





WHY -



The planning approach to achieve everything we discussed requires you to address 4 elements

WHAT – the goal, the destination understandings, skills and knowledge

- **HOW** the process, activities, and the learning strategies
 - the purpose, the context for learning
- **OBSTACLES** the barriers, student misconceptions, student mindset



Flow of Planning



Planning Authentic Inquiry Units

"Inquiry is a *systematic investigation or study* into a worthy question, issue, problem or idea."

www.galileo.org/inquiry-what.html

Authentic Learning is ...

"Construction of knowledge, through disciplined inquiry, to **produce discourse, products and performances and that have meaning beyond success in school.**"

Wehlage, Newman & Secada

Care of <u>www.inquiringmind.co.nz</u>



Spectrum of Inquiry-Based Learning



21st Century

Learning

Consultina

Spectrum for K – 3 (Walker Model)





A Structure for Learning Tasks



Process of Planning



- 1. Extract Skills & Learning Focus / Elaborations from Victorian Curriculum
- 2. <u>Identify</u> what you want students to **know** and be **able to do** by the end
- 3. <u>Create</u> a logical sequence of **key conceptual understandings & q'ns**
- 4. <u>Design</u> **Assessment / Culminating Event** in which the students will authentically demonstrate their skills and understanding (assessable)
- <u>Identify</u> the steps (checklist) to achieve the goals of the project (unpacks the thinking – links to learning activities)
- 6. <u>Create</u> a **Formative Rubric** (unpack what the skills look like at different stages links to learning activities)



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Identify Desired Results

Defining the Destination





Process of Planning



Defining the Destination (Where are they going)

- 1. <u>Extract</u> Skills & Learning Focus / Elaborations from the Australian Curriculum
- 2. <u>Identify</u> what you want students to **know** and be **able to do** by the end

Outcome

A CAN-DO List for the students in student language



How do we know someone has learnt something?



WE DON'T!

The best we can do is infer that they have learnt something from particular behaviour being demonstrated over a period of time.



Identify Desired Results

Example Year 2 Geography

The location of the major geographical divisions of the world in relation to Australia (ACHGK009)

- using geographical tools, for example, a globe and world map, or digital application such as Google Earth, to locate and name the continents, oceans, equator, North and South Poles, tropics and hemispheres
- describing the location of continents relative to Australia using terms such as north, south, opposite, near, far



Example Year 2 Geography

- I can <u>name</u> and <u>label</u> key features on a map of the world
 - Northern and Southern Hemispheres
 - North and South Pole
 - The Equator
 - o 7 Continents
 - o 7 Oceans
- I can <u>label</u> the points of a compass
- I can<u>identify</u> the direction and distance of the continents relative to Australia
- I can <u>locate</u> on a map where my family and friends have come from and been to
- I can <u>name</u> and <u>label</u> the states and territories of Australia



Example Year 5 Science

Solids, liquids and gases have different observable properties and behave in different ways (ACSSU077)

- recognising that substances exist in different states depending on the temperature
- observing that gases have mass and take up space, demonstrated by using balloons or bubbles
- exploring the way solids, liquids and gases change under different situations such as heating and cooling
- recognising that not all substances can be easily classified on the basis of their observable properties



Example Year 5 Science

- I can <u>draw</u> diagrams of the different states of substances
- I can <u>describe</u> the observable characteristics of the states of matter
- I can show evidence that gases have mass and take up space
- I can <u>explain</u> how and why different substances change with heating and cooling
- I can <u>explain</u> why not all substances act consistent with the observable characteristics we identified



Identify Desired Results

Year Levels: _____

Can DO Statement List

Unit:_____

1 can:				
I have heard of this	I can do this with help	I can do this on my own	I have taught this	I CAN List Item
		8 - 8		
		¢		
		¢		
2		¢		
		2		

Can-Do List Grade 3

I have heard of this	I can do this with help	I can do this on my own	I CAN List Item
			Investigating and designing: I can read a simple design brief. I can plan and sketch my ideas. I can label my design.
			 I can identify characteristics of different fabric.
	δ. s		 Producing: I can follow and use a list of steps and methods to choose my materials for my product. I can use a combination of fabrics to make my product. I can use a variety of tools to make my product. I can put together components to make my product and simple systems that have moving parts. I can fix my mistakes and redesign / modify my product.
	5 s		 Analysing and evaluating: I can list the similarities and differences between my product and the design brief. I can use a PMI chart to evaluate my product I can list at least two ways to improve my product.



Process of Planning



- 1. <u>Extract</u> Skills & Learning Focus / Elaborations from AUSVELS
- 2. <u>Identify</u> what you want students to **know** and be **able to do** by the end
- 3. <u>Create</u> a logical sequence of **key conceptual understandings & q'ns**



Step 3a: Conceptual Understanding

- represents a contextualized, conceptual understanding
- <u>describes</u> a complex relationship that is **worthy** of inquiry
- <u>explains</u> clearly what students should understand and why that understanding is **meaningful**
- can be qualified (using phrases such as "often", "may" and "can") if it is not true in all situations, but is still an important idea
- can be formulated at **different levels of specificity**



Identify Desired Results

Example Grade 3 HASS

	I CAN statements		Key Understandings
•	I can list various Australian celebrations	•	Every year we celebrate Australian
•	I can <u>recall</u> my experience of an Australian		events of significance
	celebration		
•	I can create a timeline of Australian celebrations		
	over the year	•	These events celebrate the
•	I can discuss why we celebrate ANZAC day and its		contributions of people who have
	importance to Australians		shaped our country and who we are
•	I can <u>explain</u> the origin of ANZAC day		
•	I can <u>list</u> a range of different symbols & emblems	•	We use these symbols to remind us of
•	I can <u>classify</u> given emblems and symbols into		these significant events and
	national, state and local categories		contributions
•	I can <u>discuss</u> why we have symbols and their		
	meanings		
•	I can <u>identify</u> and <u>discuss</u> the origin and meanings	•	By understanding the origins and
	of ANZAC day symbols		meanings of symbols and historical
•	I can <u>explain</u> the origin of why ANZAC day is		events we celebrate, we appreciate
	important to our school		what has shaped our country and who
			we are



Example Grade 5 Science

	I CAN statements		Key Understandings
•	I can <u>draw</u> diagrams of the different	•	We use observation to create
•	I can <u>describe</u> the observable		scientine theories
	characteristics of the states of matter		
•	I can <u>show</u> evidence that gases have mass and take up space I can <u>explain</u> how and why different	•	Theories must be able to be tested
	substances change with heating and cooling		
•	I can <u>explain</u> why not all substances act consistent with the observable characteristics we identified	•	Scientific theories change and improve when new evidence contradicts the theories



Empo

Learning

wering 21st Century Creating Conceptual Understandings

For a unit –

- Discuss together and identify what you want the students to understand conceptually from engaging with the topic
- Then unpack logically the understandings that lead to that goal conceptual understanding

Note: These conceptual understandings link strongly to the learning intentions for the unit



Step 3b: Designing Inquiry Questions

create factual questions

• Knowledge/fact-based, Content-driven, Skills-related, Supported by evidence, Encourage recall and comprehension

create conceptual questions

- Enable exploration of big ideas that connect facts and topics, Highlight opportunities to compare and contrast, Explore contradictions, Encourage analysis and application
- create debatable questions
 - Enable the use of facts and concepts to debate a position, Promote discussion, Explore significant ideas and issues from multiple perspectives, Encourage synthesis and evaluation



Identify Desired Results

Defining the Destination

Using your Can-Do List and Understandings

- Brainstorm a range of inquiry questions (Factual, Conceptual and Debatable) for each understanding – you can refine them down later
- What could be an overall essential question you could have that would guide the entire unit?



Process of Planning



- 1. <u>Extract</u> Skills & Learning Focus / Elaborations from AUSVELS
- 2. <u>Identify</u> what you want students to **know** and be **able to do** by the end
- 3. <u>Create</u> a logical sequence of key **understandings**
- 4. <u>Design</u> the **Assessment / Culminating Event in** which the students will authentically demonstrate their skills and understanding (assessable)



Determine Acceptable Evidence

Designing a Culminating Event

Using GRASP to design culminating events

- **Goal** Establish the goal, problem, challenge, or obstacle in the task
- **Role** Define the role of the students
- Audience Identify the target audience
- **Situation** Explain the situation
- **Product** Clarify what the students will create and why

Standards Identify specific standards for success



Grade 3 History Unit

Then and Now: Victoria Integrated Unit, Heany Park PS Grade 3 Term 2

Throughout Term Two you will be discovering how Victoria has changed over time and the factors that have influenced that change. You will be historians investigating how the state of Victoria has been built on the contributions of key people, events, cultures and communities. It is in understanding these contributions and evolution of Victoria's culture that we can fully appreciate Victoria's uniqueness.

Culminating Task – Assessment Requirements

To demonstrate your understanding of how and why Victoria has changed you will be investigating a significant building or bridge in Victoria. You will be doing both home and class research and then presenting your information to your class and to parents at an Open Afternoon.

Your research project must include the following:

- Research your chosen building/bridge
- Map of Victoria showing the location of your building/bridge
- Pictures (photos and a drawing) of your chosen building/bridge
- Captions and labels on your pictures
- Interesting facts about your building/bridge
- Colourful headings, sub headings and borders



Determine Acceptable Evidence

Design a Project

Brainstorm a possible culminating project (using GRASP) that would allow the students to demonstrate their knowledge, skill and understanding



What are the assessable aspects?



Process of Planning



- 1. <u>Extract</u> Skills & Learning Focus / Elaborations from AUSVELS
- 2. <u>Identify</u> what you want students to **know** and be **able to do** by the end
- 3. <u>Create</u> a logical sequence of key **understandings**
- 4. <u>Design</u> a **Project** in which the students will authentically demonstrate their skills and understanding (assessable)
- <u>Identify</u> the steps (checklist) to achieve the goals of the project (unpacks the thinking – links to learning activities)
- 6. <u>Create</u> a **Formative Rubric** (unpack what the skills look like at different stages links to learning activities)



Learning

Determine Acceptable Evidence

Grade 1 Science and Humanities Unit

Paddock to the Plate

Integrated Unit, Heany Park PS, Grade 1 Term 2

	CITECREIST	Starting Date:	
TASK – Steps you need to take to complete your Culminating Event Presentation		DATE TO BE COMPLETED	DONE (V)
1	Identify your favourite food made at home and get a copy of the recipe [Put in Homework sheet]		
2	Choose one of the main ingredients used to make your favourite food [Done in class]		
3	Prepare a list of questions about the ingredient you want to know more about [Activity: Work with students to formulate questions]		
4	With your parents help, find information that can be used to answer your questions. Use the T chart provided to organise your questions and information. [Have guide for parents – model it in class]	5	
5	Ask your parents / grandparents about what is different about how they got their food when they were children. [Homework task - Venn diagram (do refresher)]		
6	Show your T Chart to your teacher and get it approved before moving on. [Mini-conference with student about understanding of T Chart]		3
7	Identify the important steps for your ingredient to get from the paddock to the plate. Highlight them on your T-Chart. [Done in conference, Model organising information with students]		
0	Sequence the important steps into order from paddock to the plate.		

3 major messages from Hattie's Visible Learning





Determine Acceptable Evidence

Formative Rubrics to develop skills

Grade 3 Term 2 Then and Now Victoria (updated 10th March 2013)

Skill	Essential	Developing	Capable	Evidence of Skill	Teacher Practices / Modelling / Graphic Organisers What strategies and approaches will you use to develop these skills in your students? How are you going to develop the students in their abilities to question? What modelling, structures, graphic organisers, gtg, will you use?Is there an approach you normally use here?	
		4		What evidence will demonstrate the development of skills?		
Questioning - Relevancy - Question or not - Ability to respond to questions	 Asks questions to get more information but sometimes may not be relevant. Makes comments with teacher prompting which may be off topic. 	 Asks relevant questions to get more information of the task. Makes relevant comments with teacher prompting. 	 Asks open ended questions Asks relevant questions to clarify understanding of the task Uses vocabulary of topic Makes relevant comments and concrete suggestions. 	 Anecdotal student observations. Teacher Rubric 		
Working cooperatively - Being on Task - Speaking - Listening	 Stays in group during group time. Takes a turn to speak Listens most of the time as others speak. 	 Stays on task in group time. Waits for turn to speak. Shares something related to the topic. Listens as others contribute. 	 Helps others to stay on task in group time Shares something to expand the discussion. Listens attentively to others. Respects others' contributions. 	Teacher observations	 'Circle Time' where only the person holding a choice object, may speak. Question time after a 'News' time from selected students, to encourage attentive listening. Play games which involve cooperation e.g. 222 	

Plan Learning Experiences & Instruction

Hooking Them

Brainstorm some of the ways you are going to :

- Hook Them?
- Connect to their emotions?
- Tie what they are learning to what they already know?





Completing the day

Given what you learnt today what could you put into action?



