



PROGRESS OUTCOME 6

Designing a virtual golf game

Context

Physical education teacher Ms Henare has asked her year 11 students to create a computer game to help students work on a particular sports skill.

In consultation with Ms Henare and some year 9 students, Leilani has decided that a virtual golf game will be fun for students to use and help them with their golf swing.



Insight 1: Planning

I decided to use Scratch to develop the game. First I sketched out a plan using a flowchart, which outlined the problem and the specific tasks the program should perform. My aim was to design a game that is engaging, performs the tasks, functions as intended and is easy for the user to play.

My plan included creating a pseudocode that sets out the algorithm, breaking down the tasks into their necessary steps and identifying the sprites (characters) and components I would need to create for the game.



Insight 2: Setting out and commenting on the program code

I discussed my pseudocode with Ms Henare and began to develop the images, sprites and program code, as per my flowchart.

I had to plan how to make the game become increasingly more difficult (for example, by adding different levels). I also wanted to use a timer and keep a score (which would be a variable). I thought about the blocks I could use, such as actions to control the sprite movement (hitting the arrow keys and spacebar), and the variable for keeping the score. I sketched out my ideas and the bits of code and discussed these with Ms Henare, who was happy with my progress.

Next I started to develop the program. I annotated my code as I went, using the comment feature as I worked through the steps – the comments explain my design and implementation decisions. I also identified my variables and their names. This is a good way of reminding myself what the code is supposed to do (its function and behaviour). It's also useful if you have to explain the code to another coder and your reasons for programming it that way.



Insight 3: Testing and debugging the program

I worked through my blocks, testing the project to see if it ran as it should. I found a few errors, such as when you clicked the green flag, an animation of a golf club should have swung back and forth once, then stop. But it didn't stop – instead, the animation started all over again. I had to work through the blocks to figure out why this happened. I fixed the error and added a comment to the block for future reference.



Insight 4: Meeting end-user requirements

I asked a group of year 9 students to test the game for me. After discussing their feedback, we decided I needed to add another level for the more sophisticated golfer, as the game was too easy for some users. One error they found was that the “# of hits” display increased by more than 1 each time the golf club hit the ball. I had to work through my blocks to figure out how to fix this.



Insight 5: Testing the final outcome

After I'd finished my debugging, I asked Ms Henare and a group of year 9 students to test the game again. It functioned as intended, and they were happy with the outcome.

Downloaded from <http://technology.tki.org.nz> or <http://seniorsecondary.tki.org.nz/>

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Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab (<http://scratch.mit.edu>).

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