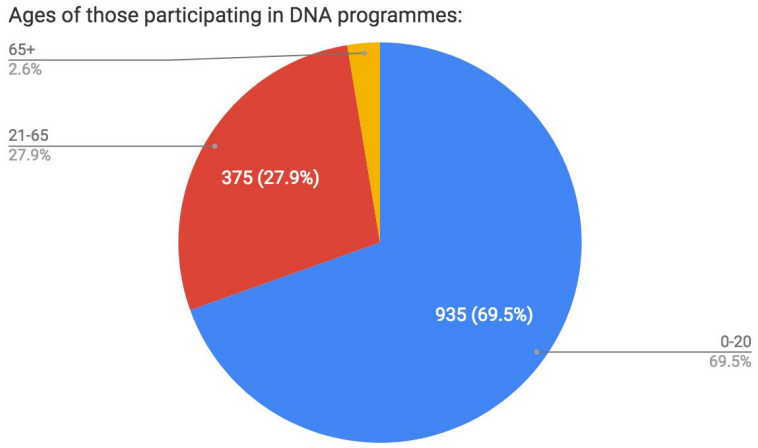
Road Maps & Star Charts

Road Maps = the connection between education and employment
Star Charts = the nexus between curiosity and self-directed learning

Digital Tech = game dev, coding/programming, eSports, animation, illustration, graphic design, social media, robotics, web development, video editing, storytelling, audio engineering, digital content creation.

Between May and December 2017, 1,345 whānau members directly benefited from DNA's activities, these included events, coding, game dev and animation programmes, digital tech workshops, weekend wānanga, 48 hour animation hacks and eSports competitions.

The following details the ages of those 1,345 participants, 0-20 (69.5%, 935), 21-65 (27.9%, 375), 65+ (2.6%, 35). These age groups are broken down further in the data below.



Quantitative Analysis

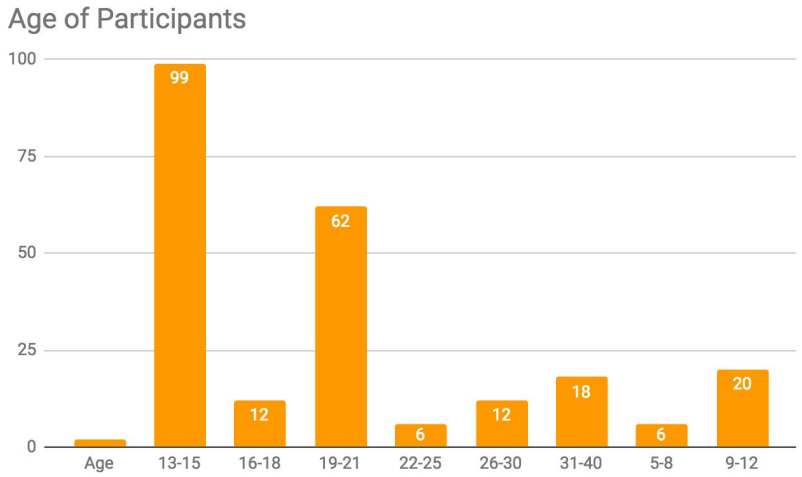
In total **235 participants** filled out an online survey giving us a **17.47% response rate**, this is a standard response rate for a survey of this type, considering the short time frames. In addition, this survey was sent out during the school holidays when many parents take time off and are not checking emails regularly. We would expect a higher response rate before or after the holidays and will take this into account for future reporting.

The survey sought participants views on the impact that DNA has had on illuminating pathways and inspiring Māori to explore the digital tech sector. The survey asked basic demographic information and also included questions around education and employment, next steps that were taken and when, It also explored the nexus between curiosity and self-directed learning as a way to prepare best for the 4th Industrial Age.

Questions were focused around length of time it took participants to take these next steps. The following tables detail the number of participants based on age.

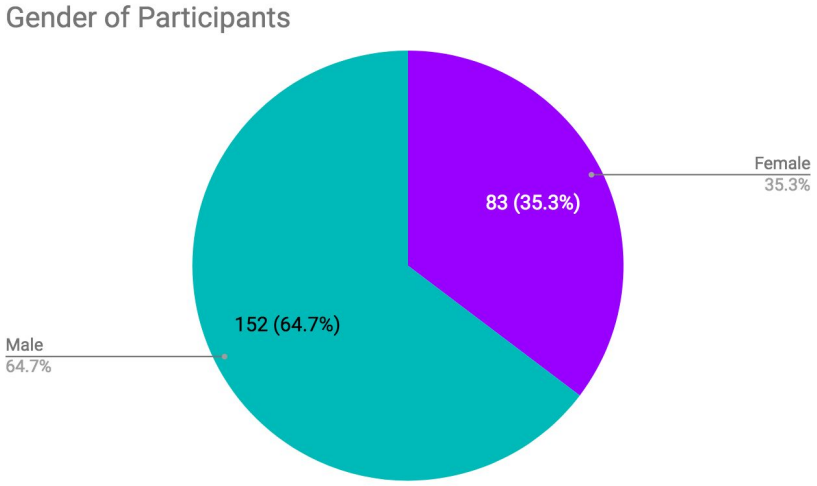
Demographic Information

Of those who participated in the survey, those between the ages of **13-15 (41.8%, 99)** were most represented, followed by those aged **19-21 (26.2%, 62)**. Followed by those aged **9-12 (8.4%, 20)**, **31-40 (7.6%, 18)**, **26-30 (5.1%, 12)**, **22-25 (2.5%, 6)** and **5-8 (2.5%, 6)**.



Kōrero: While our aim is to focus on rangatahi who are just leaving high school, the reality is that our 13-15 year olds are especially drawn to DNA, the goal will be ensuring these members are guided effectively over the next 3-5 years as they make important decisions related to their education, skill focus and long term employment. The drop off between 16-18 year olds most likely reflects the impact that NCEA has on their free time.

The gender of those who gave us feedback were predominantly **male (64.7%, 152)** compared to female **(35.3%, 83)**. These demographics are an accurate reflection of the average age and gender of DNA participants overall and also reflect the demographics of previous survey participants.



Kōrero: Gender equality in digital tech continues to be a challenge we all face, particularly within indigenous communities. Going forward DNA aim's to encourage more young wāhine Māori to enroll in our programmes, through wāhine specific events, workshops and gaming comps. In response to this, DNA is currently mentoring Kumara Patch, Aotearoa's only wāhine Māori run animation studio (which has 6 active wāhine animators). Wāhine Māori play an essential role in the digital tech ecosystem and we actively tautoko their efforts.

Road Maps

Road Maps are the pathways we know. We understand the connection between education and employment. The following section explores the impact DNA has had on illuminating these pathways and inspiring participants to take these next steps.

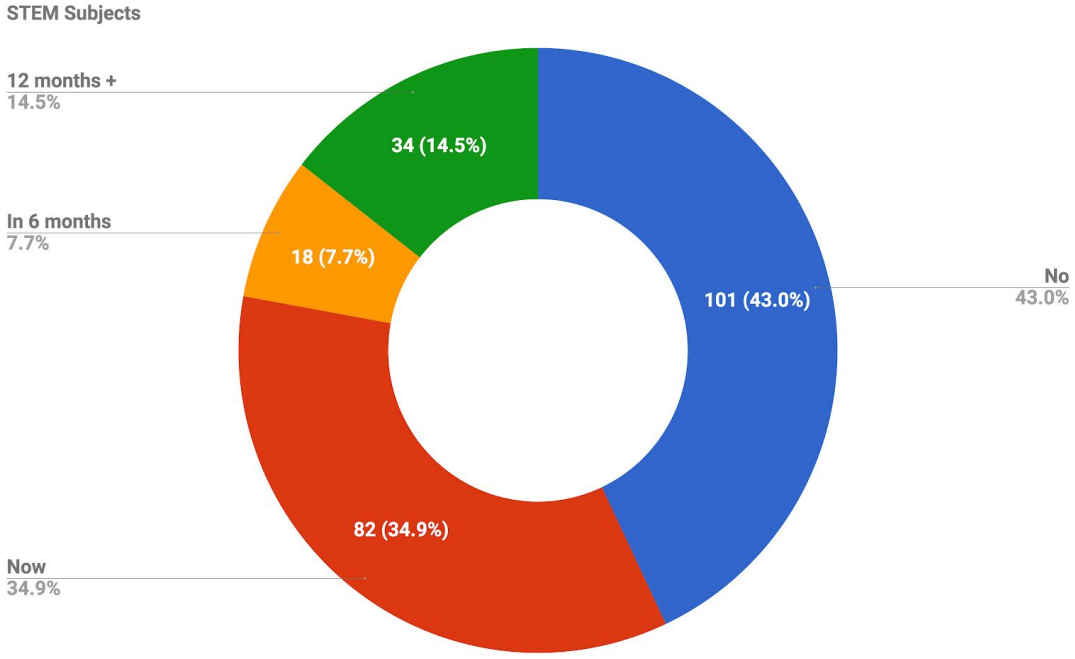
EDUCATION

Education pathways are critical to creating high value jobs for Māori in the digital tech sector. These education pathways give whānau skills, while introducing them to potential teams, these networks will prove invaluable as they progress in the industry. DNA helps by providing a clear road map to these pathways. To evaluate this we asked who after being provided this 'next steps' roadmap, took those steps and when. We broke these education pathways up into the following: enrollment in STEM subjects, digital design and digital tech subjects, business classes and tech awards.

Education: STEM Subjects

We asked participants if after being given DNA's 'next steps' roadmap did they take action and enrol in science, technology, engineering and/or maths class and if so, when.

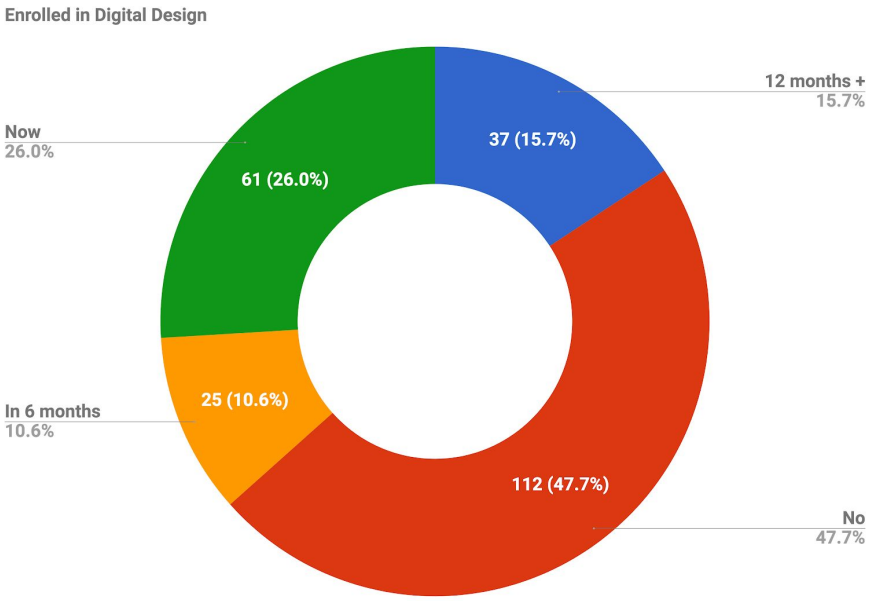
The following graphic details these results:



While those not taking any STEAM papers represented 43.0%, 101 of those surveyed, the majority **57.0% (135)** said that as a result of DNA's programmes they had taken that next step **now (34.9%, 82)**, **12 months+ (14.5%, 34)** and **6 months (7.7%, 18)** respectively.

Education: Digital Design

DNA participants interested in digital design and who took the next step **now** represent **26% (61)** of all participants, followed by **12 months+ (15.7%, 37)** and **6 months (10.6%, 25)**.

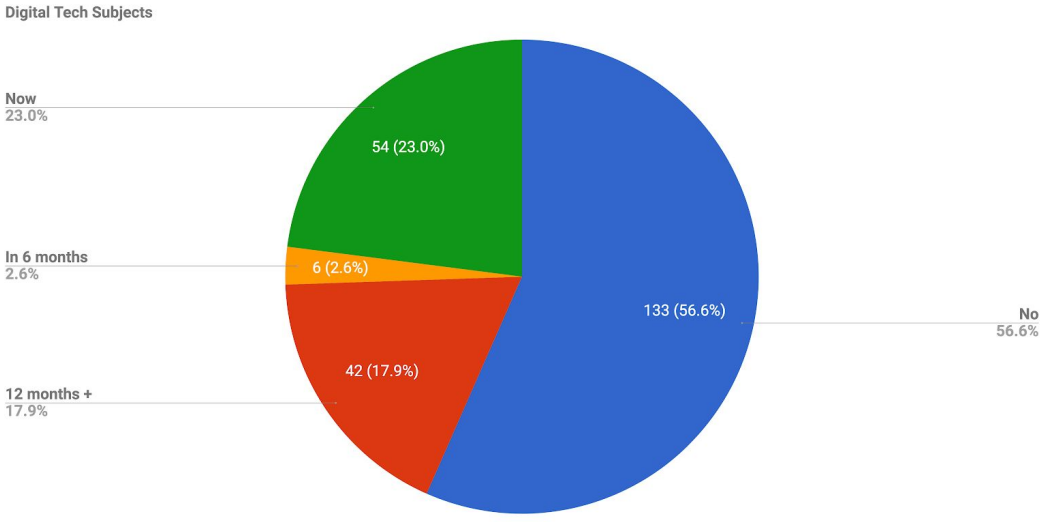


Digital design papers (at all levels) play an important role in ensuring there is a pathway for students who enjoy our programmes and want to do more in their own schools.

Those who took the next step and **now** are enrolled in digital design papers represent **26.0% (61)**, followed by **15.7% (37)** wanting to enroll **in 12 months+** and **10.6% (25)** wanting to enroll in **6 months**. This tells us that at least locally there is interest in digital tech papers within schools, which will only increase as the digital curriculum is rolled out.

Education: Digital Tech Subjects

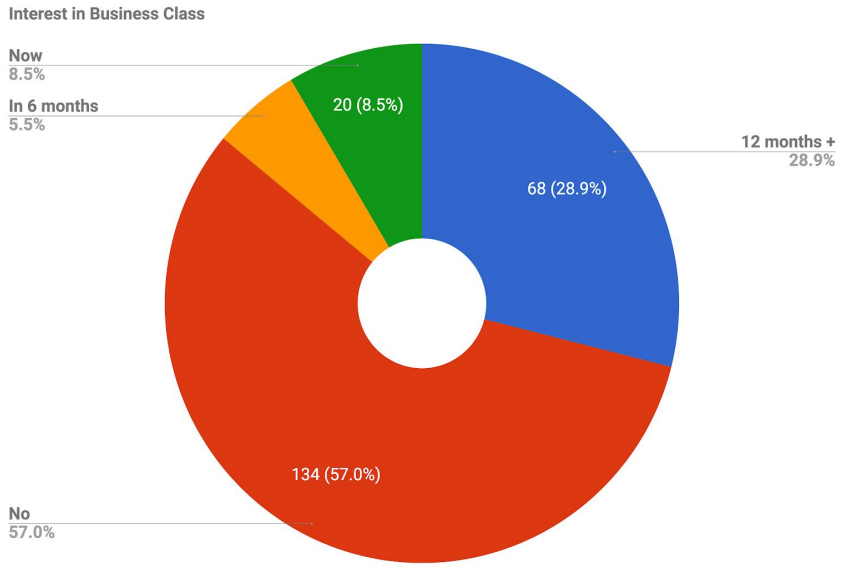
Those interested in taking a digital tech subjects represented 41.3% (102). Those taking papers **now** were **23.0% (54)**, in **12 months+ 17.9% (42)** and in **6 months were 2.6% (6).** 34.9% (82) were interested in taking a degree.



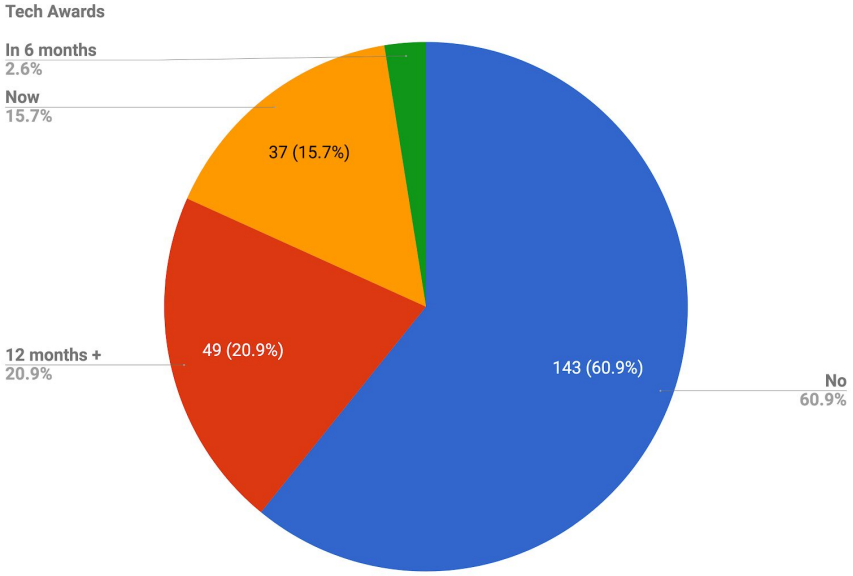
Education: Business Classes

DNA encourages participants to consider taking business classes as a way to anticipate the varied skills our digital future will require.

The following graph details interest in enrolling in a business studies paper. **28.9% (68)** of those surveyed anticipated enrolling in a business studies class within the next **12 months** and **8.6% (20) within the next 6 months** respectively.



Many of those surveyed either already had received a tech award **now (15.7%, 37)** or wanted to in the next **12 months+ (20.9%, 49)** and in **6 months (2.6%, 6).** This is important, in terms of ensuring our schools are recognising the importance of awards for digital tech and innovation, something which is just starting to take place.



Korero: We cast our nets far and wide in the hope that we give as many padawan the chance to engage in our programmes and kaupapa in the hopes that a spark will catch.

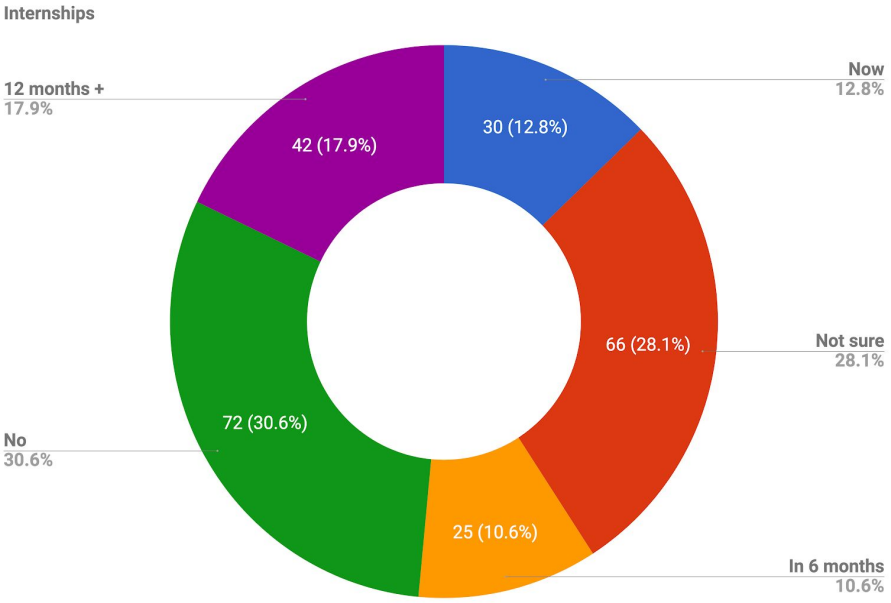
It is evident from these numbers that this is happening, the following section now looks at the nexus between education and employment in the digital tech sector.

EMPLOYMENT

Focus on employment and its pathways is important. Because there are multiple ways one becomes employed we broke these pathways into the following: internships, beta testers, startups, joining a digital tech project, funding proposals, as well as those seeking part-time and full-time work.

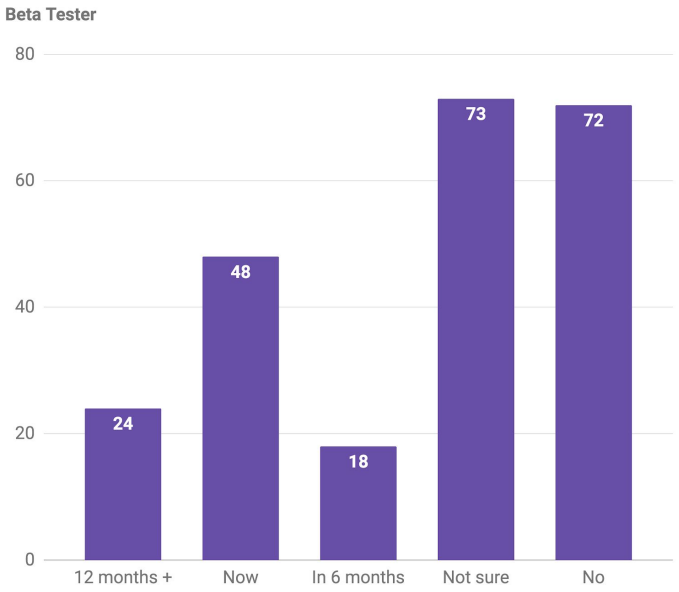
Employment: Internships

For many, internships are the first major step into any industry. Combined with structured degrees this offers the best opportunity for young people to gain access into the digital tech industry. The following details who has taken this the 'next step and when.



41.3% of those surveyed as a result of completing a DNA programme went on to work as an intern **now (12.8%, 30)** in **6 months (10.6%, 25)** and **12 months + (17.9%, 42).**

Employment: Beta Testing

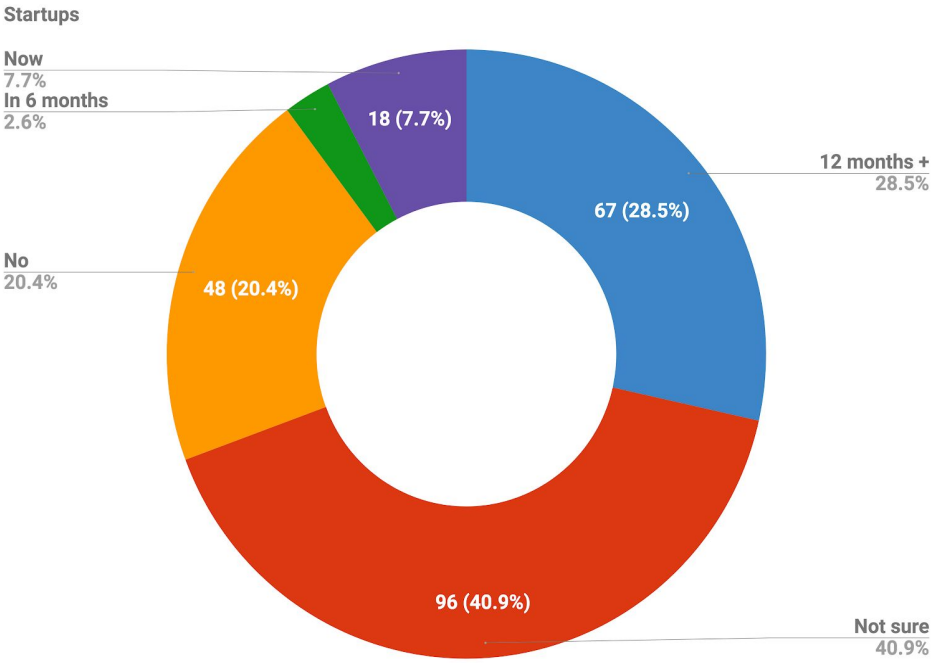


Beta testing is another important pathway into the industry, particularly for rangatahi. Beta

testing requires having high dexterity and the ability to 'break' a game, game developers often need highly proficient gamers to push their code to the limit. Beta testers are also required to be able to articulate the areas of concern they have about a game, in terms of gameplay, visual effects and player movement.

Those **not sure** represented **31.1% (73)** while those acting as beta testers right **now were 20.4% (20), 7.7% (18) in 6 months** and **10.2% (14) in 12 months+.**

Employment: Startups



Work in digital spaces is often dynamic and ever evolving. Understanding the kinds of business structures that best suit the digital tech industry is critical. DNA is working with half a dozen emerging businesses and is customising an approach for each one.

The previous graphic illustrates participant's exploration of startups and suggests strong interest in business creation. The high number of those **not sure (40.9%, 96)** most likely reflects the high number of 13-15 year olds two participated in the survey. However, those who are creating a startup **now** reflect **7.7% (18)** of participants while **28.5% (67)** wish to start in 12 months + and **2.6% (6) in 6 months** respectively. With this in mind it'll be increasingly important to provide pathways for emerging digital tech businesses.

Employment: Funding Proposals, Tech Projects, Part time & Full time Work

Writing funding proposals is standard practice in NZ's digital tech sector, because the sector is so small creating multiple streams of revenue if vital to long-term sustainability. These understandings are embedded in the discussions we have during our wānanga.

We asked who after being provided with the next steps roadmap, took that step and when as it relates to proposal writing, part time and full time employment.

Funding Proposals	Now (46.4%, 109), 6 months (19.1%, 45)

	12 months+ (14.0%,33), no (20.4%, 48)
Tech Projects	Now (33.6%, 79), 6 months (7.7%, 18) 12 months+ (15.3%,36), no (10.2%, 24)
Part time Employment	Now (28.5%, 67), 6 months (2.6%, 6) 12 months+ (15.3%,14), no (20.0%, 47)
Full time Employment	Now (20.9%, 137), 6 months (26.4%, 62) 12 months+ (2.6%,6), no (12.8%, 30)

Korero: What emerges from this analysis is need to strategically plan for the at least 67 whānau members who want to form a digital tech business within the next 12 months+, to ensure they are in the best possible position to succeed. Similarly, there is current interest in tech projects with many DNA participants actively participating in the digital tech sector, right now.

What the data tells us is that many enjoy DNA not everyone will take that next step immediately. This is the reality and we take a 3-5 year approach when working with DNA participants. There is no quick fix and spaces like these need time to bring on board whānau, so they see the value of this sector and guide their children accordingly. If we don't start now, we will miss out shaping a whole generation of young, creative and innovative minds.

Star Charts

We use Star Charts to navigate the pathways we don't know. What we have learned is that the nexus between curiosity and self-directed learning, leads our whānau to a digital future that they will harness and develop with ease.

CURIOSITY

This section focused on curiosity and exploration. We asked if after working with DNA did participants take the next step and when. In this case, the next steps are seeking out new information related to the digital tech sector and using their own self-directed learning to strengthen skills related to digital online tools.

These next steps were broken into the following; eSports, Content Development, Animation, Game Development, Coding/Programming, Graphic Design.

The following provides an analysis of the time it has taken to engage in any one of those activities after having completed one of DNA's programmes and wānanga.

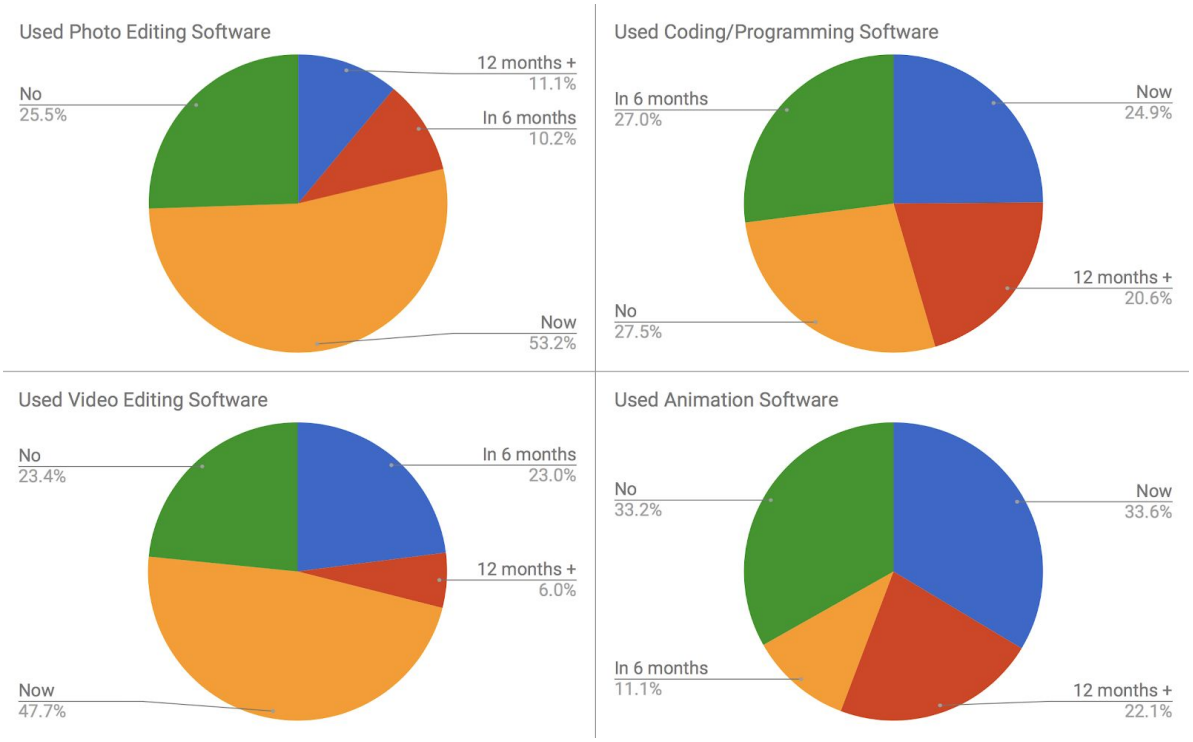
eSports	Now (61.3%, 144), 6 months (12.8%, 30) 12 months+ (6.0%,14), no (20.0%, 47)
Content Development	Now (58.3%, 137), 6 months (26.4%, 62)

	12 months+ (2.6%,6), no (12.8%, 30)
Animation	Now (46.4%, 109), 6 months (19.1%, 45) 12 months+ (14.0%,33), no (20.4%, 48)
Game Development	Now (39.1%, 92), 6 months (32.3%, 76) 12 months+ (5.1%,12), no (17.9% 42)
Coding/Programming	Now (25%, 60), 6 months (31.1%, 73) 12 months+ (5.1%,12), no (38.3%, 90)
Graphic Design	Now (25%, 60), 6 months (31.1%, 73) 12 months+ (5.1%,12), no (15.3%, 36)

Most participants engaged in more than 3 of the above with eSports, Content Development, Animation and Game Development taking out the top 4 spots in terms of those who are accessing this information now.

SELF-DIRECTED LEARNING

Self-directing one's own learning is an indication of confidence, increased digital literacy and leads to long term skill acquisition which will be vital in the future. We focused on skill acquisition related to software use, these included, photo and video editing, animation software and online programming tools.



It's clear from an analysis that DNA participants are actively using the tools we have shared with them, to seek out new information and use that information to strengthen digital skills related to photo and video editing, coding and animation. These skills will be fundamental in the future and DNA participants are therefore strategically positioning themselves to meet

the these growing needs.

Korero: This data suggests that the impact of DNA continues to be felt long after our programmes end. Because our participants understand the pathways, they can strategically position themselves - using star charts to help guide them towards the 10s of 1000s of jobs that haven't even been created yet.

Qualitative Analysis

It's important to remember that, all this data represents real, amazing and challenging human beings. Mostly, young Māori, who mostly come from single parent homes, will no access to their own technology. All still finding their way in the world.

We have this chance to help guide them as they take on new challenges. We absolutely believe that if we all support those who were going to succeed already, we have not done our job, our whānau need time, energy and commitment to help navigate this dynamic, vibrant, frustratingly crazy yet revolutionary space.

Sharing Feedback

We also asked participants if they wanted to add anything, these are some comments:

Digital Natives Academy has inspired me to help others
Answered as a Mama of a Member and a digital business.
DNA is an amazing place and I hope the facilities and programmes they offer will be available for years to come
DNA IS THE BEST
I didint understand some of the questions but i clicked no but yea: Cristobal
I really want to come back to learn more about gaming drones and computers
I study animation
Im 13 some of these things I dont even no what they are?
kia ora for everything!
Love all things computers, not sure what area I am aiming for, still learning, I am sure I will have a career dealing with computers in some way.
really enjoyed DNA, I would like to do something else with DNA as I struggle to engage at school
thank you lasa for everything, EVERYTHING
Thank you, this is very important and fun!
thanks for eveything

> Thanks to DNA for the nocheapies tournament u guys hosted. It was a success! I have finished entering my second tournament (1st national) & will be entering more this year. I am currently apart of a group creating a local gaming tournament for ROTORUA.

> TYDna for sharing the path and inspiring me to be apart of the journey. C

Kōrero: It's clear from these comments that participants find something special in DNA and see how important these skills they learn are.

We also note that we need to ensure our questions are clearer in the future. Going forward we will be working with AUT and Waikato to develop a more robust questionnaire.

Preparing for our Digital Futures

What DNA has found is that this is not just about teaching rangatahi how to prepare for their digital futures. These are teenagers, so it's equally about, "finding your people", about friendship and trust, it's about finding belonging and acceptance.

Many of our members face challenges related to ADHD, autism, dyslexia, depression and anxiety and the reality is we must be prepared to connect them with those additional support systems as they navigate this thing called life <3

Celebrating Success

Most recently DNA sent 21 year old **Te Mauri** to New York City, where he spoke as a Digital Natives Academy and 4CompanyB representative on the Indigenous Digital Leader panel at the United Nations. He also flew to Seattle where he meet Microsoft's Hololens developers, to discuss Hololens as a educational tool and cultural AI. Te Mauri has also helped solidify our relationship with Microsoft and we've been asked to submit a funding proposal.

Geoff, a 16 year old who was not able to enroll in his Statistics paper due to not passing last year's' exam (although all his course work was excellent) - he asked to take a placement test, which he brought to DNA for a study session. He was successful in the test and is now taking the statistics paper next year (his final year before University), he is also receiving private tutoring to ensure he can pass his exams and plans to study Computer Science at Waikato University. Dylan is one of our tutors and has worked with us at DNA Opotiki. Dylan has taught himself LUA, a server side programming language and provides tech support at DNA.

Nanny Paula, 65, helps maintain tikanga at DNA, she also gives out free hugs. Paula's son, committed suicide when he was 20, she missed the signs all those years ago, and wants to make change. She has become an expert in this space and keeps a watchful eye on our community. Nanny Paula makes sure that our whānau's emotional and psychological needs are being met and if anyone is struggling, she knows where to get professional help quickly.

Elizabeth, is 21 year old and was homeless ever since she left CYFS care. She'd spent 16 years in 16 different homes and on turning 18 was unable to cope. She was living rough for 2 years. Liz starting attending DNA's programmes and was taken under the wing of Kumara Patch founder Celia Pirini. Liz is no longer homeless and is now enrolled at Animation College and is working on Fierce Girls, a Canadian co production, 30ep part animated, part

live action transmedia webseries.

Celia (34) and **Sasha** (21) both flew to Tokyo to attend the Tokyo Games Show, neither had ever flew before. The recent animation graduates experienced the trip of a lifetime and came back committed to setting up Kumara Patch, the first ever wāhine Māori run animation studio.

Dean, 13, has trouble controlling his ADHD at school, but has found himself a special place at DNA, he now helps tutor others and excels in coding and digital illustration. Having regular access to DNA keeps Dean focused on controlling this behaviour.

Josh, 25, an accomplished digital creator was working at Burger Fuel full time, after spending the last 8 months creating content at DNA, he has picked up a job in the UK creating digital assets for a multinational marketing department. He will work there for 2 years.

There is **Dylan**, a 20 year old intern and tutor, has been helping to shape DNA's eSports programme. Dylan regularly provides tours for school, hosts Ministers of Parliament and has provided input to the Ministry of Education as it relates to Digital Curriculum.

We have a **Ammie** a 22 year old wāhine, who was working in retail but who is an amazing illustrator, we have helped guide her and she has moved to Rotorua from Hamilton to study animation at Animation College.

Daniel Martin, is 20 years old, was on the dole, loved gaming and wanted to turn that passion into an opportunity. He's now also enrolled at Animation College this year and wants to focus on 3D animation.

Trae, is a 16 year old rangatahi who left school. He makes his own robots (and recently made a flamethrower - which we think is amazing) - at the age of nine he began studying Leonardo Da Vinci and began creating his work from natural materials. When his mother dropped him off, she cried.

We have a **Calvin**, a 22 year old recent graduate, who is also autistic, he's an amazing game developer and brilliant problem solver. We have connected him with 4CB ain their games division. Not only has he found a team to be part of, he's found friends for life.

Tangina, 23 year old mama of 2 recently took part in our eSports tournament, she came in 9th and began competing competitively. Their Sulphur City Beatdown Crew are now running day long tournaments and is working on developing a sponsorship pack.

These are just a few stories, but our reality is that Digital Natives Academy has helped to create a space which empowers our whānau to actualise and make real their dreams.

Tihei Mauriora!