EXCELLENCE EXEMPLAR 2022

2

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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COMMON ASSESSMENT TASK

Level 2 Digital Technologies and Hangarau Matihiko 2022

91899 Present a summary of developing a digital outcome

Credits: Three

Achievement Criteria		
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Present a summary of developing a digital outcome.	Present an in-depth summary of developing a digital outcome.	Present a comprehensive summary of developing a digital outcome.

Type your School Code and 9-digit National Student Number (NSN) into the space below. (If your NSN has 10 digits, omit the leading zero.) It should look like "`123-123456789-91899`".

[redacted]-91899

Answer ALL parts of the assessment task in this document.

You should aim to write **800–1500 words** in total.

Your answers should be presented in 12pt Times New Roman font within the expanding text boxes.

The only resource you may access during this assessment is your digital outcome for reference only. The three images you prepared in advance are the only information you may copy and paste into this assessment. No other internet access is permitted.

Save your finished work as a PDF file with the file name used in the header at the top of this page ("`SchoolCode-YourNSN-91899.pdf`").

By saving your work at the end of the examination, you are declaring that this work is your own. NZQA may sample your work to ensure that this is the case.

Instructions

The task in this assessment requires you to discuss a digital outcome you developed within the past 12 months.

You should illustrate your answers with three images you have prepared in advance:

- a single image of the digital outcome (e.g. a website, a poster, an electronic device)
- a single image showing a relevant digital component of the outcome in the software used to create it (e.g. the HTML / CSS for a website, the “layers” view of a poster, source code, a CAD / CAM file)
- a single image of the planning / development process (e.g. agile development, a planning chart).

During this assessment, you may access your digital outcome for reference only. The three images you prepared in advance are the only information you may copy and paste into this assessment. No other internet access is permitted.

Read all parts of the task before you begin.

Assessment Task

Your outcome

(a) (i) Insert the image you prepared of the digital outcome (e.g. a website, a poster, an electronic device).

(ii) Explain the purpose of your digital outcome.

The purpose of my digital outcome is to help highschool and university students study for exams more efficiently and effectively. The robot device has a timer and health messages such as “do 5 start jumps” and “Get some more water” to help students develop positive and beneficial study habits. It is intended to be used for tools such as the timer which will limit the need to use a phone. Which users would then be distracted from their study with games and social media. It is a device which I intend to sell to customers who are my target end users who want a distraction free environment to study in.

(iii) Describe what your digital outcome looks like and how it works.

My digital outcome looks like a physical grey robot box with 3 buttons, a screen and a light.

When it is turned on a message saying “hello” will appear on the screen for a few seconds. There are 3 buttons, all of which have separate functions.

The left red button when pressed will turn on the light in the top left corner to a green colour. This signifies to the user that the messages system has been activated. Meaning health messages will appear on screen in regular intervals. When the same button is pressed again, the colour of the light will change to purple. Which tells the user that the health messages system is now deactivated, so no messages will appear at all while the light is purple. Pressing the button again will turn the light back to green, reactivating the messages. This means the user has control over whether or not they want health messages during a certain study period. Which optimises the user's experience with my device.

The button at the bottom of the device is used to add time to the timer. Each time it is pressed it adds 10 seconds to the timer. This button is a crash sensor which is different to the other 2 buttons. This is because this button needs to be pressed multiple times to reach the users desired timer amount. Using a crash sensor means that the user can hold down the button and 10 seconds will continuously be added on. The button itself can be pushed in different areas that make adding heaps of time or just a couple of 10 seconds very easy. This means that users can have their desired use of the button in a way that works for them. The amount of time the user has put on, is displayed on the screen at all times.

The right red button is used to start and stop the countdown of the timer. When pressed and there is time, the time will go down by 1 each second. This is displayed on the screen as the time changes each second. This will continue until the time equals 0 where the countdown will stop. However if there is time left and the button is pressed again then the countdown will stop and the current time it was stopped will be displayed on the screen. Then if the button is pressed again it will resume the countdown of the time.

(iv) Insert the image you prepared of a relevant digital component of the outcome in the software used to create it (e.g. the HTML / CSS for a website, the “layers” view of a poster, source code, a CAD / CAM file).

(v) What software did you use to create the digital components of your outcome? How suitable was this software? You may include more than one software in your answer.

A software that I used to create the digital components of my outcome was “Microsoft Makecode”. It is a software designed for microsoft components and uses block commandes to code. This was helpful for me in the development of my digital outcome as it is the only way I know how to code. This meant I was confident and familiar when working with this software meaning I could create more complex code that I understood. If I did not use this software then I would have had to learn a whole new coding language such as python to create my outcome. This would have been negative to my development as I would have to spend time learning how to code instead of coding and creating. I used this software to code all of my electronic components such as buttons and the screen. This software was very suitable for my digital outcome as it was compatible and designed for the electronics I was using such as a micro bit. This meant that the software had specific commands for the electronics to achieve exactly what I wanted to happen. This resulted in a better development process that was efficient and effective. If the software was not compatible then I would have had to convert the code or create commands which would have taken up precious time and been a more stressful workload. Especially as I tested the outcome very often when I made a change to see if it worked.

Another software that I used which was suitable for my components was “Tinkercad”. I used this to create the outer box and buttons which were laser cut and 3-d printed

I decided to test and trial by components and outcome with people who were my target audience of highschool and university students. This was beneficial to my outcome as I received feedback from potential users as to how I could improve my outcome during development. I often receive feedback from the users which was also part of the requirements for my outcome. For example “there are too many buttons, I don't remember what they do”, which told me that I needed to develop my outcome to be more simple. Getting feedback like this directly impacted my outcome as I made changes to accommodate and fix issues the people who tested my outcome gave me for the better. I believe that I could have carried out this decision better by getting people to test my outcome more often for specific parts, potentially giving them options and asking what is better. This would result in a better outcome as people who are giving feedback generally don't know the possibilities that could be achieved. I believe I could have also done better by getting different groups to test the outcome. I typically used my friends and family to get feedback. This might have been bad for my outcome as they didnt give me truthful advice because they wanted to be nice to me. Meaning my outcome could have been better.

(iv) Based on what you learnt through the decisions discussed above, explain and justify what changes you would make to your development process, and how these changes could further improve the quality of your outcome.

I would make the change to the development process of adding a step before trialling components which would be a step of researching. Adding a research step before trialling and making my components would mean that I would be well informed on what I was about to make and how it should work. For example, I need to have an array in my code to hold the health messages. But I had never used arrays before, and so instead of researching how they worked, I just started coding. This resulted in me wasting my time by trialling code that I had no idea whether it might work. By adding this stage of researching before trialling, I would have researched and learnt about arrays before I started to write code for it. This would reduce the amount of wasted time and make me feel more empowered and confident as I fully understood what I was coding. This would keep me interested in developing the outcome at a high quality level. Especially as during the development process there were many times I lost interest in the outcome as I was stressed and confused. More free time would give me more time to create better components. Resulting in a more fully completed outcome, rather than the Minimal viable product that I finished with. Researching components that I already know how to do would allow me to push my level of understanding of them higher as I learn more complex ways they can be done or used. This would increase the overall quality of my outcome as it would be more well thought through and engineered.

Excellence Exemplar 2022

Subject	Digital Technologies Level 2	Standard	91899	Total score	07

Q	Grade score	Annotation
(a) & (b)	E7	This is an example of an authentic electronics outcome where the candidate has created both a functional electronics component and the housing to make the robot usable. At Achieved level the candidate's responses have included clear detail about how the device is used as if you were using it yourself. At Merit one requirement links directly back to the digital component being the code and the other about the physical appearance, which includes justification as to why the look has been considered. At Excellence level the candidate has clearly discussed what they would have done differently in their development process and how it would positively impact the outcome with specific examples. The candidate has evaluated their decisions. To get to 08 the candidate would need to make some of the details clearer by giving specific information about one example for each response and having a stronger link back to the code. This could allow them to make the one judgement and leave the rest for improvements.