



This book introduces children to a number of basic project management concepts (or simply *project concepts*, if you prefer).

Resources and Downloads

www.projectkidsadventures.com/resources

School Curriculum Applicability

The concepts covered in this book include independent learning and aspects of technology, specifically:

- Characteristics of technology and technological outcomes.
- Technological modelling, products and systems.
- Planning, identifying resources, skills and stages required to complete an outcome.

The relevant school curriculum standards include, at a minimum:

New Zealand

The New Zealand Curriculum (2007)

Science

- Nature of Science [Level 1,2,3,4]
 - Investigating in science

Technology

- Nature of Technology [Level 1,2,3]
 - Characteristics of technological outcomes
- Technological Knowledge [Level 1,2,3]



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Notes for Parents & Teachers

- Technological modeling
- Technological systems
- Technological Practice [Level 1,2,3,4]
 - Outcome development and evaluation

Australia

Australian Curriculum [ACARA]

Year 5 - Science

- ACSHE081 - Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena
- ACSIS231 - With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be
- ACSIS086 - With guidance, plan appropriate investigation methods to answer questions or solve problems
- ACSIS087 - Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate
- ACSHE083 – Scientific understandings, discoveries and inventions are used to solve problems
- ACSIS088 – Uses equipment and materials safely, identifying potential risks
- ACSIS093 – Communicates ideas, explanations and processes in a variety of ways
- ACSIS218 - Compare data with predictions and use as evidence in developing explanations

Year 6 - Science

- ACSIS232 - With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be
- ACSIS101 - Communicates ideas, explanations and processes in a variety of ways
- ACSIS103 - With guidance, plan appropriate investigation methods to answer questions or solve problems
- ACSIS104 - Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate
- ACSIS105 - Uses equipment and materials safely, identifying potential risks



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Notes for Parents & Teachers

- ACSIS221 - Compare data with predictions and use as evidence in developing explanations
- ACSHE098 - Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena

Year 7 - Science

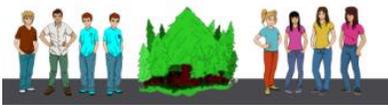
- ACSIS124 - Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge
- ACSIS125 - Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed
- ACSHE223 - Science knowledge can develop through collaboration and connecting ideas across the disciplines of science
- ACSIS126 - In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task
- ACSIS129 - Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate
- ACSIS130 - Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions
- ACSIS131 - Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method
- ACSIS132 - Use scientific knowledge and findings from investigations to evaluate claims

Year 5 & 6 - Technology

- ACTDEP026 - Apply safe procedures when using a variety of materials, components, tools, equipment and techniques to make designed solutions
- ACTDEP028 - Develop project plans that include consideration of resources when making designed solutions individually and collaboratively

Year 7& 8 - Technology

- ACTDEP036 - Generate, develop, test and communicate design ideas, plans and processes for various audiences using appropriate technical terms and technologies including graphical representation techniques



- ACTDEP039 - Use project management processes when working individually and collaboratively to coordinate production of designed solutions

United States

National Standards

Science

- NS.5-8.1 Science as Inquiry
- NS.5-8.5 Science and Technology

Technology

- NT.K-12.1 Basic operations and concepts
- NT.K-12.6 Technology problem-solving and decision-making tools

United Kingdom

Primary Curriculum

Design and Technology Key Stage 1

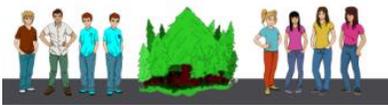
1. Developing, planning and communicating ideas (a,b,c,d,e)
2. Working with tools, equipment, materials and components to make quality products (a,c,d,e)
3. Evaluating processes and products (a,b)
5. Breadth of study (a,b,c)

Design and Technology Key Stage 2

1. Developing, planning and communicating ideas (a,b,c)
2. Working with tools, equipment, materials and components to make quality products (a,b,d,e)
3. Evaluating processes and products (a,b,c)
4. Knowledge and understanding of materials and components (a,b,c)
5. Breadth of study (a,b,c)

Science Key Stage 2 (Years 5,6)

1. Working Scientifically

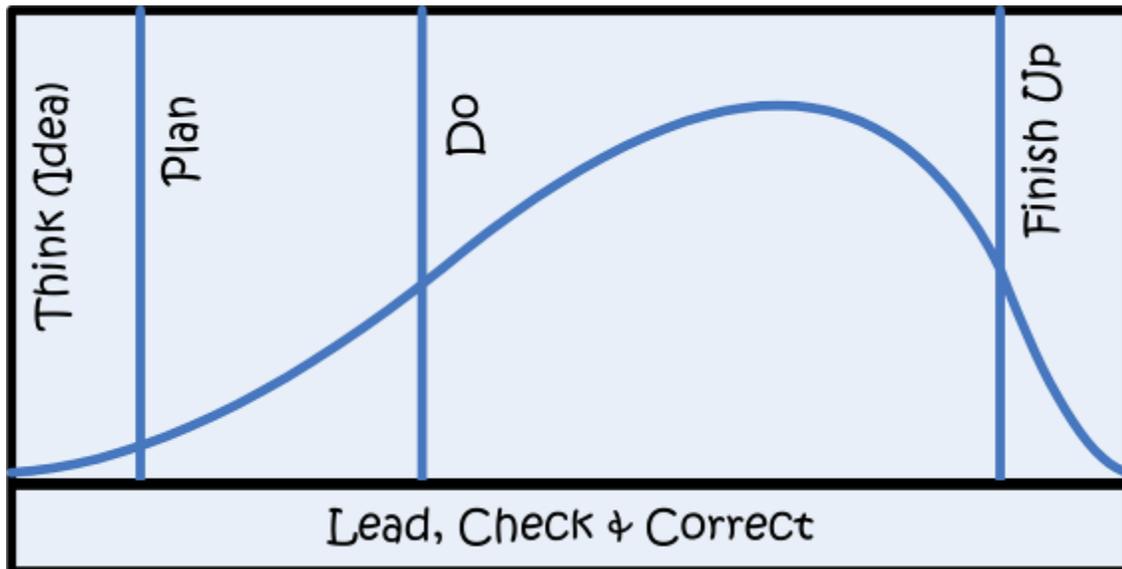


1. Working Scientifically

- Scientific attitudes
- Experimental skills and investigations
- Analysis and Evaluation
- Measurement

Project Management Concepts

The project kids have previously learned the basic project stages that are common to every successful project, regardless of your preferred terminology or system. These concepts are reinforced throughout this book. The following is a mapping of project phases to chapters.



- **Initiation** (Idea / Think)
 - Relatively Speaking
 - Fun and Games
 - The Assignment
 - Troop, Alert!
- **Planning** (Plan)
 - Science, Schmience



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Notes for Parents & Teachers

- Boots on!
- What's the Big Idea?
- **Execution (Do)**
 - Wet Shoes, and Everything Else
 - Rain on the Window
 - That's MY Toy!
 - Best Laid Plans
 - Of Mice and Ben
 - Peanut Butter & Pickles
 - Write that Down!
 - No Mouse for You
- **Closeout (Finish Up)**
 - Show Time!
 - Stage Fright
 - Hot Chocolate
- **Project Control (Lead, Check & Correct)**
 - Best Laid Plans
 - Write that down!
 - No Mouse for You
 - Show Time!

In this book, the girls struggled to get a good, workable idea before they started any detailed planning. One of their **requirements** was that they wanted to get a really good mark, so they wanted to do something different than what everyone else might be doing, or what had commonly been done before. Once they had their idea, and **validated** that it would be able to work - i.e. to test the robot to determine if it might be able to navigate a maze, their planning took off and they could clearly see what they needed to do.



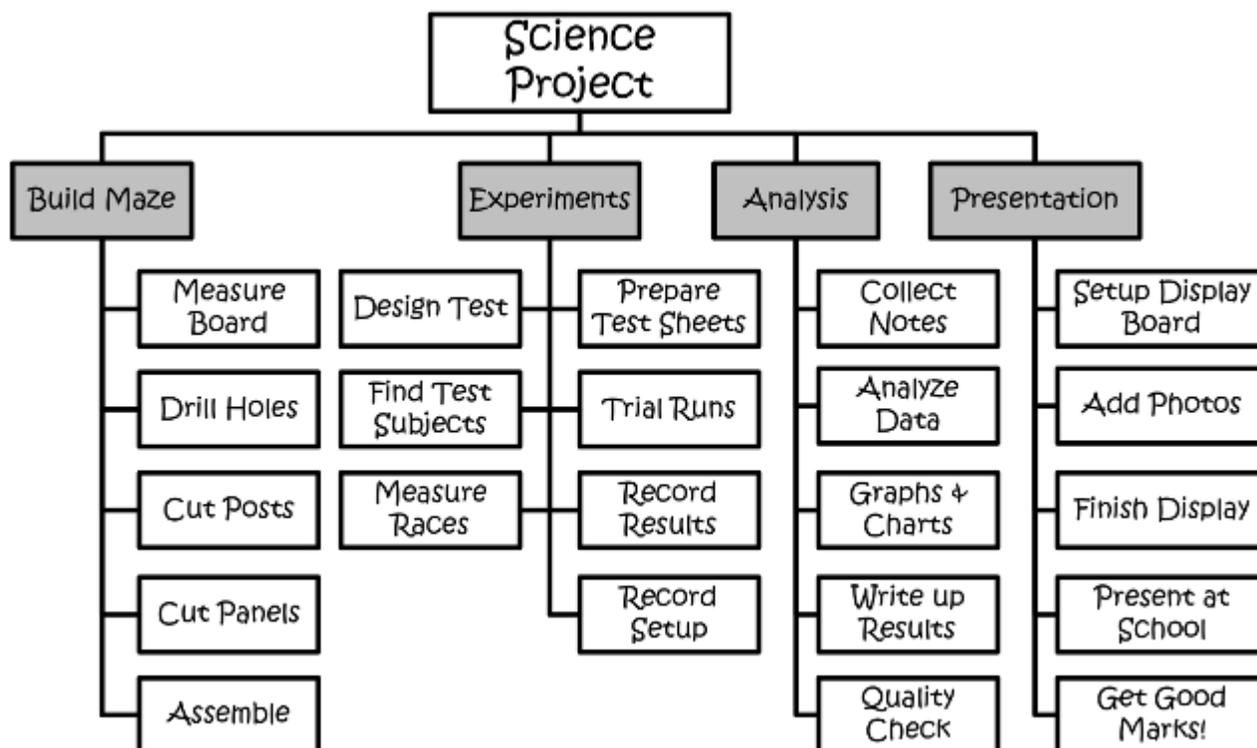
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Project Kids Adventures

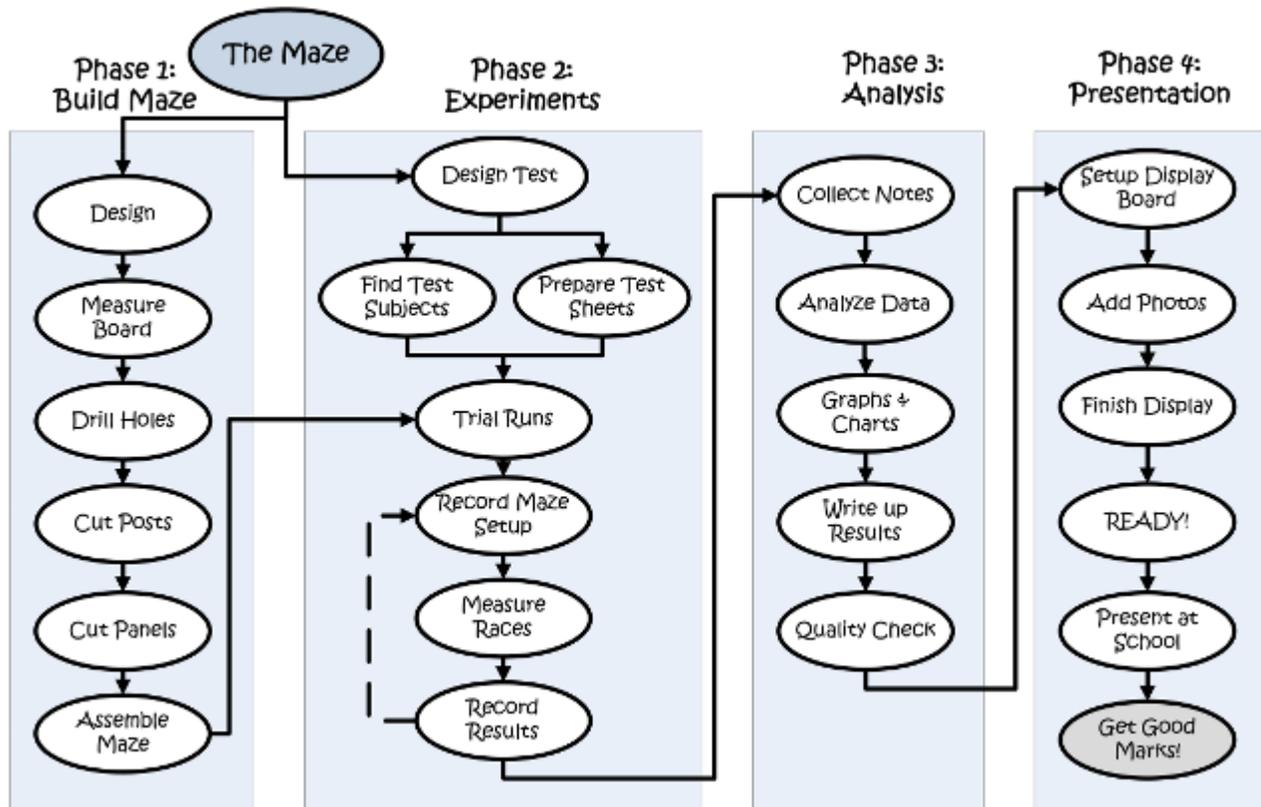
Notes for Parents & Teachers

This can be a common problem - until we can clearly see what it is we want to do, there can be a lot of indecision and 'fluffing about' while the team tries to work out where they are going. However, when the vision is clear, it is a lot easier to move forward and get the project done.

During the planning process they do a short brainstorming session, followed by developing a simple **Work Breakdown Structure** of what needs to be done.

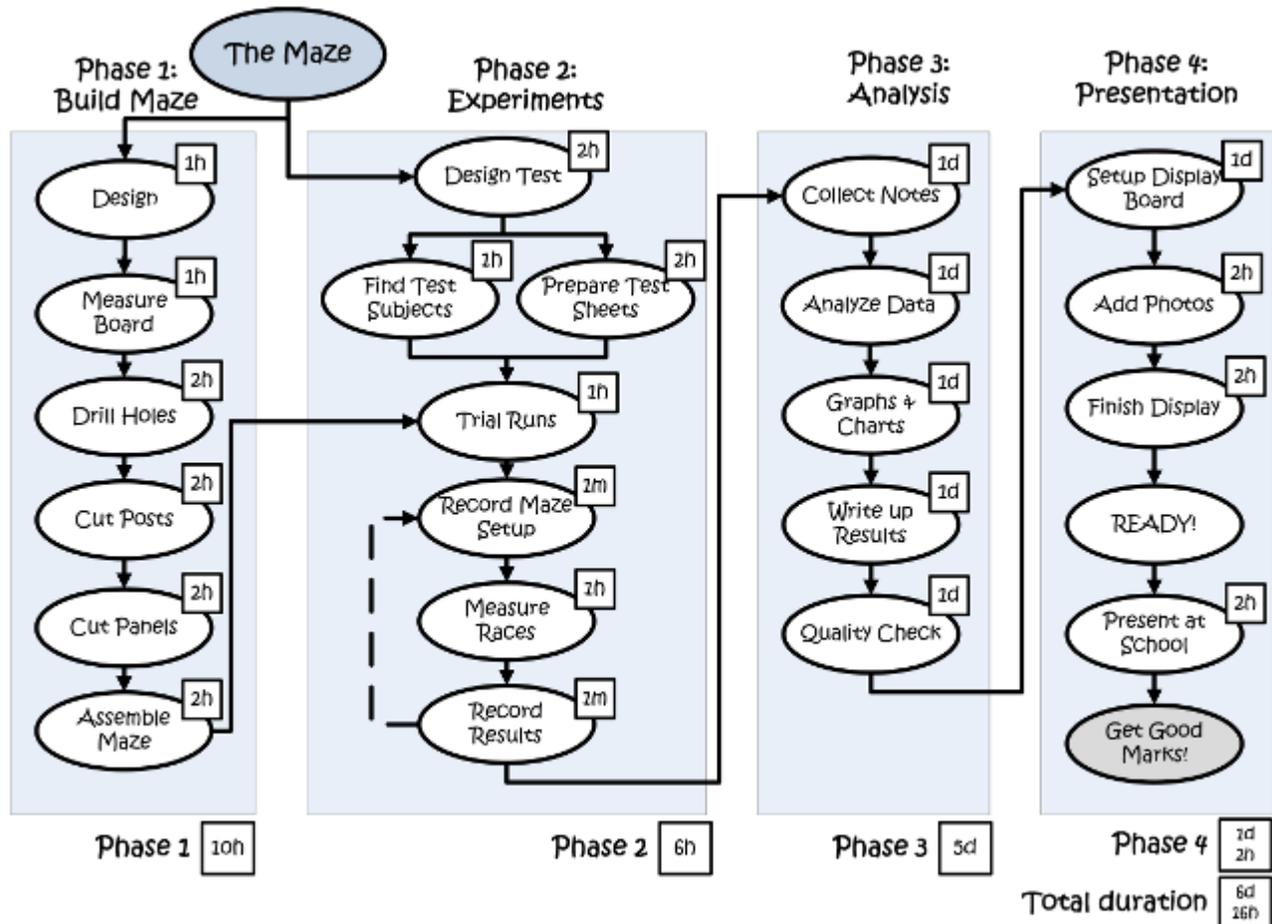


Next, they put the activities into logical sequences, identifying **dependencies** between tasks. This project is similar to the Tree House project, where the project is mostly completed as a series of sequential **stages**, while the Haunted House had more parallel activity streams. This is represented in a **network diagram** (the children call it a bubble diagram in the story).



In this network (or dependency) diagram, it becomes quite clear what needs to happen first, second and so on, so they can work on the right tasks as the right time and in the right order, while still being prepared for the next activity.

Similar to the Haunted House project, they attempt to use **task estimating** to see if they will be able to complete the project on time, and initially it looks like it will be completed in a very short period.



However, they realize that there are several key **variables** that they will have to deal with - such as how long it could actually take to complete a test run (**estimate uncertainty**), and they also do not know exactly how many **test iterations** they will need to do in order to get a good sampling of results to analyze. Therefore while they may have some idea of how long an individual test iteration might take, they need to allow a reasonably large block of time to complete an indeterminate number of tests. The approach taken was to only do as many tests as they could in a specific period of time, which is one way of **controlling the schedule** and **minimizing the risk** of not completing the project on time.

Amanda also introduces the **Gantt chart** to help visualize and track status, which was taught to her by her father (outside of this story). The Gantt chart shows tasks, schedule, resources and dependencies all on one combined diagram. A simple Gantt chart can be used effectively for this project, with the phases, tasks, timeframes and who is the lead for each task clearly visible.



Project Kids Adventures

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Notes for Parents & Teachers

Science Fair Maze Project

Task	Who	Duration	Week 1							Week 2							Week 3							Week 4							Week 5						
			S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S
Maze Project		27 days	[Gantt chart showing task bars across 5 weeks]																																		
Planning	All	6 days	[Gantt chart showing task bars across 5 weeks]																																		
Phase 1: Build Maze		6 days	[Gantt chart showing task bars across 5 weeks]																																		
Design	Susan	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Construction		5 days	[Gantt chart showing task bars across 5 weeks]																																		
Drill Holes	Susan	4 days	[Gantt chart showing task bars across 5 weeks]																																		
Cut Posts	Susan	4 days	[Gantt chart showing task bars across 5 weeks]																																		
Cut Panels	Susan	4 days	[Gantt chart showing task bars across 5 weeks]																																		
Assemble Maze	All	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Phase 2: Conduct Tests		26 days	[Gantt chart showing task bars across 5 weeks]																																		
Design Tests	Becky	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Find Test Subjects	Amanda	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Prepare Test Sheets	Becky	5 days	[Gantt chart showing task bars across 5 weeks]																																		
Trial Runs	Amanda	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Run Experiments		10 days	[Gantt chart showing task bars across 5 weeks]																																		
Record Maze setup	Becky	10 days	[Gantt chart showing task bars across 5 weeks]																																		
Measure Races	Becky	10 days	[Gantt chart showing task bars across 5 weeks]																																		
Record Results	Becky	10 days	[Gantt chart showing task bars across 5 weeks]																																		
Phase 3: Analysis		4 days	[Gantt chart showing task bars across 5 weeks]																																		
Collect Notes	Becky	2 days	[Gantt chart showing task bars across 5 weeks]																																		
Analyze Data	Amanda, Becky	2 days	[Gantt chart showing task bars across 5 weeks]																																		
Graphs + Charts	Becky	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Write up Results	Amanda	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Quality Check	Susan	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Phase 4: Presentation		2 days	[Gantt chart showing task bars across 5 weeks]																																		
Setup Display Board	All	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Add Photos	All	1 day	[Gantt chart showing task bars across 5 weeks]																																		
Finish Display	All	1 day	[Gantt chart showing task bars across 5 weeks]																																		
READY		0 days	[Gantt chart showing task bars across 5 weeks]																																		
Present at School	All	1 day	[Gantt chart showing task bars across 5 weeks]																																		

The girls follow the approach of conducting many tests within a set block of time, and find that they also have time to introduce additional test subjects. This provides them with a more complex data set, i.e. comparing boys vs girls, human vs mouse etc. Of course, this hopefully earns them better marks as well.

On the *boy* side of things, the Scout camp expedition turns out to be a project all of its own, which they point out to their patrol leader and an adult leader during the camp planning phase and the post-camp review.

This book also includes a visual timeframe in most chapters (a calendar with completed dates crossed off, days remaining and an indicator of the current project phase).

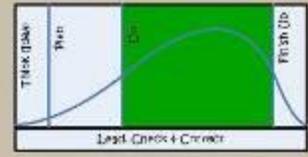
November

SUN	MON	TUE	WED	THU	FRI	SAT
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9



Days Left:

9




This simple, familiar visual is intended to help the children to be more aware of time passing as they progress through the book, and intentionally add a little bit of deadline anxiety - “only 9 days left!” Young or old, we all seem to work better when we have a deadline and have visibility of time elapsing.

A number of other project concepts are also reinforced, either directly or indirectly in the story, including:

- **Requirements** (The Assignment, Troop, Alert!, Science, Shmience, What’s the Big Idea?)
- **Estimating / Measurement** (Rain on the Window, That’s MY Toy!, Of Mice and Ben, Peanut Butter & Pickles)
- **Resource Management** (Best Laid Plans, Of Mice and Ben, Peanut Butter & Pickles)
- **Teamwork / Human Resource Management** (Best Laid Plans, Of Mice and Ben, Peanut Butter & Pickles)
- **Communication** (All)
- **Change Management** (That’s MY Toy!, Best Laid Plans, No Mouse for You)
- **Risk Management** (Wet Shoes, and Everything Else, No Mouse for You)
- **Quality Management** (Write that Down, Show Time!)
- **Lessons Learned** (Hot Chocolate)



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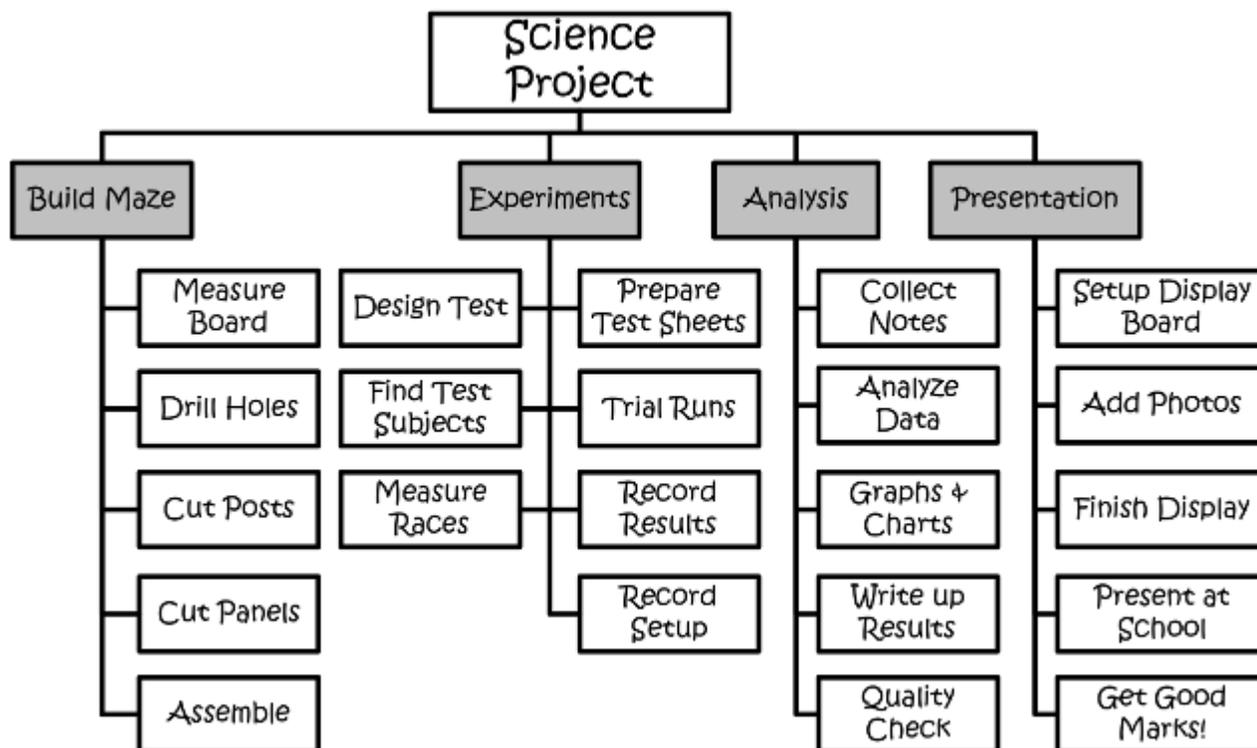
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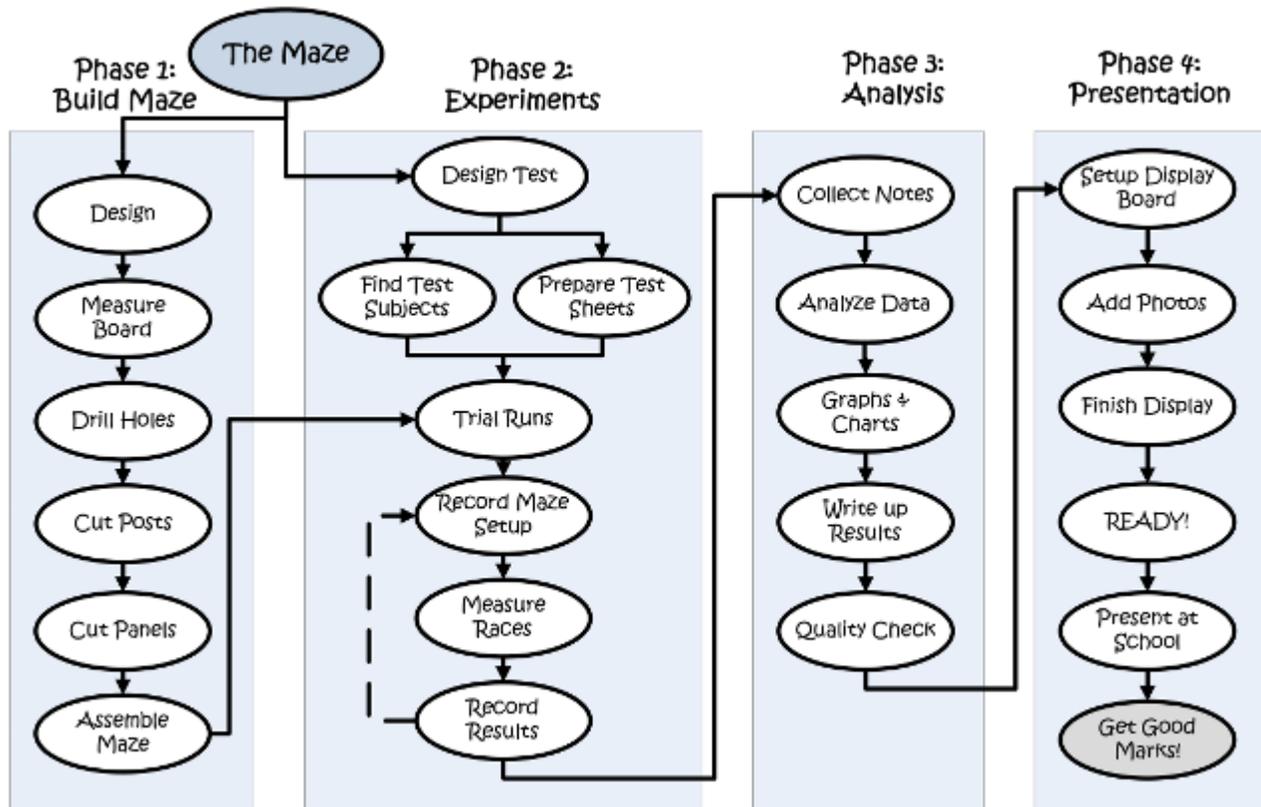
One final note - the “Work Breakdown Structure” (WBS) is sometimes modeled as a “Product” or “Deliverable” Breakdown Structure, with no verbs (i.e. no tasks or actions, just nouns or noun phrases indicating what the outcomes need to be).

i.e. “Bridge”, “Deck”, “Truss”, “Supports” etc.

Often, it is helpful to have the WBS include a combination of higher level deliverables (nouns) and key tasks at the lower levels (using nouns or verbs), which can help with communicating your plan to a wider range of people. Sometimes you can include action words even at the higher levels.



(See [Once Upon a Time: Your Project is a Story](#) for further information and examples on creating a WBS in a fun way.)



The network diagram and the Gantt chart generally end up with the blending of Deliverables and Tasks, so it is up to the specific project if it is helpful to include this task detail in the WBS itself.

You can also refer to the website (<http://projectkidsadventures.com/resources>) for more complex examples.