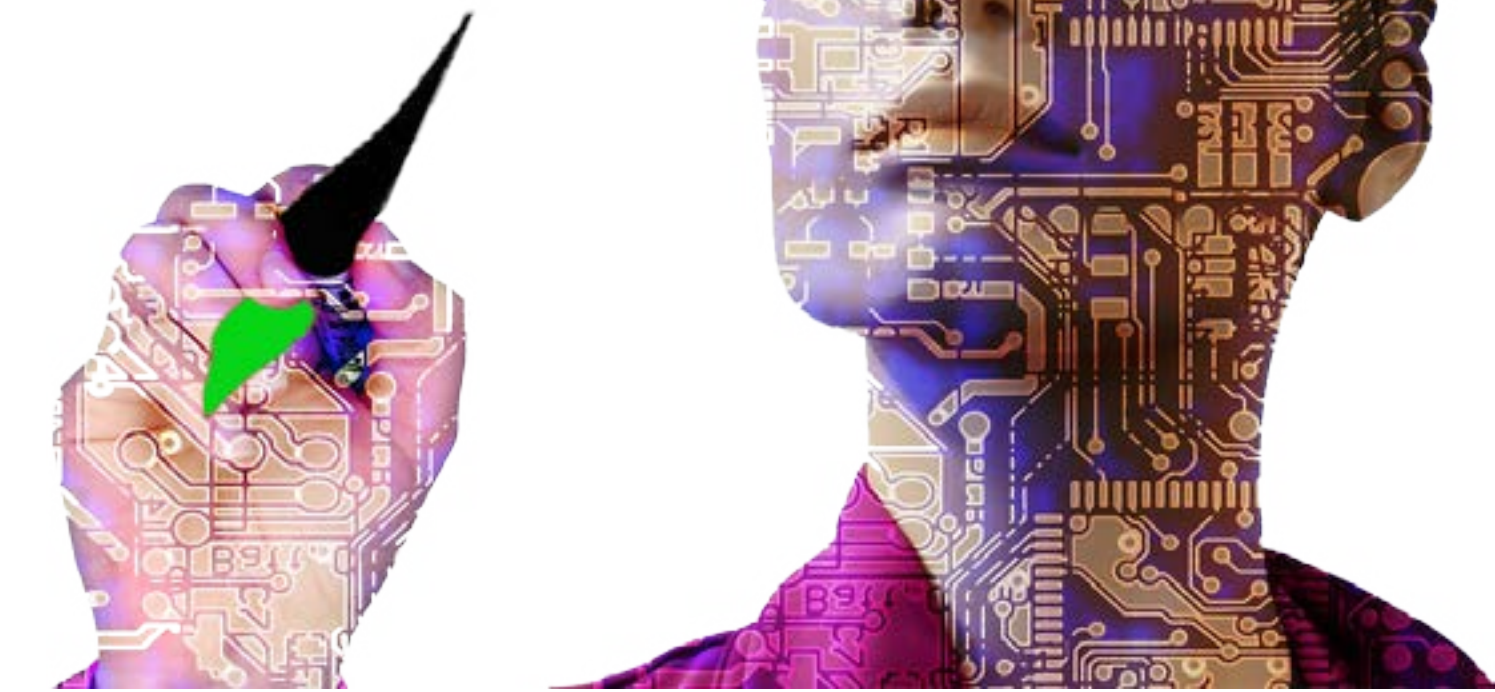


Game On!

There are 10 kinds of people in the world ...
those who understand binary and those that
don't!

```
01011001 01101111 01110101 00100000 01100001 01110010 01100101 00100000
01100101 01101001 01110100 01101000 01100101 01110010 00100000 01100001
00100000 01100011 01101111 01101110 01110011 01110101 01101101 01100101
01110010 00100000 01101111 01110010 00100000 01100001 00100000 01100011
01110010 01100101 01100001 01110100 01101111 01110010 00101110 00100000
01000011 01101111 01100100 01101001 01101110 01100111 00100000 01100111
01101001 01110110 01100101 01110011 00100000 01111001 01101111 01110101
00100000 01110100 01101000 01100101 00100000 01101111 01110000 01110000
01101111 01110010 01110100 01110101 01101110 01101001 01110100 01111001
00100000 01110100 01101111 00100000 01100011 01101111 01101110 01110100
01110010 01101111 01101100 00100000 01111001 01101111 01110101 01110010
00100000 01100110 01110101 01110100 01110101 01110010 01100101 00101110
00100000
```

Student's Name:



DISCLAIMER

Game On!

By Steven Bauer and Kelly Bauer

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Content within this book is based around the BOSTES syllabus, Technology (Mandatory) Years 7 - 8 published in 2003. For the most up to date version of this syllabus and other current information pertaining to learning in this course, you should check on the web site at <http://www.boardofstudies.nsw.edu.au/>

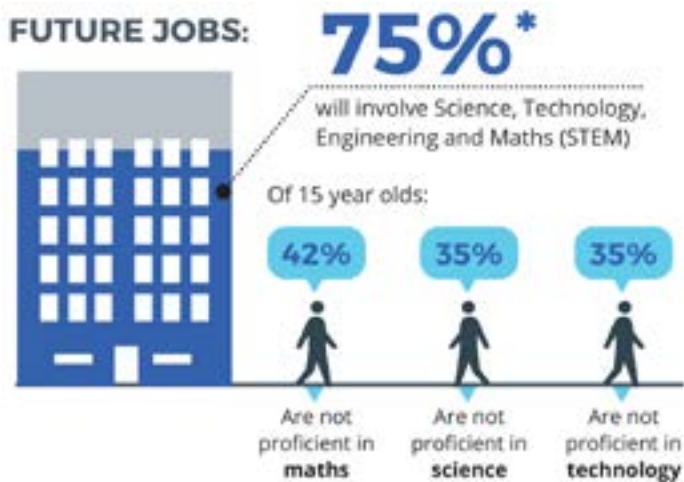
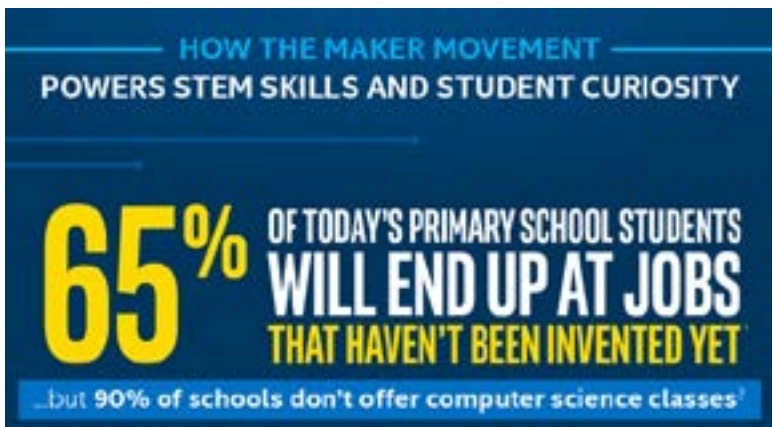
Empathize ...

In this part of the folio we will be trying to understand the problem that people face everyday, and the one that we are trying to solve through this design project.

Entry Document

Is STEM Education important?

There is so much discussion about STEM Education in the news paper and society that it can really drive you crazy! People seem to be talking about the future of our world and the jobs that school aged children will be going into. Look at this statement to the left ... now this was written when you guys were in Primary School! And look at the other figures! To survive as a society, we are nearly half a million people short for the jobs that are available!



That is just plain crazy!
What can we do about this?

Well firstly, Year 8 has now been dedicated to design projects that have greater links to Science and Math. We are also teaching a STEM course as an elective in Year's 9 & 10.

But lets be honest here ... is that enough?



No is the answer ... the fact is that when we get older we lose a lot of information that we have been taught at school, and for you to be a success in the future, you really need to engage in your learning.

To support this fact I played along with Rhett and Link to test my own knowledge of scientific fact that is commonly learnt at school.



Good Mythical Morning (2015). **Science Facts Everyone Should Know.** <https://www.youtube.com/watch?v=WepMZDdUXI4>

Try doing the quiz your self, or better still, take it home and see how your parents go with it.

How did I go?
TERRIBLY!

I only got one fact right and that was because I used to “play” a lot and really enjoy SCUBA diving.

And that brings me to my next point!

How can we remember scientific facts better?

There are lots of educational theories running around out there, but I have a couple of ideas of my own that are worth



testing. Look, the one the one question that I got right in the quiz was about the Great Barrier Reef where I have spent a lot of really enjoyable time and desirer to remember the good time. Also, during this time there was lots of play ... swimming, catching and releasing animals and learning new skills.

So basically, my educational beliefs for life long learning is that we need to have fun and be playful in what we do!

Alltime10s. (2012). **10 Surprising Health Benefits of Playing Video Games.** <https://www.youtube.com/watch?v=LNycSARuGcE>

There are also educational theories that support my personal beliefs. All Time 10’s actually produced a video to show that playing computer games make us smarter and healthier!

Lets face it, I am turning into an old man who has a secure career in teaching ... but what about you? What is it that you need to help succeed in education and get that STEM career in the future?



This leads me to propose the

The Driving Question ...

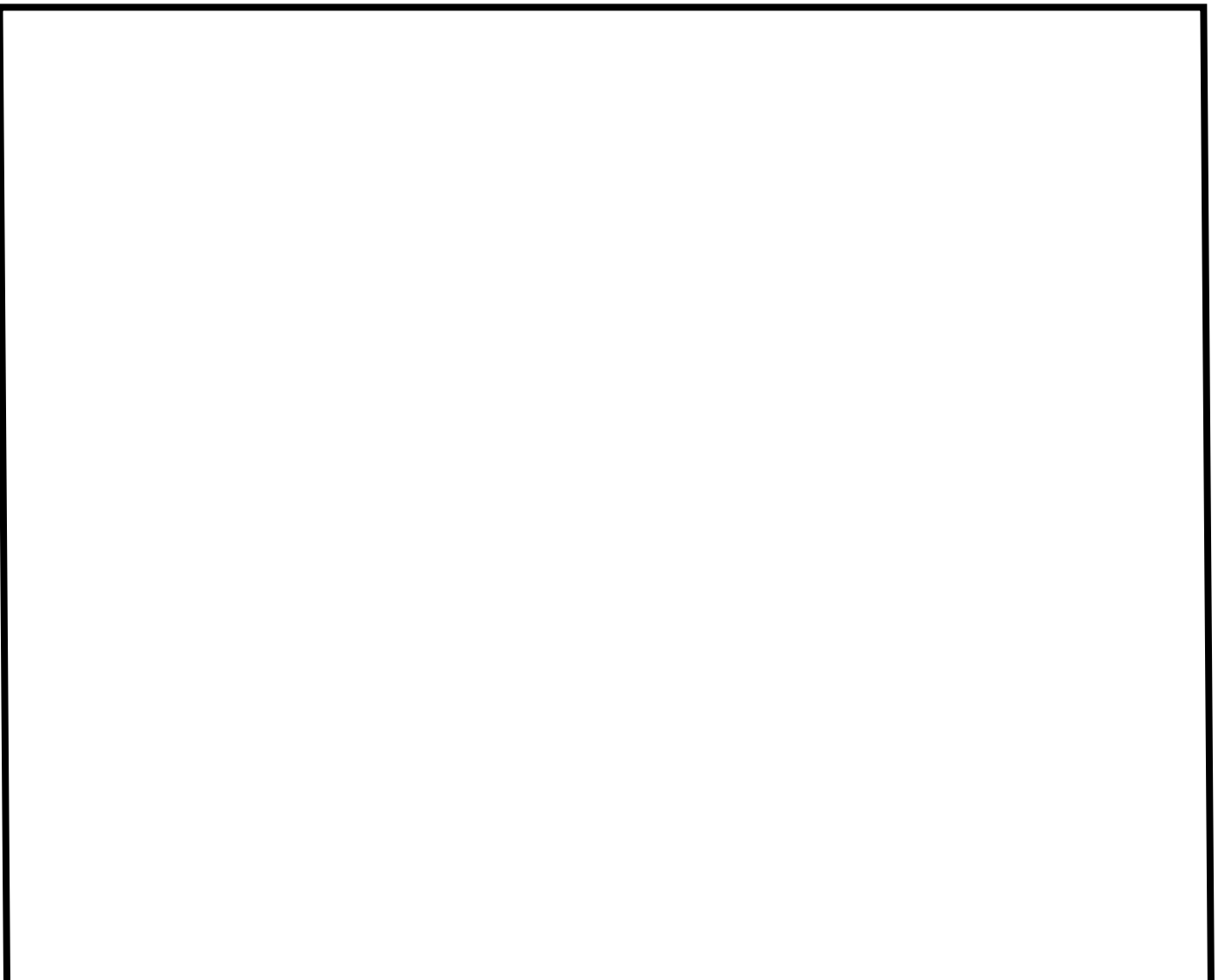
... for this project:

“How can we flip general scientific knowledge into a playful learning experience that will help us get that job of tomorrow?”

Define

Knows

As a class, develop a list of things that you already know about the project that you are doing. Take a photo of the work completed in class and paste it in the space below..



Need to Knows

I am sure that there are a hundred questions buzzing around in your head about this course that need to be answered. In this section, as a class, develop a list of question that you feel need to be answered in order to reach a good solution to this problem. Think about the projects' design, technological, administrative and your individual learning needs. After developing your ideas as a class. Photograph the work completed with your teacher and paste it in the space below.

Criteria for Success

Now all parts of your folio need to be linked. You have come up with a “need to know” list, and these questions need to be answers. The criteria for success will be used to tell us what will need to be done as evidence that the question has been understood and answered.

Based on the needs to know questions, a successful solution to the problem will be developed if:

Design:

Technology:

Administration:

STEM Outcomes:

Action/Time Planning

The following time plan will be used to understand the time requirements needed to finish the project.

	Weeks									
Steps	1	2	3	4	5	6	7	8	9	10
Ideate										
Prototype										
Test										
Evaluate										

It is great that we now understand what is required for the project to be a success and the time requirements needed to manage the development of a successful solution, but this information is really of no value unless we use what we have learnt.

What we need to do is evaluate our findings and determine how it can best be used to help us.

For this process, we will be using the ...



... scaffold.

Lets go to the next page so I can explain how it works!

Let's start at the beginning.

Why call it

D'SLEEKa

Now I can give you this fantastic speech about my Italian heritage, but that would be a lie.

The truth is when I read students' work, I find myself naturally using hand gestures as part of the celebration of excellence, or as a way to signal my disgust at a lack of effort. And, when it comes to hand signals, there are no better in the business than the Italians!

Take a look at this video and you will see what I mean!



TempleRome. (2016). **TEMPLE ROME Italian Hand Gestures.** <https://www.youtube.com/watch?v=aRdrj153GxY>

- ITALIAN POPULAR GESTURES - (JUST A FEW.)



d'SLEEKa

... stands for:

d' - **Define** the factor of design that you are going to be evaluating.

S - Make a **statement** about how the factor of design applies to your project.

L - **Link** what you are saying to your developing project ideas.

E - Provide an example to provide a better understanding of what you are saying.

E - **Evaluate** what you are saying by passing a judgement (this is good or this is a bad situation) and offer a reason as to why you are making this judgement.

K - Indicate what the "**Knock-On**" effect of this situation means for your project.

a - Show how you will **apply** what you are saying to help improve your project.

So in this case, we would need to look at how the findings of the time plan will affect the projects development.

Lets step through it on the next page.





Response to the action time plan

Define	
Statement	
Link	
Example	
Evaluate	
Knock On Effect	
Apply	

Now for every decision that you make, or every change that you make to your developing idea, you need to tell us what you are thinking by giving us **d'SLEEKa** answer!

Ideate ...

So now lets start having some fun in generating idea to help create our final solution. This will involve us doing research, developing original ideas and testing prototypes.

Factors of Design

For all that we do in design, we need to consider the factor that can affect the solution that we are developing. For example, with a game we need to think about how it is to function and how we can make it aesthetically appealing to the user. In the space below, interview your peers to discover what they believe will be needed in a good game that can help us remember scientific theory.

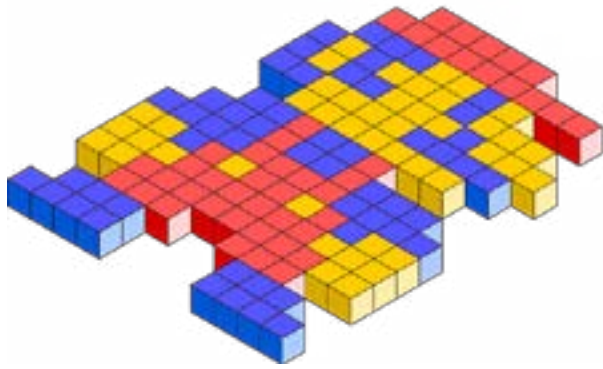
Function

Aesthetics

We also need to consider our Socio-Cultural perspective for this project, which is really our PALS ideology, when we develop our game. Jot down some notes in the space below to indicate how who your game is intended for and how you can best communicate to your niche market.

Socio-Cultural and PALS Ideals





So we have started thinking about the factors of design, but that is not enough! What does this new information mean to our developing solution? Time to write a

d'SLEEKa evaluation.

Use the space below to evaluate your factor of design research and PALS information to show how it will help to improve your developing solution.

WHS

In everything that we do we need to be safe! While using the iPad does not look like much, there is a whole lot that we need to understand about physical and cyber safety.



OnGuard Safety

MAKING SENSE OF WORKPLACE SAFETY TRAINING

First thing that you need to do is your OnGuard

Safety Test. These tests will help us understand the basic expectation of classroom safety that are specifically related to the technology that we are using.

So click on the link below and follow the prompts to get your safety test!

<http://tinyurl.com/zshjc54>

The tests that you are required for this course are:

- Computing in Australian Workplaces
- Workplace Safety Signs
- Risk Management Principles in Australian Workplaces

After you have completed your tests, your teacher will demonstrate the finer points of the safety test so that you can better understand what is to occur, as well as watch you in action in order to deem you competent and able to work independently using the stipulated technology.

Expert Session Checklist

Session Name	I attended the session on:	I understand what needs to be done	I have applied my learning to my project
Scientific Theories			
Cartesian Coordinates with Variables			
Narrative sequence of a Game			
Writing an Algorithm			
Developing a Pyonkee Game			
BETA Testing a Game			

Prototyping

So we are ready to go! So what are you waiting for!

Expert Session - Scientific Theories

So, the first thing we need to do is find out what different Scientific Theories are out there that should be common knowledge for all people. After a class discussion lead by your teacher, use the space below to identify and describe a Scientific Theory that you are interested in using for your coded game.

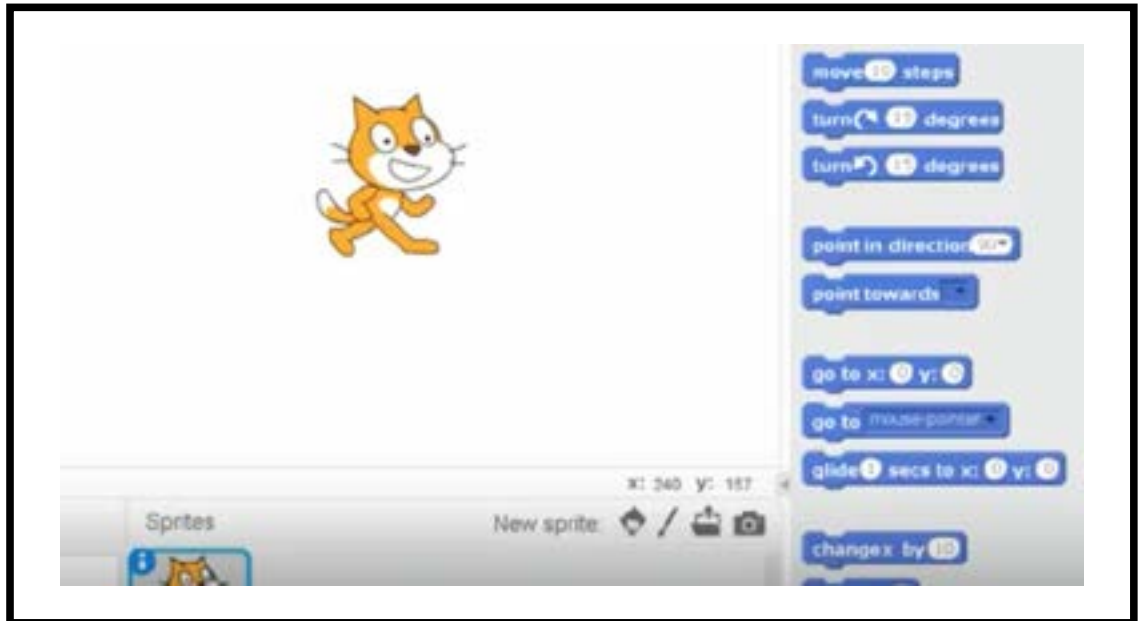
The scientific theory that I am interested in is:



Expert Session - Cartesian Coordinates with Variables

So this is where the math kicks in ...

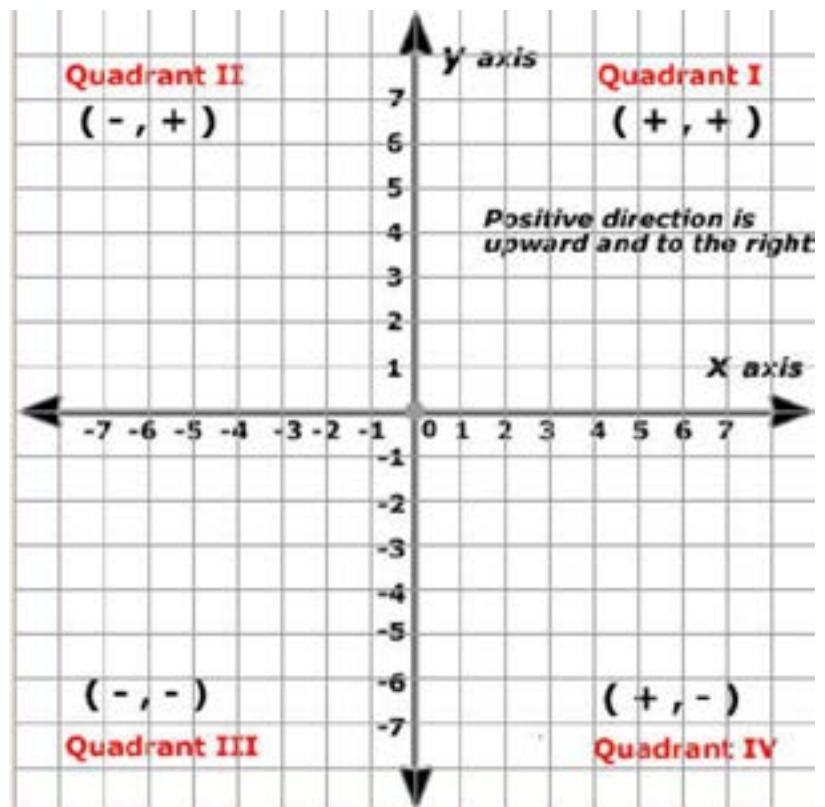
Before we start lets have a look at the video below so that you can get an ideas of how Cartesian coordinates works hand in hand with coding a game. Now don't be fooled ... while Mr Kleen is talking about a Scratch game, it is exactly the same as a Pyonkee game.



The difference between Scratch and Pyonkee is that one works on a computer (Scratch) and the other works on an iPad (Pyonkee).

Kleen, T. (2016). **Scratch--X and Y coordinates.** <https://www.youtube.com/watch?v=1F1Q7YUdD2U>

So from the video we can see that “0” is the middle of the plane and we use “X” and “Y” coordinates to steer our sprite around the course. To better understand this refer to the grid to the right..



Russel, D. (2016). **Cartesian Plane, Coordinate Plane, Coordinate Grid.** <http://math.about.com/od/geometry/ss/cartesian.htm>



So lets play a game, because as we have said all along, this needs to be fun and one great way of learning is through game play! Let me introduce you to the rules of:



The first thing that you need to do is hide your battleships within your Cartesian grid. The ships that you have are:

2 x cruisers. Each of the cruisers need to be 4 grid lines long and colour them blue.

1 x Frigate. Your frigate needs to be 3 grid lines long and be coloured green.

1 x mine sweep. This ship needs to be 2 grid lines long and be coloured orange

Here is a sample of what I mean:.

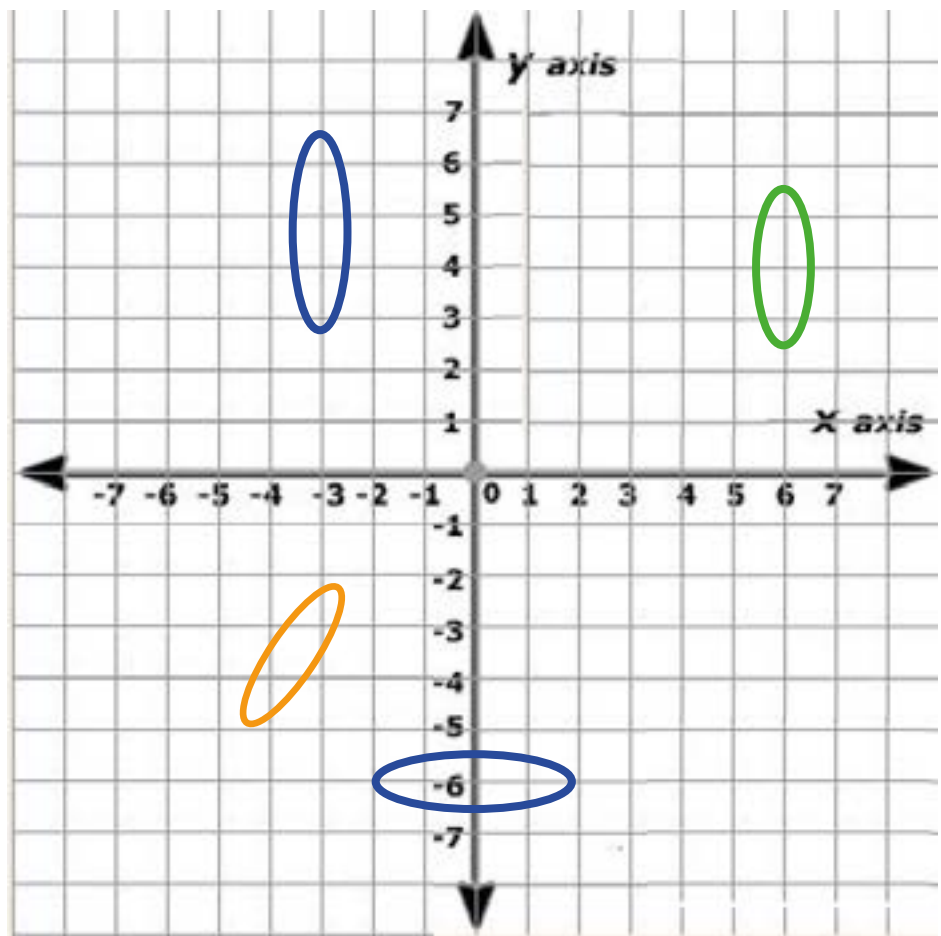
Obviously, I am trying to make it as hard as possible for my opponent! I am positioning my ships horizontally, vertically, diagonally and even across different coordinate planes!

So for my opponent to sink all of my ships, they will need to guess all of the coordinates within the ellipses!

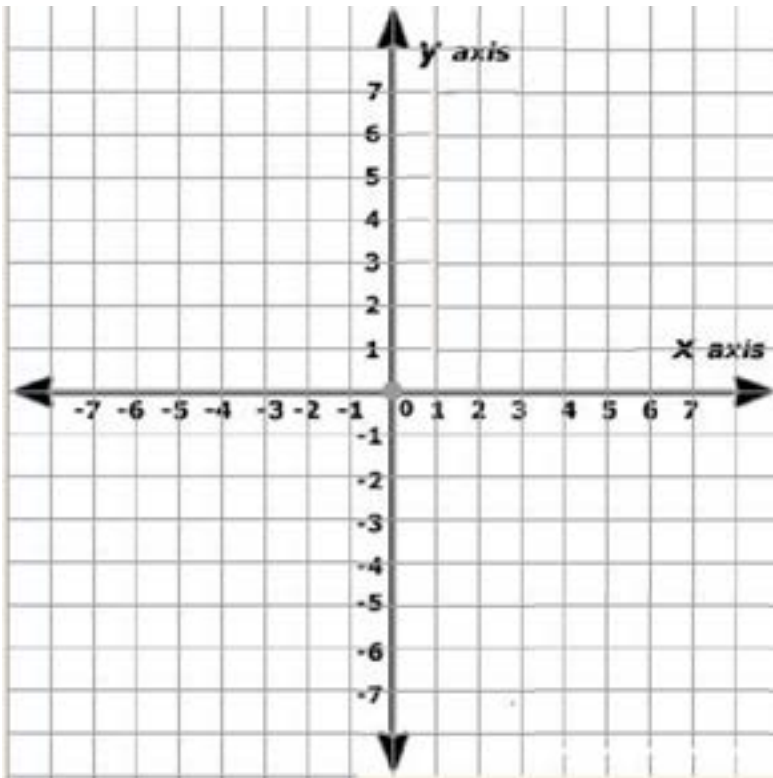
Every time that they guess the right position, put a red X on the coordinate that they have gotten right.

The player to sink all of the ships first win the battle!

On the next page there are two Cartesian grids for you to play the game. There is one for your fleet of ships and the other one is for you to plot the guesses that you have made.



Here is another tip! This is an “Old School” game that your parents would have played when they were growing up. Once you get good enough challenge them to a game!

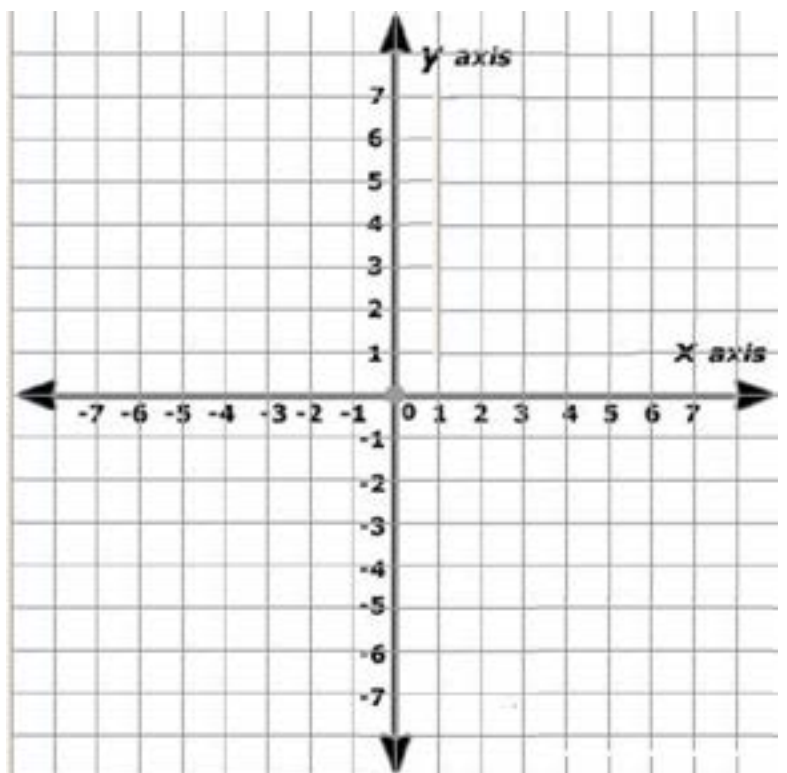


My fleet!

(YOU! "The Good Guys")

The Mortal Enemy!

(Them ... your challenger "The Bad Guys")



Expert Session - Narrative Sequence of a Game Storyboarding

With all good design, you need to plan what it is that you intend to do. That is, what the story or pattern that your game will follow. Have a look at the video below on how to draw a story board for your game ideas.

Indy mogul. (2013).
Storyboarding For People Who Can't Draw (Like Me!) : FRIDAY 101
- https://www.youtube.com/watch?v=ux_Em1IVsjI



Drawing is very important with what we do. It is the only universal language of communication, and the better you can draw, the clearer you will be able to communicate. But the message here is, that this is for your planning and to help you develop your design ideas! So while we would love to see beautiful artworks, in reality, stick figures will do for now. Have a look at the examples below and on the next page develop your storyboard for your game design.



Example of professional storyboard.

Pluralsight Creative. (2015). **Sneak Peek: Drawing Storyboards for the Entertainment Industry in Photoshop.**
<https://vimeo.com/132846176>

Example of simple storyboard.

eelke dekker. (2016). **Storyboards DHM.** <https://www.flickr.com/photos/eelkedekker/8216236151>



Project Storyboard

The following is a storyboard for the game that I wish to develop.

Project Name: _____

Date: _____

A large empty rectangular box for drawing a storyboard panel.A large empty rectangular box for drawing a storyboard panel.

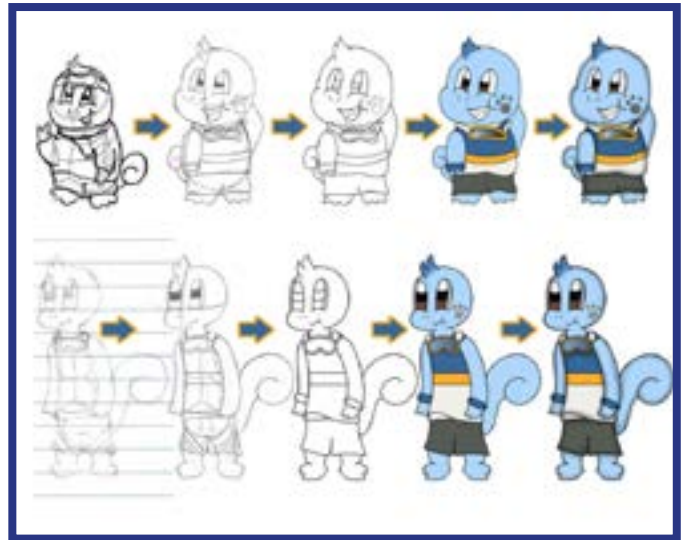
A large empty rectangular box for drawing a storyboard panel.A large empty rectangular box for drawing a storyboard panel.

A large empty rectangular box for drawing a storyboard panel.A large empty rectangular box for drawing a storyboard panel.

Sprite Development

Now we are starting to get into the nitty gritty of the project, and we need to design our sprites. Sprites, if you do not know as yet, are the characters in the game. While Pyonkee does come with some generic sprites already loaded, if you want more respect for your efforts, then you should really develop your own.

Use the space below to help develop your own characters, or sprites, for your game. Remember, in this day and age, you start your drawings with a pencil then use apps like “Graphic” to clean up your work and digitise your drawing! You want to WAM! your project! Then think about drawing your own background stages too!

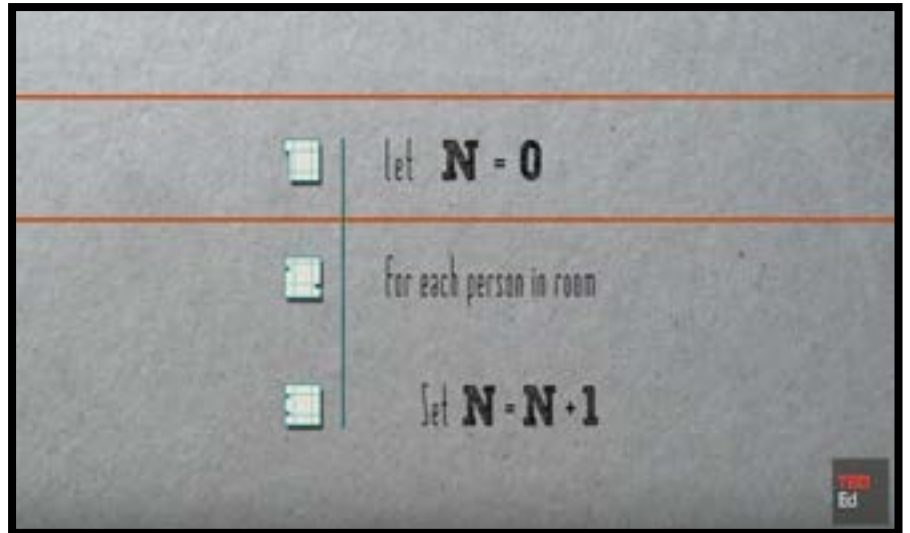


Expert Session - Writing an Algorithm

So what is an algorithm?

Take a look at the videos below and wait for your teacher to explain it better for you!

Malan, J. (2013). **What's an algorithm?** <https://www.youtube.com/watch?v=6hfOvs8pY1k>



Flowcharts

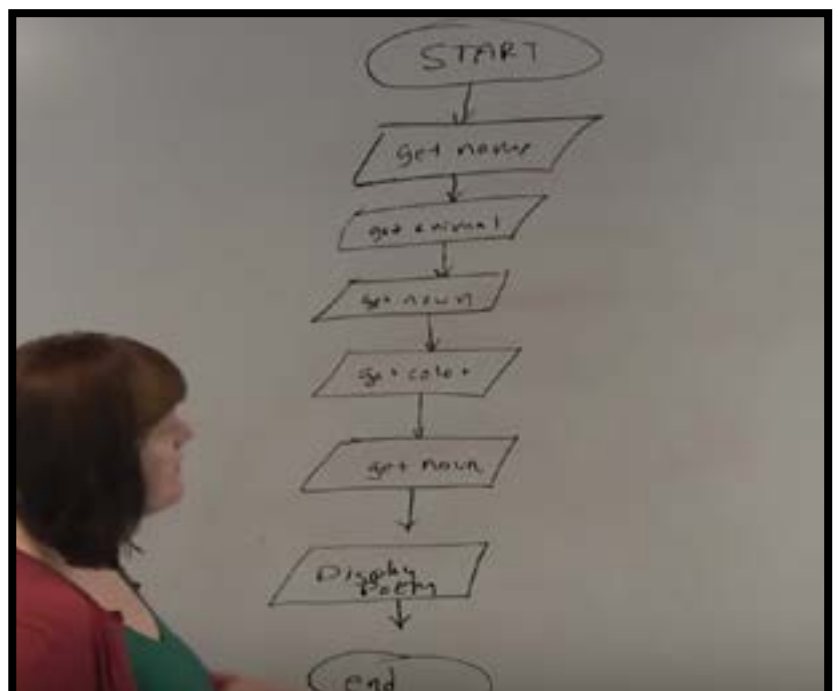
What is a flowchart?
What does one look like?
Why do you call it a picture?
What is it good for?

Then there is developing flow charts...

gerroaolcom. (2007). **Flowcharting - Part 1.** <https://www.youtube.com/watch?v=DRwtJ1WjzI8>

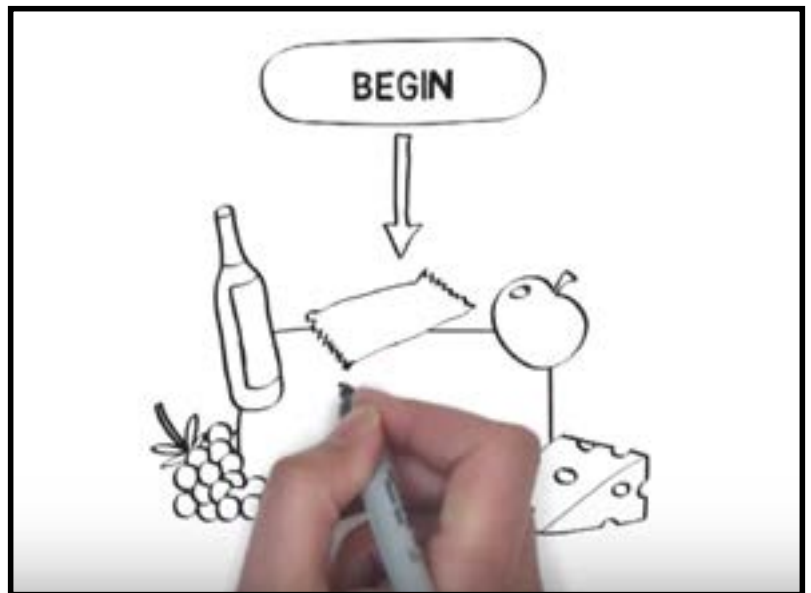
And then there is the need for logic ...

Winchester, M. (2013). **Applied Logic: Lesson 1- Flow Charts.** https://www.youtube.com/watch?v=PZjXIX_LUME



Finally, we get to put it all together so that we can start to do with greater ease our block coding for the game.

Cambridge GCSE Computing Online. (2013). **Algorithms in pseudocode and flow diagrams.** <https://www.youtube.com/watch?v=XDWw4Lfy5w>



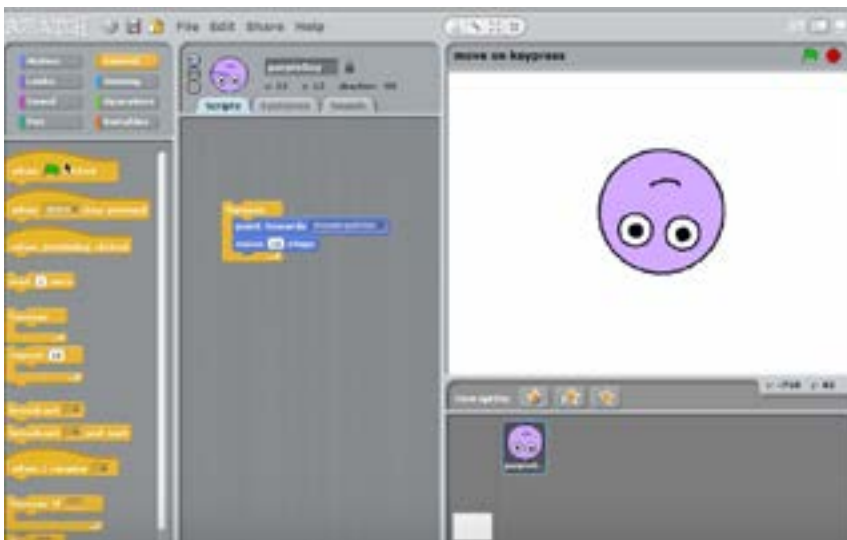
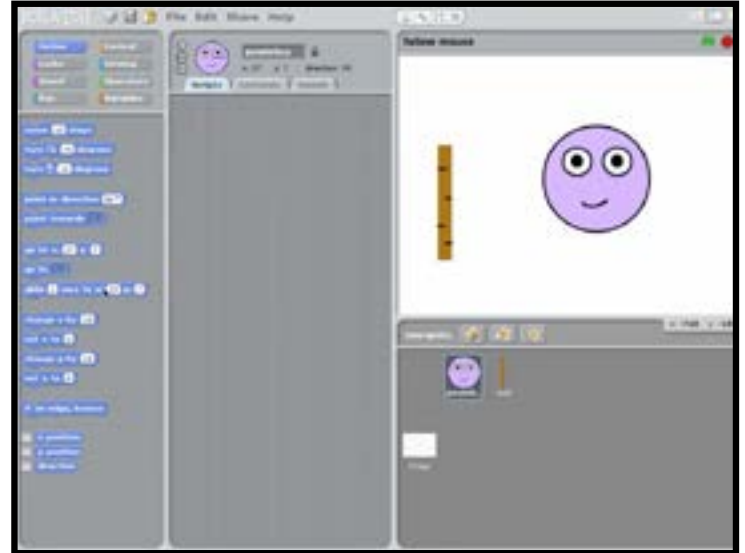
So see the space below?

Use it to write your algorithm for your game idea!

Developing a Pyonkee Game

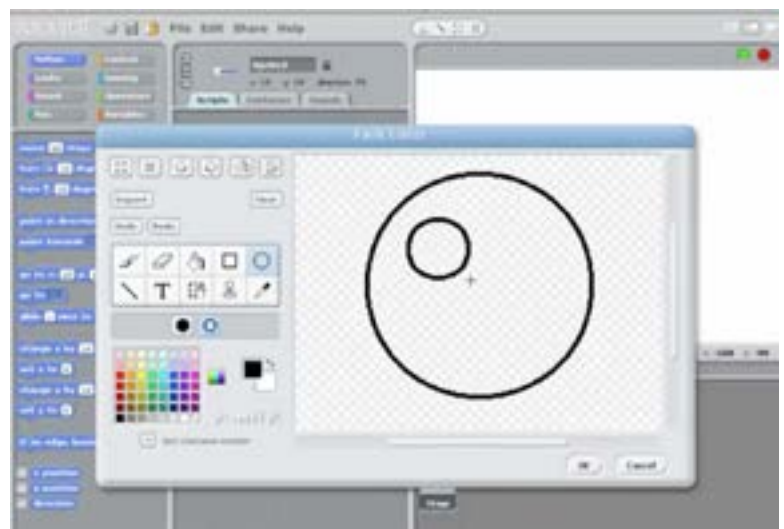
Now I would love to say “just go and make your game!” But you know what ... there is still some specific knowledge that you need about Pyonkee before you can really sink your teeth into developing your game. Have a look at the following videos to pick up the basics for creating a game. Remember, if there is something specific that you want to do, check out You Tube as the chances are there is already an instruction video out there about it.

Bauer, K. (2011). **Scratch Hit test and Variables (Score).mp4.** <https://www.youtube.com/watch?v=0qmhf3FcBQ4>



Bauer, K. (2011). **Scratch move with mouse.mp4.** <https://www.youtube.com/watch?v=oYm2PD5hQyl>

Bauer, K. (2011). **Scratch Move on Keypress.mp4.** <https://www.youtube.com/watch?v=fb3qnUPWZu4>



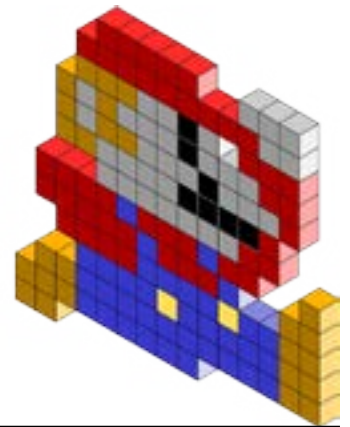
Developing your design

In this section of your folio, you are to journal how you have created your coded game. Use the space below to indicate the steps that you have taken in creating your project. This is best updated every week to ensure that you keep your project on track and it will be used as evidence to support your efforts in creating your solution.

Week/Step Taken	Description of work completed	Photo of Progress
1		
2		
3		
4		

5		
6		

Once your project has been completed, write a **d'sleeka** response to indicate where you feel you have done really well in this task and what you where you think you could improve.



Testing

Before any product is released on the market, it needs to be tested by potential consumers, or users, to ensure that all is in working order. For example, there would be nothing worse when getting a game like Tetris and the blocks don't fit no matter what you do ... So you end up with this epic fail through no fault of your own! And then there are games like the "Idiot Test" ... please! Give



it a go, and I will bet as a Beta Tester looking at the value of such a product, you too will say it is rubbish!

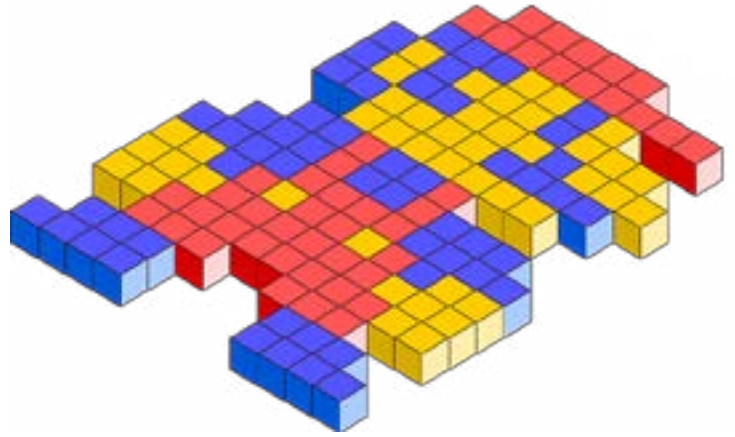
Unknown (2016). **The Idiot Test.** <http://idiottest.net/>

Now if the product was found lacking in anyway, the item would be changed to ensure greater success. The same must be done for the products that you are creating. Imagine how frustrating it would be if you created a game that was not functioning! Or what if you created to worst looking game in the world ... Surely you would want to know these facts prior to you handing your product over to for others to judge.

Have your peers use your game and ask them to see if everything is in working order and if they feel that it is presented in a professional manner. Also see if they can understand what Scientific Theory your game is based on. Use the space below to record their thoughts and the steps that you will be taking to improve your final product prior to submission for grading.

Evaluation

If you have reached this page, you will find that you have come to the end of your project.



Congratulations!

However, there is still a little bit of work to be done. There may come a time where you will have to do another game project and it would be great to look back on this page to obtain some handy hints on how you could do this project better.

Using the **d'sleeka** response scaffold, write an evaluation that sums up how you went in this project. Think about what you would have done differently, which could have improved your overall results.

One more step ...

Make sure that you submit this document in the manner prescribed by your teacher so that you can be awarded the grade that represents your efforts in this course to date!



Word list ...

The following words need to be understood in order to understand what is being learnt and how we are required to answer questions being posed.

Term		Definition
Empathize		
Define		
Ideate		
Prototype		
Test		
Evaluate		
Function		
Aesthetics		
PALS		

Term	Definition
Social	
Cultural	
Scientific Theories	
Cartesian Coordinates	
Variables	
Narrative	
Algorithm	
Game	
BETA Testing	
Flow Charts	
Logic	

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This text could not have been possible without the generosity of Creative Commons and all of their contributors.



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