# Experiences of Pacific students in the Health Science Academy (HSA)

by

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# Abstract

This research study aims to bring light to the experiences of Pacific students in the Health Science Academy (HSA). The HSA programme was established to support academic achievement of Pacific students in secondary science and encourage them to join a healthcare career (Middleton et al., 2019). More Pacific people are needed in the healthcare workforce as this may help make the healthcare sector more culturally responsive, leading to a more comfortable environment for Pacific peoples to seek medical advice (Brown, 2018). In return, this may improve the health of Pacific people and the general population of New Zealand.

The research was conducted at two Auckland secondary schools. Each school had a focus group session where participants spoke about their experiences of the HSA. This included the aspects they found helpful and the aspects they thought could be improved. The findings were later analysed using thematic processes.

Through this research, it was found that the participating students were all intending to join the healthcare sector. The trips that students went on were informative and allowed the students to make career choices that suited them. Career advice was appreciated by all students as it brought clarity and gave students a goal to work towards. As the students knew what they were aiming for, it gave them the motivation to do well academically. It was noted that tutorials must be regular. The tutorials supported the students' academic achievement as it prepared them for assessments. Mentoring sessions also supported learning as students were able to build positive relationships with their mentor teachers and peers. The students supported each other's learning. This led to a comfortable and safe environment for students to learn as they were able to seek help without having the fear of being judged.

This research has its limitations as only two of the thirteen schools within the HSA participated. Both focus groups had five participants. The participant size was too small to represent the voice of all Pacific students of New Zealand. All the participants at both schools were females, hence the responses were mainly from a female perspective. Since, the male voice in this research was practically silent, the findings cannot be homogenized to be the voice of all Pacific students in New Zealand. Hence, no major changes to the HSA programmer are suggested, however, some recommendations for schools who are part of the HSA and those who are not are provided.

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# Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the Acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

*Signed:* Swastika Sharma *Date:* 18th April 2024

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Author Name

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My initial appreciation goes to the almighty:
I bow my head onto your feet to seek blessings.

त्वमेव माता च पिता त्वमेव
त्वमेव बन्धुश्च सखा त्वमेव
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# CHAPTER ONE: Introduction

This chapter describes the beginning of this research journey and outlines the significance of the research question, background, context, and my position as the researcher. This research aims to examine the experiences of Pacific students in the Health Science Academy (HSA) programme. Information regarding their experiences can shed light on their reasons for being part of the HSA, and how the HSA supports their success in science as well as motivates them to join a healthcare career.

**High level overview**

The New Zealand health sector provides health services to about five million residents (StatsNZ, 2019). In New Zealand, there are four regional divisions (Northern, Te Manawa Taki, Central and Te Waipounamu). These regions are looked after by the regional commissioning boards. For example, the Northland region, Waitemata, Counties Manukau and Auckland cover the Northern region (Health New Zealand - Te Whatu Ora, 2023; MidCentral DHB Communications Unit, 2010). The healthcare system is largely funded or subsidised for the residents through taxpayer's money. The amount of funding allocated to health varies across the Organisation for Economic Co-operation and Development (OECD) (OECD, 2017). ID medical, a healthcare recruitment agency in United Kingdom ranked the countries in OECD by comparing the amount of Gross Domestic product (GDP) spent on health. They also compared the number of nurses, doctors, hospital beds to the population and their average life expectancy. Aotearoa's healthcare system was ranked 18$^{th}$ out of the 24 OECD countries with 60/100 points. New Zealand is behind countries like Japan, Germany and Australia (Hart, 2019). In 2014, New Zealand used 11% of GDP on healthcare and has achieved a universal healthcare coverage that is regionally administered (OECD, 2017).

The New Zealand healthcare system is still regarded as one of the best in the Southern hemisphere (in terms of GDP spending), despite lagging behind other first world countries (OECD Better Life Index, n.d). According to an OECD study, the health system is perceived as "good" or "very good" by 86% of the population. Aotearoa supports its Pacific neighbours with health aid, such as funding, healthcare supplies or professionals when requested (Griffin, 2020).

Life expectancy paints a picture of the population's health and the effectiveness of the healthcare system in a particular country. According to the OECD, the average life

expectancy in Aotearoa is 82.06 years, this varies considerably across the population groups as shown in table 1 below (StatsNZ, 2019).

**Table 1**

*Life expectancy of New Zealander's based on ethnicity, adapted from StatsNZ (2019).*

| Ethnicity | Male (life expectancy in years) | Female (life expectancy in years) |
|---|---|---|
| Māori | 73.4 | 77.1 |
| Pacific | 75.4 | 79.0 |
| Asian | 85.1 | 87.9 |
| Non-Pacific (European and other) | 80.9 | 84.4 |

These figures show significant differences between the health outcomes for Māori and Pacific peoples compared to non-Māori and non-Pacific peoples. Walsh and Grey (2019), assert that between 2013 and 2015, 47.3% deaths of Pacific peoples and 53.0% of Māori deaths could have been avoided. Māori and Pacific people are more likely to experience strokes at a younger age with higher rate of recurrent strokes as they are more likely to be unaware of the signs and symptoms of stroke or go for regular check-ups (Feigin et al., 2015).

A possible reason for this high rate of avoidable deaths in Māori and Pacific peoples could be due to the lack of cultural responsiveness in the healthcare sector (Brown, 2018). Cultural responsiveness includes being respectful towards everyone's beliefs, knowledge, culture and lifestyle. It is not just about employing professionals who possess attitudes and skills necessary for being culturally responsive. It must run through the whole system from the professionals employed to the ways in which data and resources are used (Tiatia, 2008). According to Midcentral DHB communications unit, for Māori, cultural responsiveness includes being aware of diversity and being able to function effectively and respectfully when working with and/or treating patients of different ethnic backgrounds. These may include acknowledging Aotearoa's culturally diverse population, the interactions impacting provider-client relationship where positive outcomes can be achieved when there is mutual respect and understanding between the healthcare provider and patients (MidCentral DHB Communications Unit, 2010).

A possible way to enhance cultural responsiveness in the interactions between patients and healthcare providers is by ensuring that the healthcare workforce represents the population it serves. In the healthcare workforce, Māori and Pacific people are under-represented and significantly over-represented in poor health outcomes compared to the general population (Lees et al., 2021).

The 2018 census showed that Counties Manukau District Health Board (now known as Te Whatu Ora – Counties Manukau) provided medical services to a population consisting of 16% Māori and 22% Pacific peoples in this area (Lees et al., 2021). Furthermore, Māori and Pacific peoples employed in the healthcare sector tend to be clustered in areas that require low levels of formal qualifications (Ministry of Health NZ, 2011; Ratima et al., 2007). The percentage of healthcare workers in Te Whatu Ora Counties Manukau does not match as only 7% of Māori and 15% of Pacific peoples were employed in the healthcare sector (Counties Manukau Health, 2023). This means that Māori and Pacific patients are unlikely to be treated by people from their own cultures. Having more Māori and Pacific people in the healthcare sector can help in achieving a culturally responsive sector. One of the downfalls of healthcare professionals having low cultural competence is that Māori and Pacific peoples are less likely to attend follow up appointments, ask questions related to their health, or seek medical advice with early symptoms (Brown, 2018; Walsh & Grey, 2019). The Māori people in the study usually did not visit a healthcare provider unless absolutely needed as their experiences of healthcare settings were generally degrading of their Māori heritage (Macintosh, 2023).

According to Middleton et al. (2019), one way to improve health outcomes would be by increasing the number of Māori and Pacific peoples in the healthcare workforce. To increase numbers, a Health Science Academy (HSA) was established. The HSA is an initiative in secondary schools in Auckland funded by Te Whatu Ora - Health New Zealand. The HSA is designed to support Pacific senior secondary students achieve in science subjects that enable them to get into science courses at tertiary level and join the healthcare workforce (Middleton et al., 2019). The HSA is currently running in 13 secondary schools across wider Auckland, coordinated by Te Whatu Ora Counties Manukau, Counties Waitemata and Counties Waitakere (2023). Each school runs their own programme slightly differently, but the main components are a dedicated homeroom group (mentor group), a HSA coordinator teacher, tutorials and field trips. Tutorials prepare students for assessments, and field trips offer them a taster experience of various domains in healthcare (Te Whatu Ora Ora- Health New Zealand Counties Manukau, n.d.).

The HSA aims to nurture and build a workforce that is ethnically representative of the communities served by the healthcare system. This can be done by encouraging more Māori and Pacific peoples to work in the healthcare sector (Middleton et al., 2019). In the HSA, students are encouraged and supported through their academic journey. Generally, the students in these academies are described as motivated and willing to learn (Middleton et al., 2019).

**Significance**

I will examine the issue of Pacific students not progressing into health science careers through two research questions.

1. What do the students who are part of the HSA find helpful in supporting their learning in science?
2. What are the recommendations that could be implemented to support future students in the HSA programme?

Te Whatu Ora and the schools involved have stated on various platforms such as their websites and fono meetings that the academy is successful with high retention rates and higher academic achievement (Counties Manukau Health, 2023; Quality Accounts Waitemata District Health Board, n.d.). As the academy and schools involved are claiming high success rates, the experiences of these students will help us identify what could be done differently in mainstream science teaching to ensure that all students benefit from the approaches that form the basis of the HSA.

The HSA programme has been recognised as being successful and has been sustained for 10+ years in some schools (Te Whatu Ora Ora- Health New Zealand Counties Manukau, n.d.). However, more research is required to determine what aspects of the HSA programme students find most useful, supportive, and encouraging to help them to continue in science. This research is important as it gives an insight on the experiences of the students in the HSA. The information obtained can help teachers make changes to their existing HSA programme to ensure the future students are supported and motivated to succeed in science education and science related careers.

This research would also be of interest to other schools with the HSA programme as the findings might provide clarity on student expectations from the programme. For educators in the non-HSA schools with a significant Pacific population, the research may illuminate how Pacific students learn, what they expect from their school/ teachers and what aspects of the HSA these schools could trial to boost academic success. Schools that are not currently part of the HSA programme may consider joining if they are aware of the benefits of the programme. The practices that make up the HSA will be helpful for science education in all schools and at all levels.

**Background and context**

Science is a compulsory subject until year 10 across Aotearoa. It then narrows to discipline areas like Biology, Chemistry, Physics, Agriculture and Earth and Space Science. The New Zealand curriculum suggests that science informs problem solving and decision making processes in many areas of our life (Ministry of Education, 2007). Many major challenges and opportunities that confront us need to be looked through ethical, social, financial and scientific perspectives (Te Kete Ipurangi, 2014). The Ministry of Education has focused on science as an agency-oriented subject with the aim of making students more capable of interacting with their environment. These include, making well informed decisions regarding the new laws that are related to health, medicines, and the environment. Basic understanding about the world around us can support decisions that benefit everyone (Ministry of Education, 2007).

In Aotearoa, a decline in interest towards science studies is evident between years 7-10. The engagement and achievement of Māori and Pacific students in science subjects at school has been an ongoing issue (Hipkins & Waiti, 2002). This can be seen in the achievement rates as well as the number of Māori and Pacific peoples employed in the science career sectors, whether it be health professionals or science academics (McAllister, Naepi, Wilson, et al., 2022; Ratima et al., 2007).

Programmes have been set up to enhance Māori and Pacific peoples interests and success in science. These programs are focussed on increasing success rate at tertiary institutions and beyond (Ratima et al., 2007). There are some programmes that support Māori and Pacific people getting into workforces. These include Vision 20:20, Whakapiki Ake, Hauora Māori Scholarship program, Health Research Council of New Zealand Māori Career Development Awards Programme, Hauora.com Trust, Te Rau Matatini strategic plan 2018-2021 and Te Rau Puawai (Ratima et al., 2007).

A programme that supports students at secondary school and tertiary level is the HSA. It is funded by Te Whatu Ora to create a pipeline to encourage more Pacific people in the healthcare workforce. The selection criteria to get into science courses at universities is higher than the requirements of most other non-science courses. For example, with NCEA, 165 points is required to enrol into a Bachelor of Science degree, whereas 150 points are required for a Bachelor of Art (University of Auckland, 2023). The NCEA results from 2021 and 2022 show that the HSA students are doing better than the other decile 1-3 students and the non-HSA Pacific students, in fact, the percentages are on par nationally as shown below in tables 2 and 3 (Counties Manukau Health, 2023).

**Table 2**

*Percentage of students in the HSA programme attaining merit endorsement compared to total population.*

| Percentage attaining NCEA with merit endorsement | HSA students | New Zealand total | Total Pacific students | Total students in decile 1-3 school |
|---|---|---|---|---|
| Level 1 | 39% | 32% | 28% | 24% |
| Level 2 | 34% | 25% | 17% | 15% |
| Level 3 | 28% | 27% | 17% | 17% |

Adapted from Annual Report 2021/2022(75/76), by Counties Manukau Health, 2023, Te Whatu Ora – Health New Zealand Counties Manukau.

**Table 3**

*Percentage of students in the HSA programme attaining excellence endorsement compared to total population.*

| Percentage attaining NCEA with excellence endorsement | HSA students | New Zealand total | Total Pacific students | Total students in decile 1-3 school |
|---|---|---|---|---|
| Level 1 | 20% | 21% | 9% | 10% |

| | | | | |
|---|---|---|---|---|
| Level 2 | 18% | 18% | 6% | 7% |
| Level 3 | 18% | 17% | 6% | 8% |

Adapted from Annual Report 2021/2022(75/76), by Counties Manukau Health, 2023, Te Whatu Ora – Health New Zealand Counties Manukau.

**Researcher positioning**

I am interested in this study as I identify as a Pacific person. I was born in Fiji and later immigrated to Auckland, New Zealand. Under the British ruling in India, Indians were taken to many countries including, Fiji, South Africa, Suriname, Trinidard, Tobago British Guyana and Mauritius. Indians were taken to Fiji to work on the sugarcane plantations between 1879 to 1916. This period is more commonly referred to as 'girmit', this comes from the word 'agreement'. While they were promised luxuries in Fiji, none of it was true and many did not even know what the agreement included as they were unable to read, write or understand English. Indians were brought into the country on a 5 year-agreement. At the end of the five-year term, they were allowed to either extend their stay or return to their home back in India. While some returned, many stayed in Fiji, because the situation back home was not any better (The Fiji Museum - Virtual Museum).

My great grandparents came to Fiji under the indenture system to work on the sugarcane plantations and after serving their five-year term decided to stay in Fiji. Ever since, my family has lived in Fiji and I am a fourth generation Fijian-Indian, with India in my blood and Fiji in my heart.

My schooling started in Fiji. School life was linked to the cultural identity of Fijians which includes both i–Taukei (indigenous Fijians) and Fijian-Indians. A typical school day would start with a prayer and finish with a prayer as both i-Taukei and Fijian-Indians have strong connections with their religious beliefs and practices. The religious functions were given importance and celebrated in schools while there were a significant number of religious public holidays as well. The celebrations at schools included activities such as quizzes, oratory competition, puppet shows and plays which all had a significant role in giving importance to the cultural and religious practices of Fijian students' lives.

I was in year 11 when I immigrated to New Zealand and settled in South Auckland with my family. Settling down in school and adjusting to the new ways was difficult and challenging.

My home and school life were vastly different. School life and assessments were more demanding. External exams for three continuous years were draining. The school system in New Zealand was more westernised in terms of technology as well as the way things were taught. While science labs were better resourced, and learning was more practical, it was hard to adjust to the school life in New Zealand as it did not resemble my previous experiences, nor my life outside of school. My siblings were already in the workforce, so no one knew or understood what school felt like. The school system was systematic with very few emotional or cultural aspects which made it hard to make connections.

The three years of secondary schooling gave me an insight on how challenging it can be to uphold your cultural identity in a multicultural society, where my culture is a minority one. As I faced many challenges in those three years of senior secondary schooling, one of the major challenges was to figure out what I wanted to uptake as a career option. The career advisory team was limited in resources which gave students a few opportunities to seek advice or ask questions in relation to specific careers and opportunities. Especially, if students were seeking advice and opportunities outside of Aotearoa (Elsom & Munro, 2000).

My passion for science led me to a Bachelor of Science degree. During my years at tertiary study, I would sometimes think of my experiences as a high school student. The thought of having survived high school always kept me going. By the end of my bachelor's degree, I decided to go into teaching. My high school teachers supported me to succeed. Knowing that there are many other students who felt like me, I decided to pursue teaching so that I could support the learning of those students who felt a little displaced like myself.
I currently work at a decile seven school with approximately 450 Māori and 570 Pacific students. My school has recently joined the HSA. I have witnessed the initial stages of setting up the HSA to what it is now after four years. I am one of the science/ chemistry teachers part of the HSA mentoring and tutorials that are run weekly and extra ones as needed closer to exams and internals. This involvement has catalysed my interest in researching the students' experiences in the HSA programme.

**Overview**

The number of Māori and Pacific people employed in the health sector does not represent the population it serves. As the percentages of Māori and Pacific peoples employed in the health sector is lower than ideal, practicing cultural responsiveness towards all patients may have been impacted. Having a more responsive sector, may lead to better health outcomes as patients may

attend follow up appointments, take early symptoms seriously and seek medical help at early stages more comfortably.

More Māori and Pacific people are needed in the health sector. As mentioned earlier, policies and organisations are in place to increase the number of Māori and Pacific workers. The HSA works as a pipeline that introduces students to the different career opportunities available. The HSA aims to raise academic achievement by supporting Pacific students with tutorials and mentoring. These interventions are in place to ensure that more Pacific peoples are successful in science subjects and can proceed to careers in science.

The aim of this research project is to examine the experiences of Pacific students that are part of the HSA. The aspects that work well for these Pacific students can be highlighted and the aspects that need to be improved on can be identified and focussed on.

**Structure of the dissertation**

Chapter one introduces the following research question along with the importance of undertaking this study.

1. What do the students who are part of the HSA find helpful in supporting their learning in science?
2. What are the recommendations that could be implemented to support future students in the HSA programme?

Chapter two discusses the relevant literature. Initially, the science education system of New Zealand is described, highlighting the current state of science including the engagement and motivation towards learning science. Furthermore, discussing the identity and the importance of being able to see yourself in the science and science careers. The role of an educator and how practicing cultural responsiveness can improve students' academic progress. This includes the importance of having professional development that effectively encourages culturally responsive practices.

Chapter three highlights the method and the methodology used for this research. The use of qualitative methods to collect, analyse and interpret data is outlined. The use of focus groups and thematic analysis is detailed along with the ethical considerations that were undertaken in this research.

Chapter four includes the details of the findings from this research. The findings from both focus group sessions are described and analysed using the thematic process.

Chapter five discusses the findings of this study and links it to literature. The findings are discussed in relation to the research questions and the aim of this study which is to explore the experiences of Pacific students who are part of the HSA programme.

Chapter six includes the final comments about this research, concluding the findings and the relevant literature. The limitations of this research are described and suggestions for future research are outlined. Recommendations for schools and educators of Pacific students is also summarised.

# CHAPTER TWO: Literature Review

## Introduction

This chapter focuses on the literature on science education and Pacific peoples. Previous research done in this area is being used to inform this research.

## Science in New Zealand

Science, Technology, Engineering and Mathematics (STEM) education is given much importance in the New Zealand curriculum. The curriculum clearly states the expectations of science education. Science education is compulsory up to year ten across the country, but some schools have year 11 (NCEA level one science) compulsory as well (Bolstad & Hipkins, 2005; Ministry of Education, 2007).

Science teaching and learning has changed over decades (Te Ihuwaka Education Evaluation Centre, 2021). Rather than just focusing on siloed science areas such as chemistry and biology, the current focus for educators is STEM. STEM is where Science, Technology, Engineering and Math or a combination thereof are explored in an interdisciplinary manner. The reason for focusing on STEM education in schools is to mitigate the risk of having insufficient workers in STEM careers (Tātai Aho Rau Core Education, 2023). The five science capabilities, introduced in 2014, are future focused and aim to create responsible global citizens. These capabilities include gathering and interpreting data, using and critiquing evidence, interpreting representations, and engaging with science (Te Ihuwaka Education Evaluation Centre, 2021). It is important that young people are able to confidently make decisions that require scientific understanding (Dunne & Pike, 2011).

School science has the responsibility of raising awareness about science, and also creating more scientists for the future (Tytler & Osbourne, 2011). Science education in schools is seen as the starting point of creating these scientists. Hence, it is important for the subject 'Science' to flourish in schools, so that students can move up into tertiary sciences and then into science careers.

## The current state of science

The aim of science education is for "students to explore how both the natural physical world and science itself work so they can participate as critical, informed, and responsible citizens in a society in which science plays a significant role" (Ministry of Education, 2007, p. 17). However, not all students are meeting these expectations. It is clear from international and

national studies that student engagement and achievement in science is declining (Martin et al., 2020). For example, data from Programme for International Student Assessment (PISA) shows that the average achievement of New Zealand students is higher than the OECD average. However, there is a decline in scores when comparing the 2018 data to the 2009 data (Te Ihuwaka Education Evaluation Centre, 2021). This trend is also seen in the Trends in International Mathematics and Science Study (TIMSS) data where students in year five were placed 24th out of 54 countries showing no improvement for year fives since 1994 and a decline in science achievement for year nines (Te Ihuwaka Education Evaluation Centre, 2021). Adding onto the trend, according to NMSSA (National Monitoring Study of Student Achievement) a decline in confidence and attitude towards science is evident between years four to eight (Martin et al., 2020).

**Number of students in secondary school science**

There is a decline in the engagement and motivation towards science as students' progress through intermediate to secondary school. It is suggested that attitudes towards science is mostly established by 14 years of age (Tytler & Osbourne, 2011). Studies show that at age 14, 20% of students reported they did not enjoy science. Later, by the age of 16, the numbers had increased to 25% of students not enjoying science (Martin et al., 2020). Evidence suggests that there are lower levels of engagement for females and minority students (Martin et al., 2020). Similar trends can be seen in the work sector as well, where females and minority groups such as Māori and Pacific peoples are underrepresented (Mostafa, 2019; Ratima et al., 2007). The gender gap in science education is evident by the age of 15 (Mostafa, 2019).

The decline in the number of students taking secondary science have led to less students taking tertiary science courses. This is an issue as there are not enough health professionals to serve the population (McAllister, Naepi, Wilson, et al., 2022; Ratima et al., 2007). Māori and Pacific peoples are underrepresented in the health sector. More students need to succeed at tertiary science courses to raise the number of healthcare workers. To get in tertiary science courses, students need to succeed in secondary science. Hence, the attempt by Te Whatu Ora to create a 'pipeline' of Pacific healthcare workers (Middleton et al., 2019). However, larger scale changes are needed to ensure all learners are given multiple opportunities to learn and deepen their understanding of science (Aitken & Wood, 2023). Students are more likely to choose science subjects and science related careers if they can see themselves succeeding in science (Dunne & Pike, 2011).

**Identity – seeing yourself in science.**

This section outlines the identity of Pacific peoples and how identity can affect career choices. The perception of achievement in science is also discussed.

The term 'Pasifika' is commonly used in Aotearoa. For this research, I have opted to use the phrase 'Pacific people'. The term Pasifika is used as an umbrella term that includes people from all Pacific Island countries in the Pacific Ocean. The 60+ Pacific Island countries include the Cook Islands, Fiji, Kiribati, Nauru, Niue, Rotuma, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and many more Island countries, geographically speaking even New Zealand is a Pacific island country (Foster & West, 2023). The major groups present in the student population of Aotearoa are Samoan, Tongan, Niuean, Cook Island, Tokelauan, Tuvaluan, and Fijian (Spiller, 2012).

"I didn't realise I was a Pasifika person or an Islander until I arrived at the airport in Mangere, before that I was a Samoan!" (Schuster, 2008, p. 12). This quote suggests that people living in Pacific Islands do not label themselves with any of these umbrella terms. Pacific peoples identify themselves with the Island nation they originate from (Spiller, 2012). The diversity of Pacific peoples is acknowledged in the Ministry of Education (2020), Pacific Action plan 2020-2030 and its predecessors. These groups are not homogenous, they may share values but their history, cultural practices, languages are all different. Hence the term 'Pasifika' or other alike terms cannot be used to refer to a single ethnicity, nationality, gender, language or culture (Ministry of Education, 2020; Spiller, 2012). For this research, Pacific peoples are those that are from Pacific Island countries and originate from outside of New Zealand.

Many Pacific peoples have immigrated to New Zealand for better education and work opportunities (Barrington et al., 1987; Spiller, 2012). For many Pacific peoples, education is their ticket out of poverty or their current socioeconomic status (McAllister, Naepi, Walker, et al., 2022; Theodore et al., 2018). Better education means better jobs that pay well and in return their socio-economic status in their community rises (McAllister, Naepi, Wilson, et al., 2022; Spiller, 2012; Theodore et al., 2018).

While education is more accessible in New Zealand, there is a longstanding issue with the underachievement of Māori and Pacific students compared to other ethnicities (Hipkins & Waiti, 2002; Sharma & Hamilton, 2018). This trend of not achieving in parity with other students is also evident in science (Middleton et al., 2019; Sharma & Hamilton, 2018; Vivili,

2022). According to Spiller (2012), there are three main reasons for Pacific students underachieving:

1) Deficit theorising by teachers.
2) Teachers not understanding Pacific students' identity.
3) Lack of effective pedagogy –this includes building strong relationships.

Students' self – efficacy and self-belief are strengthened with achievement. Those that attain better grades in science have a higher possibility of having positive science identities and are more confident when choosing science (Dunne & Pike, 2011).

This continued underachievement has implications as low achieving students may not be allowed to progress through the science courses. According to Bolstad and Hipkins (2008), it is important that students are not eliminated too early from science and enough opportunity is given to encourage students to stay in science. Often, students do not realise the effect of not taking a science subject until they are making a career choice. Hence, the link between subjects and career options must be made explicit within lessons and during meetings with careers advisors (Bolstad & Hipkins, 2008; Elsom & Munro, 2000).

The range of career options available to students now is greater than the past. Career choices are informed by the interactions students have with their family, teachers, peers and organisations they network with every day (Bolstad & Hipkins, 2008). While there are many factors that affect career choices, this study will focus on factors that may influence students to continue studying post-compulsory science at secondary school and their trajectory to tertiary studies in heath science careers. As noted earlier in the Science in New Zealand section, students' attitudes towards science are developed between years four to eight (ages 8 to 12) (Martin et al., 2020; Tytler & Osbourne, 2011). Assessments can transform the identity of students. When students have favourable results in assessments, they are more likely to form a positive identity related to the subject and continue with that subject (Cowie, 2013). Therefore, ensuring that students have positive experiences in science before the age of 14 (year 10) may encourage them to take science in upper secondary school, form positive science identities and see themselves in science-based careers (Bolstad & Hipkins, 2008; Tytler & Osbourne, 2011).

Continuing with science subjects until the end of secondary education does not mean the student is going to take tertiary science or choose a science career. Often, students enjoy science but they do not see it as financially rewarding (Bolstad & Hipkins, 2008). However, those that

are interested in pursuing a science career tend to be more inclined towards traditional careers eg, medicine, dentistry and veterinary sciences (Bolstad & Hipkins, 2008). One of the recommendations stated by Tytler in Bolstad and Hipkins (2008), was that students must get opportunities to learn about career opportunities available. Therefore, providing information about careers and how individuals can contribute to society can make a difference. For example, the trips with the HSA can show students another perspective and broaden their knowledge on healthcare careers (Middleton et al., 2019).

Raising student achievement is crucial. Several factors can increase achievement in science (Vivili, 2022). One of the factors is career awareness as it allows students to learn about the opportunities available, their interest and participation in science subject is enhanced, allowing for self-motivation towards science (Bolstad & Hipkins, 2008). According to Vivili (2022), the students thought more explanation by the teacher, group work, fear of failing and desire for more 'caring teachers', hands on activities and practical investigations were factors that could increase achievement in science. However, they also recognised that learning the theory before engaging in practical investigations made the purpose of the activity clearer, providing long term motivation (Vivili, 2022). This aligns with Abraham (2009) who cautioned that while practical and experiments can be engaging, they do not stimulate long term motivation unless equipped with learning of theories and explanations behind it (Vivili, 2022).

Another way to enhance achievement and by extension optimise their science career trajectory is by structuring discussions in small groups. Students reported that they were more comfortable sharing their ideas with their peers compared to their teachers. Students did not mind having whole class discussions. However, they preferred working in smaller groups as there was reduced fear about being wrong and students shared their ideas much openly. In smaller groups, the students were also able to explain and share their ideas in their native languages which made it easy for the students to share, explain and understand the concepts (Chand et al., 2021). Additionally, seeing a task performed by a friend may raise their physiological/ emotional state of mind and help them become more ready to attempt similar tasks (Vivili, 2022).

Pacific students did not like to question their teachers about 'how' they are being taught because of the cultural perception that teachers and schools are correct and are in charge of the classroom (Chand et al., 2021; Spiller, 2012). However, students enjoy subjects more where there is autonomy, where they are involved in the decision making processes and can choose

what and how they want to learn (Dunne & Pike, 2011). This is more possible with subjects that are loosely structured with minimal time limits or assessments (Zohar, 2007, as cited in Dunne & Pike, 2011). Students and their needs and interests must be considered when planning for lessons.

Another factor that can improve achievement is the acknowledgement of cultural identity (Vivili, 2022). The Pacific students in Chand et al.'s (2021) study reported they learned better i.e., were more engaged when the teachers acknowledged their cultural identity. The author surmised that this led to a better relationship with their teachers as students were more confident with asking for help and support from teachers that cared. Teachers can make a difference with the way the students see themselves. When the students experiences are positive and perspectives are validated, their sense of belonging is enhanced which can improve achievement levels (Vivili, 2022).

Students' experiences can be enhanced when content is related to their daily lives. Lessons make more sense when ideas are relevant. Students felt they were learning something important and therefore were more engaged (Chand et al., 2021; Vivili, 2022) When learning is related to current issues, the students can relate to it at different levels. Learning about current issues stimulates curiosity and motivation for learning (Chand et al., 2021). For example, in Chand's et al (2021) study, students found science in New Zealand harder to understand than in Fiji, because in Fiji the teachers related the content to their daily life.

There needs to be a transformation in the ways in which science is taught in schools. Current issues that affect humanity can be used to inform and guide the lessons. Such scenarios can help students see the usefulness of science subjects and science careers (Bolstad & Hipkins, 2008). Choosing science or knowing the importance of science subjects and being able to make that link between science and careers may not be apparent at a young age. Hence, the teachers need to guide the students. Teachers need to make explicit links to the current world where students can see the relevance of science (Elsom & Munro, 2000). To effectively support the students, the teachers must be aware and prepared to incorporate diversity into their lessons. The following section looks at how an educator can embrace diversity and support learning.

**Educators' role in a student's academic success – how can educators make a difference?**

In this section, the important role of an educator and how it affects a Pacific student is explored. I will examine this under the themes of diversity in education, professional development, cultural responsiveness, and relationships that support students' academic progress.

### a) Diversity in education

New Zealand is becoming more culturally diverse. The student population has diversified due to immigration however, limited diversity is evident in the teacher population. It is important the teacher population represents these culturally diverse learners (Hargraves, 2022). The 2018 census statistics showed, 70.2% of New Zealand population identified as European, 16.5% Māori, 8.1% Pacific peoples, 15.1% Asian, 1.5% MELAA and 1.2% of other ethnicity (StatsNZ, 2020). In contrast, 73% percent of the teacher population identifies as European and 4% as Pacific people (Education counts, 2021). One way to diversify the teacher population is by encouraging more Māori and Pacific peoples into the teaching profession. There are courses that provide training for secondary teachers, however, none of them specialise in Māori or Pacific education (Teaching Council of Aotearoa New Zealand, 2023). Incentives must be put into place to encourage more Māori and Pacific peoples in teaching secondary schools, especially in the STEM subject areas.

### b) Professional development, cultural responsiveness, and relationships

In this section, the importance of professional development, cultural responsiveness and how it fosters positive relationships are discussed.

Professional development can be used to support existing teachers to improve their practice and can influence student achievement. Professional development includes educating, re-educating, and developing teachers. Teachers are considered to have a major effect on student achievement (Meissel et al., 2016). Professional development opportunities can include, reflection, group discussions, workshops, seminars, coaching, collaboration, and higher education study. Professional development equips and instils confidence in teachers to use different strategies that can work for students with different capabilities (Meissel et al., 2016). Active and ongoing professional development needs to be in place to ensure that teachers are constantly supported and resourced so they have confidence in teaching science whilst practicing cultural responsiveness (Bolstad & Hipkins, 2008).

For professional development to be effective, it must motivate the teachers and encourage them to change their practice to suit their students' needs (Hynds & McDonald, 2010). The motivating factors for teachers include self-respect, responsibility, and sense of accomplishment in their classrooms. Other influences include the sense of autonomy, collegiality, professional development opportunities, support from people in authority (e.g.,

principal), parental support, networking opportunities, salary improvement and career opportunities with higher education (Hynds & McDonald, 2010). Another important point raised by Hynds and McDonald (2010) is that an awareness around the underachievement of Māori and Pacific students coupled with a sense of social justice may inspire practice change in the hope that more equitable outcomes may be achieved.

The purpose of the professional development must be clearly backed with relevant information to ensure that teachers understand the importance of it. There is a clear need for professional development to support cultural awareness. However, there are limited professional development opportunities available; especially in subject specific contexts (Hynds & McDonald, 2010; Schuster, 2008). Pertinent professional development can enhance teacher awareness around ethnicity and cultural diversity. Becoming culturally aware may guide teachers to develop better relationships with students, and cater to their learning needs, which can enhance their academic achievement (Chand et al., 2021; Spiller, 2012).

There is a need for culturally appropriate resources as fear of offending students has led to hesitation from the teachers side to touch any issue that might have a cultural significance (Hipkins & Waiti, 2002). Providing adaptable resources and training to use them may encourage teacher confidence to deliver content through a cultural context (Chand et al, 2021). This may make lessons more interesting and culturally relatable.

Teachers who are culturally competent and appreciate the uniqueness of a person may be able to influence students to appreciate and respect each other's cultural capital (Ministry of Education, 2020). Culture can be incorporated as a way of delivering content. There are subjects/topics where it is hard to incorporate culture which can lead to content being delivered in mainstream ways which may not always suit the Pacific learners, leading to disengagement and lower achievement rates. Other ways of delivering content in a more culturally competent manner must be explored by professionals. Policies and documents such as the Tapasā and The Action Plan are resources that provide generic suggestions however, subject, age and location specific resources would be better appreciated by the schools and teachers (Averill & Rimoni, 2021; Hargraves, 2022).

An assumption mentioned by Schuster (2008, p, 10) is "the best people to provide services to Pasifika children have to be Pasifika". Cultural responsiveness is not just about learning about other cultures. There is a need for supportive teachers who are aware of the challenges that Pacific students go through and appreciate the cultural capital students bring in along with

accepting ideas and multiple ways of thinking and learning (McAllister, Naepi, Walker, et al., 2022; Schuster, 2008). Teachers need to teach from their heart, rather than just think of it as their duty or obligation. Teachers who teach from their heart are usually more secure in their identity and able to encourage others to bring in their cultural identity (Siope, 2011). Further clarified by Schuster (2008), cultural responsiveness includes consideration for your own identity and "just remember to bring yourself as well" (Schuster, 2008, p. 12).

One way to ensure that students are learning is through making lessons relatable to students (Spiller, 2012). Teachers may struggle with making lessons relevant when lessons are guided mostly by assessment pressures. This may reduce engagement in class (Dunne & Pike, 2011; Elsom & Munro, 2000). When the students are engaged, they behave better and may get better results. Behaviour and engagement are interlinked. Positive relationship between the highly engagement and high achieving was seen. The more engaged a student is, the better grades they get (Martin et al., 2020).

According to Spiller (2012) engaged and on task behaviour may look like the following:

- Entering classroom excitedly.
- Asking questions about the lesson – the teacher answers the questions.
- Lesson includes powerpoints/ videos.
- Discussion on life experiences.
- Noise, but the talk is mostly about the task.
- Students wanted to contribute and express their opinions.

Cognitive engagement is essential for learning to take place. Cognitive engagement refers to the students interest in learning activities with effort to engage in learning (Pietarinen et al., 2014). Behaviour such as entering classroom noisily and excitedly are considered inappropriate and have consequences (e.g., detentions). This can lower their interest and engagement (Hirsh & Segolsson, 2021). Teachers acknowledged Pacific students learnt best when in groups. Oral, hands-on and interactive activities aided learning (Chand et al., 2021; Spiller, 2012). However teachers resorted to traditional teaching styles that included word finds, repetitive task, worksheets and chalk and talk (Spiller, 2012). Therefore, there is a need for teachers to change their approaches to suit their students. Teachers acknowledged that students were more involved in their learning process when the tasks were engaging, challenging, and interactive. Often, teachers do not want to employ these practices because, the noise levels can be high in these scenarios and they prefer a quieter classroom (Spiller, 2012).

Better student - teacher relationships are needed so that teachers understand what the student needs and what can be done to optimise their learning. Teachers can make a difference for the Pacific learners. However, teachers must be well informed and confident about the cultures and experiences that students bring into classroom. A positive student- teacher relationship may benefit the learner where optimising achievement is the common goal which can be achieved with enough support and mutual respect for the cultural capital that both parties bring in (Porter-Samuels, 2013).

Forming productive relationships with the parents of Pacific students is a crucial factor in supporting Pacific students' academic success. As stated in the New Zealand curriculum, "learning cannot be separated from its social and cultural context" (Ministry of education, 2007, p. 34). Schools must work on building relationships with the wider school community (mainly parents and caregivers) as they can also advance students learning and achievement (Ministry of Education, 2007). As shown in the Action Plan for Pacific Education 2020-2030 (2020), parents are interested in learning about subject choices, assessments such as NCEA and work experience opportunities. Therefore, information evenings may help them understand and ask questions regarding their child's career choices. A student from Lower Hutt in 2018 fono said, "It's about my parents and family being included in my education. It must be a safe place otherwise I won't bring my parents or family in" (Ministry of Education, 2020, p. 34). The student identified that their parents must feel safe enough to make contributions and be part of conversations. This again highlights the fact that relationships are held of great importance. The cultural capital that students and their families bring into the school community must be appreciated, given importance, and accepted as real knowledge (Chand et al., 2021; Ministry of Education, 2007, 2020). Stronger relationships between the three (school/teachers, learners, and parents/family) correspond to academic success (Chand et al., 2021; Ministry of Education, 2020; Spiller, 2012).

There are certain things that the school can do to strengthen that relationship. As per the Action Plan for Pacific Education 2020-2030 (2020) feedback from families clearly showed that families like getting involved in the decision making or planning for their children. Especially, in terms of subject choices or work experience opportunities. Involving the community in the formulation and feedback process for this policy is a way in which the government has shown its commitment on establishing and maintaining the vā (space between), in particular vā

fealoa'i (social relations) where the connection between people is given more meaning and importance (Anae, 2010).

Pacific parents want their children to do well at school and attain qualifications that take them towards a brighter better future. However, the misinterpretation seems to be on 'how' parents can support their child's learning (Spiller, 2012). Parents equate being respectful as an indicator of achievement (Spiller, 2012). Parents rate education highly and have high expectation of their children. These Pacific students may be the first ones to go to university and are role models for younger family members. Since parents and other family members have not experienced university and its pressures themselves, they are often not aware of how to support their children through university (Theodore et al., 2018). Parents fully trust schools and teachers and may not challenge their decisions (Spiller, 2012). Teachers may lower their expectations (shown by giving easier tasks, simple instructions or accepting minimal work) and the parents accept their children are not capable and do not question teachers about their child's capabilities. Parents blame students for underachievement while teachers blame it on the Pacific values and deficits (Hargraves, 2018; Spiller, 2012).

The lack of cultural responsiveness is not limited to secondary school science. Low numbers of Māori and Pacific students enrol into natural and physical science courses at university, and proceed to honours and post graduate level courses. In terms of academics in New Zealand universities, less than 4% are Māori and less than 1% identify as Pacific people (McAllister, Naepi, Walker, et al., 2022).

The emotional support given by family is a factor contributing towards academic success (Theodore et al., 2018). Educators need to understand the importance of family support for Pacific learners, rather than viewing it as a limiting factor (McAllister, Naepi, Wilson, et al., 2022). Pacific learners constantly put in effort to make their elders proud and support their younger ones. These expectations come from parents, family members and the wider community. For some tertiary students, being the role model for their children, or other younger family members provides an incentive to continue with their studies. Family expectation is highly valued and therefore works as an extrinsic motivation factor that keeps these students encouraged (Ministry for Pacific Peoples, 2022b).

**Academic success and careers**

This section looks at the importance of academic success and how it influences career choices. Academic success is linked to better job opportunities and better earnings. Those that are higher

up on the academic ladder generally earn better than those that did not have the privilege of attending university or other professional training courses (Mahoney 2014). In comparison to the overall population, Pacific peoples are more likely to be unemployed or have lower annual household income. Pacific people were almost twice as likely to be unemployed during COVID-19 outbreaks than the rest of the population (Ministry for Pacific Peoples, 2022a; Ministry of Business Innovation & Employment, 2021). From an immigrant parents' point of view the second and third generation Pacific students are perceived to be privileged as they are studying in an overseas country. Many parents moved for better educational opportunities for their children. Parents do not want their children to work in low-income factory jobs. Good education can help their children escape low income jobs (Siope, 2011). In some instances, the experience of being poor motivates students to do well academically. For many, academic success is the only way of getting out of that financial state hence the desire to succeed academically and find a good job (Theodore et al., 2018).

Mentoring groups are becoming more popular as the role of a mentor teacher is recognised and developed. Previous, known the 'form teacher', the role was focused on pastoral aspects such as attendance and uniform checks etc. However, as the role evolved to the position of 'mentor teacher', the role demanded teachers establish positive relationships with their mentees (Moehricke, 2022). Mentors support students through their school journey by helping them plan for assessments, find revision techniques that work for them, help with time management, subject and career choices and in the senior years, help with the university and scholarship applications etc (Middleton et al., 2019).

In the HSA, the mentor teacher is highly likely to be a science teacher. Hence, they can help students during mentor time as well as with their science homework, revision or choosing science courses or careers. When the mentor is a science teacher, then the mentoring sessions can also be used for tutorials.

Tutorials have been an integral part of the HSA (Middleton et al., 2019). Tutorials provide the students with an opportunity to ask questions and clarify their doubts. The effectiveness of these tutorials is based on how they are integrated into a course. Tutorials must be carefully planned and integrated into a course so that it supports learning, rather than just being an extra task or a tick box aspect. It is important that the teachers/ tutors establish the aim of the tutorials to ensure effectiveness (Louw, 2018). At the same time, the tutorial sessions must be a safe and comfortable space for the students to be able to ask questions without the fear of being judged

(Anderson, 1997). Effective tutoring can enhance academic results (Menard et al., 2015). Within the HSA, tutorials have been an important component and may have been a contributing factor towards academic success as shown in tables two and three (Counties Manukau Health, 2023; Middleton et al., 2019).

The range of careers available in STEM and healthcare is vast, however there is not enough awareness around these careers (Bolstad & Hipkins, 2008). Teachers are constantly trying to prepare the students for careers that are ever changing and for new opportunities. Hence, teachers must obtain enough knowledge about STEM related careers and use these as examples in their lessons to encourage and motivate students (Bolstad & Hipkins, 2008).

Another important way to support students' academic success and health science trajectories is to ensure students receive adequate career guidance. This should include information about the profession, and study pathway needed to achieve their goals. Adequate information should be provided to the students and their parents and applications be reviewed by liaisons and university mentors to ensure students are taking relevant courses. This would mitigate students changing courses one-two years into a degree when they realise that a particular course or career is not suited for them (Theodore et al., 2018).

Generally, for Pacific students to flourish academically, we need teachers that can support them. The teachers must practice culturally responsive pedagogies, and this will happen if the teachers are confident and supported enough to practice cultural responsiveness. Teachers must be encouraged, supported, and have access to resources, to practice cultural responsiveness with confidence. The teachers need to make explicit links to current scenarios and careers to ensure that students are aware of the career opportunities available and can work towards it in confidence.

**Additional responsibilities**

Another factor highlighted in the literature is the impact that additional responsibilities have on academic achievement. These responsibilities will be further explored under family and attendance, financial pressure, church and community work, sports and females' responsibilities.

a) **Family and attendance**

One factor that impacts students' learning is their responsibility towards family in the islands. Even though many of the Pacific students are born in New Zealand, they have strong connections with the family back home (Ministry of Education, 2020). During family celebrations or emergencies, students are expected to accompany their parents to their ancestral village / island home (Baker et al., 2021; Hawk & Hill, 1996). Since the student is away for extended periods of time, they miss a lot of school. Attendance is a key driver in achievement. Even missing out on two days of schooling can affect achievement (Education Review Office, 2023a). Regular school attendance of all New Zealand students has decreased. In 2011, 69% of the students had 90%+ attendance while in 2022 this has dropped down to 39% (Devine et al., 2023). While the pandemic has amplified this drop in attendance, the trend was there before the pandemic. Some changes need to be made to accommodate current students and their situations (Devine et al., 2023). The attendance for Māori and Pacific learners has decreased at a faster rate than Pakeha or Asian students (Education Review Office, 2023a). This is concerning, as academic success is linked to higher attendance (Education Review Office, 2023).

Although, attendance for both Māori and Pacific students is lower than other ethnicities, parents do value schools and attendance and are less likely to keep their children out of school for activities such as sports and holidays. On the other hand, the Māori students and parents are more likely to prioritise family or community commitments. These may include cultural events and looking after family members (Education Review Office, 2023a). Low and unexplained attendance for extended periods of time occur when the students are, as stated by a teacher in Hawk and Hill's study (1996, p. 72) "taken over to the Islands on family matters but there is no notification to the school". Students are expected to catchup when they return after weeks away, which may affect the wellbeing of Pacific students (Hawkes, 2023). Balancing individual and communal interests is something that Pacific peoples have to navigate more often than Pakeha / European children (Hawkes, 2023). As stated earlier, Pacific parents want to support their children's' learning but may not be aware of how to do that (Spiller, 2012). Since, church is such a huge part of a Pacific person's life, the churches could be a place that encourage and equip parents and whanau on how to support their children. This includes supporting better attendance (Hawk & Hill, 1996).

**b) Financial pressure**

Economical inequalities in Pacific families may impact student's learning. Pacific students may have responsibilities that affect their achievement. For example, "sometimes these kids are

breadwinners. Some start after school and work up to midnight. Parents say education is important but that is saying that money for the family is more important" (Hawk & Hill, 1996, p. 70). Sometimes, the older siblings help the family financially through their part time jobs (Siope, 2011). Hawk and Hill (1996) also mentioned, sometimes older siblings were expected to stay at home or come back home during the day to look after the younger siblings so parents could work.

This situation amplified during COVID-19 when many parents lost their jobs and students had to step up and support their families financially (Fagaiava-Muller, 2020). The pressure to financially help at home is the biggest contributor towards Pacific students dropping out. Economic inequities are forcing Pacific students to work when they should be at school (Hawkes, 2023). Activities at school that require payments may increase financial pressures on families (Baker et al., 2021). Parents need to manage and prioritise their finances so that they have enough money for their family's needs, which may include supporting the extended family and church obligations. The trips that the HSA students go to are all paid for which reduces the financial pressure on parents (Middleton et al., 2019).

### c) Church and community work

Church and religious commitments are an important pillar in most Pacific people's lives. Going to church is seen as a way of serving family (Hawkes, 2023). Commitment and duty towards family comes before everything else. Family is the most important thing for the first-generation immigrants while the second and third generation also acknowledge personal goals and satisfaction. These include academic, career or financials goals (Hawkes, 2023).

For parents, taking their children to church is also important, as it provides an opportunity for parents to ensure that the cultural identity of their children is enhanced as churches usually practice island customs and traditions, this includes the usage of island languages. Their island language is freely spoken enhancing cultural identities and knowledge and traditions that can be passed on to future generations (Siope, 2011). Students come back home late at night and are too tired to do their schoolwork. As teenagers, they must follow what their parents decide. Parents may give time to study in later years of school, but only given closer to examinations. The parents need to understand that time needs to be given all year around and in early years of learning as well. While parents say they value education, they do not set aside time for children to complete their homework (Hawk & Hill, 1996). Sometimes family, church, sport,

music may take precedence over education. The parents do not realise that students need time at home as well to complete homework, to revise and consolidate their learning. Instead, the students are expected to take part in sport or have church commitments on weekends and week nights (Siope, 2011).

**d) Sports**

Although faith and family are above sport, sport is seen as a way to serve family and God (Hawkes, 2023). When God has given a talent and skill, using that on the field is a way of thanking God and sport brings joy to the spectators so that is serving other people. Hence, in sport such as rugby, Pacific peoples are overrepresented as it is seen as an act of service towards God and the community. It is one of the factors that helps in maintaining the vā between individuals, families, communities and God (Hawkes, 2023).

Sport is seen as a pathway to success. While education is important, the males may be influenced by their peer groups to hold non-academic ways of maintaining prestige. This is mainly due to previous success in sport careers (Fairbairn-Dunlop, 2010). There are role models of Pacific origin who have made money and brought fame to their family and country through sport. However, when it comes to other professions, very few role models can be seen. Since sport professionals generally are well paid, it is easier to support family (Hawkes, 2023).

Females have less pressure than males to do well in sports (Hawkes, 2023). An increase in awareness around health issues is observed which led many females to join and continue in sport. Women also encourage men to stay fit and healthy. Statistics show that Pacific peoples are over represented in issues such as diabetes, obesity and heart diseases (Siope, 2011). This increase in awareness has encouraged people to play sport to stay healthy as well. The women are often in-charge of when what the family eats and the activities that the family member take part in (Hawkes, 2023).

**e) Females' responsibility**

There are additional responsibilities for Pacific females, as they are expected to tend to the family, in the absence of the elder females of the family. For example, a student said in Hawk and Hill's (1996) study, "we do dishes, vacuuming, cleaning, cooking, laundry and minding children and we do it every day. Girls have a harder time. My brother thinks he is "King"" (p.68). The parents may also have a very gender specific and conservative approach when it comes to choosing careers (Hawk & Hill, 1996). According to Fairbairn- Dunlop (2012),

females show better achievement than males at secondary and tertiary level. The author argued that while parents allow males to go out, the females are more likely to stay home and tend to the household, this often allows the females to find time in between for schoolwork, keeping them more up-to-date with their homework and revision (Fairbairn-Dunlop, 2010).

Most research homogenises their findings. A literature review done for the Ministry for Education claimed that the Pacific male voice in research was "silent" as the majority of research was done with female participants only (Ferguson et al., 2008). Further research is needed to determine how the responsibilities of the males and females are different and how it affects academic success at secondary school level.

**Summary**

Literature suggests that Pacific students are overrepresented in the underachievement statistics in New Zealand and achievement in science is no different. The number of students choosing to do science in secondary schools and at tertiary level is decreasing. Possible reason for this decline could be that students are not able to see themselves succeeding in science or are not aware of the various career opportunities available. The teachers need to ensure that students are aware of career opportunities and practice cultural responsiveness to include students in lessons. Lessons could be made more relevant so that students see the relevance of science knowledge. Professional development must be in place to encourage and support teachers to practice cultural responsiveness and effectively portray the relevance of science knowledge related to current issues as well as career opportunities. The next chapter describes the method and the methodology used to undertake this research.

# CHAPTER THREE: Methodology

**Introduction:**

This chapter outlines the theoretical framework and the method used in this research. The procedure of selecting participants and how the collection and analysis of data took place is outlined. The ethical considerations that were taken when planning and doing the research are described. The limitations of this research are also discussed.

**Methodological framework**

The methodology includes the strategies and rationale of the research. It is important to consider methodology in the planning stages of a research as the purpose of the research will shape the design (Punch, 2009). The aim of this research is to document the experiences of Pacific HSA (Health Science Academy) students. The methods were carefully chosen to support the purpose of the research and suit the participants. It was essential for the method to be culturally appropriate for the Pacific students and the focus group dynamics.

**Theoretical position**

A research methodology is a toolkit that includes the way of thinking and the way of carrying out research. The purpose and position are two fundamental methodological concepts that inform the research design (Boyask, 2023). This includes the paradigm, practical methods of data collection, analysis, and ethics. The methodology must suit the purpose and position from which the research is done. The positional terms such as ontology and epistemology form the basis of a cohesively designed methodology that ensures consistency in researcher position (Boyask, 2023).

Ontology explores the nature of reality, with the researcher outlining their position (Boyask, 2023). I will be using a constructivist ontology, where there are multiple realities, where meaning is constructed socially through language (Savin-Baden & Major, 2013). In this case, knowledge will be constructed from the data the participants provide in the focus group sessions. It is the participants perceptions and their experiences that are contributing towards the construction of knowledge. Meaning will be constructed from the multiple perspectives that the participants provide in the focus group session.

Epistemology is the study of theories of knowledge. Epistemology concerns with the validity of knowledge and how knowledge can be created. This includes what it means to know and the relationship between the knower and the known (Scotland, 2012). The epistemological

assumption that I want to employ is phenomenology. Phenomenology states that the only source of true knowledge is the individual. There cannot be a universal truth as the experiences, perceptions and responses are all individually based. The findings from any research that uses phenomenology as their epistemology cannot be generalised therefore no remedy for an issue can be suggested. The research outcomes are situational, and any remedy suggested can potentially only be effective for the same situation. A change in any circumstance will lead to different outcomes, therefore a different solution to the issue (Doyle & Loveridge, 2023).

The reason for choosing phenomenology in this study is, the individuals are the true source of information. The participants are the only ones that can talk about their experiences of the academy. Data from these participants can unveil the potential of the academy and how it may be useful for schools with and without the HSA.

The worldview that closely fits my research is the interpretive paradigm as the participants' experiences were interpreted and accounted for (Benade, 2023). The data acquired here is highly personalized, it takes everyone's thinking, experiences, and feelings into account which provides a chance for data analysis to be descriptive and in - depth. Reality is constructed individually and as part of the focus group so the interpretive paradigm does not question it, rather it accepts the truths from each participant and the researcher constructs their own reality based on the participants responses (Scotland, 2012). Any suggestions the students recommend for the HSA will be reported and can be used by the HSA schools to improve their programmes.

Qualitative research heavily concentrates on studying human behaviour and social life in natural settings. This has been greatly used in the education field as it is a rich and complex way of analysis. It takes account of multiple perspectives and practices (Punch, 2009). For this research, working under the qualitative paradigm was better as it gave the research more clarity and ability to capture the essence of the student's experiences.

**Method for generating data**

The decision was made to use focus groups (Cohen et al.,) as the main method for generating data. The use of talanoa (Vaioleti, 2006) was contemplated as the participants in this study identify as Pacific peoples. In this section, I will describe what focus groups are and why I chose the approach. I will then outline what talanoa is and how I included aspects of talanoa in my study. I will discuss why talanoa was not used as my main data generation method.

Focus groups generally consists of a one-time meeting with people who share a common experience (Carey & Asbury, 2012). The participants interact with each other as well as the interviewer. This enables the participants to express their views and reduce the possibility of the researcher's agenda dominating the conversation. The conversation flows into a direction that gives the researcher a lead into the aspects of the topic that affects the students the most (Carey & Asbury, 2012).

The decision to have two focus groups from two different school was made to confirm the data. The focus group was not exclusive to those participating students due to its dynamics but rather a voice of all students of HSA programme. Focus groups worked effectively as the students all belonged to a group i.e., were of Pacific descent and part of the HSA programme.

In order to shape the discussion, it was important to stimulate discussion with questions (see appendix). Semi - structed questioning was used in this instance as this allows the "interviewee to articulate a fairly detailed response" (p. 426) and freedom to share their experience. Although both groups were asked the same questions, the order was different which is common in semi- structured interviews (Clark et al., 2021).

A focus group allows for participants to voice their opinions and concerns as a group (Cohen et al., 2018). This can be effective as not everyone is confident and having a group of people with similar experiences can allow the shy ones to voice their opinions. The details given by one participant often leads to another participant adding on to those details, making the whole process to flow with the interactions (Carey & Asbury, 2012). The deep collection of strongly held beliefs and perspectives are enhanced by the interactions. This also gives the participants a sense of belonging. The comparison of view leads to greater insights of the experiences shared by the students (Carey & Asbury, 2012).

Focus groups are economical in terms of time and may produce rich data. Even though they may generate less data than individual interviews or surveys (Cohen et al., 2018). The data collected from focus groups also can be used to develop common themes within that interview

and make links with other focus groups interviews on the same issue (Cohen et al., 2018). The data gathering processes became less time consuming as responses were collected and in a timely manner as a group. This worked perfectly as no response was repeated and everyone added onto what the other students had said previously.

The selection of the participants plays a significant role. Four to twelve participants are suggested for a focus group setting to work effectively (Cohen et al., 2018). The focus group becomes non-functional if the participants are intimidated during the interview. The same person answering all the questions or talking for most of the time is a possibility hence, the facilitator must ensure that other participants also get a chance to contribute (Cohen et al., 2018). In this instance a prompt sheet was also used to capture everyone's responses, and everyone was allowed time to contribute.

The other approach that I contemplated using in this study was talanoa. Talanoa is aligned with phenomenology as both focus on meaning making of participants lived experiences (Gremillion et al., 2021). It is a Tongan methodology based on "the notion of valuing cultural practices, identities and voice" (Oldehaver, 2018, p. 27). Talanoa research must include important cultural values such as Mo'oni (pure, real and authentic) and Māfana (warmth) (Gremillion et al., 2021). The value of talanoa is that it can be used to inform and shape research too as it creates an environment that is culturally appropriate for data collection with Pacific peoples (Vaioleti, 2006).

Talanoa is a collaborative method based on storytelling, where participants mainly converse face to face to discuss issues and exchange ideas (Vaioleti 2013). These might be through formal ways such as an interview or informally around a kava bowl (Chand et al., 2021; Vaioleti, 2006). There are at least eight possible talanoa research frameworks. These include talanoa vave, talanoa faikava, talanoa usu, talanoa tevolo, talanoa faka' eke' eke, pō talanoa, talanoa'i and tālanga (Gremillion et al., 2021; Vaioleti, 2013). For example, talanoa vave is when fast, brief or quick verbal conversation takes place when confirming or reconfirming of information (Vaioleti, 2013). Talanoa faka' eke' eke is a close form of interview and works effectively in a qualitative research approach. This is when the researcher directly asks questions and more questions are built based on the responses from the participants (Vaioleti, 2013). In faka' eke' eke, the researcher determines the direction of the talanoa session.

I used aspects of talanoa to underpin my focus group sessions. For example, at the start of the focus group session, I used talanoa vave to re-introduce the topic and outline my research aims. This ensured that the participants were clear about the expectations and there was no misunderstanding about the research process (Vaioleti, 2013). I confirmed their willingness to participate in the research and indicated that they could choose how and what they contributed to the conversation (Vaioleti, 2006; Vaioleti, 2016).

I used talanoa faka' eke' eke in our discussion. Initially I used a prompt sheet to guide the conversation, identify, uncover and understand the experiences of the HSA students (Vaioleti, 2013). However, the questions were not limited to those on the prompt sheet, as I asked more questions building on the participant's responses (Vaioleti, 2013). However, it is important to confirm their response using talanoa vave, to ensure there are no misunderstandings.

Although there are similarities between focus groups and talanoa in that they explore the lived experiences of the participants (Oldehaver, 2018), one cannot conflate both methodologies. The participants are Pacific students and understand the notion of talanoa as an 'everyday' term for discussion but are not aware of its complexity as a research methodology. As someone who has lived in the Pacific, I have an understanding of the process however I am not an expert at weaving talanoa into a research scenario. Therefore, I was not able to use the approach as my main method for data generation. However, I wanted to incorporate an underpinning methodology that created a warm and safe environment for the participants to share their stories. Therefore, used aspects of the approach in my focus group sessions. These included the use of talanoa vave at the start of the session to ensure all participants were aware of the expectations and were comfortable to share their experiences of HSA. This helped to propel and advance the conversation that ensured the revelation of their experiences and enhanced the talanoa faka' eke' eke (Oldehaver, 2018; Vaioleti, 2013).

**Selection of participants**

The focus of this research was to look at the experiences of Pacific students in the HSA in South and Central Auckland High schools.

**The recruitment process:**

The HSA programme was established by the Counties Manukau DHB, currently known as Te Whatu Ora Counties Manukau along with the philanthropic Tindall foundation in early 2010's (Middleton et al., 2019). There are 13 Auckland secondary schools with HSA. I initially started

by contacting two schools at a time. I stopped recruiting when two schools agreed to participate. While some schools declined the offer to participate, a central Auckland school and a South Auckland school opted in for this research.

When both the schools agreed to participate in the research, the HSA coordinator at each school was contacted and an information sheet with a consent form was sent to them. Once the HSA coordinator agreed to support the research a meeting was arranged. During the meeting, I explained the research to the coordinator, who then helped in recruiting the student participants. I delivered printed copies of the information sheets and consent forms for students and parents and gave a box where the signed consent forms from the students and parents could be collected. The coordinator explained the research to the students. They also distributed the information sheet and consent forms for students and parents. The signed consent forms were returned to a box at the student centre. At the end of the two-week period, the consent forms were collected from each school and a date was confirmed for a focus group session.

All participants were of Pacific descent and were year 13 females. They had been part of the HSA for more than two years. The participants were between 16-18 years of age and working towards NCEA level three. All participants were interested in science subjects and were planning to continue with science related tertiary qualification to get into a science related career. The students have all consented to be part of this research. The parents were also informed about the research and their consent was also taken to show that they allow their child to take part in the focus group research. There were two focus groups, one at each school with five female participants each. For ethical considerations, the names of both the schools and all participants will not be identified. Both schools remain anonymous and are referred to as 'school A' and 'school B' respectively.

School A is a central Auckland co-ed school with a roll of 1764 students and is a decile four school (Education Review Office, 2023b). Decile reflects the socioeconomic backgrounds of the students at a school. Decile one schools are the 10% of school with a the highest proportion of low socioeconomic community (Ministry of Education Te Tāhuhu O Te Mātauranga, 2023). School A started the HSA programme in 2021 and is one of the most recent ones to join. The HSA students are placed in a mentor class with a science teacher and in the same science class at year 11 and they later branch off into Chemistry, Biology, Physics and Earth and Space Science at year 12 and 13. At the end of year 10, Pacific students are encouraged to apply to be part of the HSA, and are recruited based on attendance, behaviour and academic success at

year 10. There are after school tutorials twice a week. Attendance at these tutorials is compulsory. There are other tutorials for all students, attendance is not compulsory, but the HSA students are encouraged to attend these tutorials too.

School B is a South Auckland co-ed school. They are a decile two school with 1554 students (Education Review Office, 2023). They established the HSA in 2020. The Pacific students at the end of year 10 are encouraged to apply to join the HSA for year 11. They are mostly recruited based on their interest in science subjects and science careers. At year 11, the students are all in the same class for Science, Math, and English. At year 12 and 13, the students must take at least two science subjects to be part of the HSA. Even at year 12 and 13, the students are put into the same classes for science. There is mentor class for year 11 and one with combined year 12 and 13. These students are supported by their mentor during their mentoring session where they meet for 100 minutes three times a week. This session is timetabled and falls within the day plan. At first, they did try to have extra tutorials which was outside of timetabled hours (i.e. before and after school) but the attendance to these tutorials was poor as they were not compulsory hence, the decision was made to have an extended mentoring session with the mentor teacher who is a science teacher. Having the mentoring/ tutorial session within a timetabled day meant that the attendance is compulsory.

Over the years, school B has had a decline in their HSA cohort as they progressed onto the next year level. This decline in numbers was mostly because of families moving or migration. Currently, the year 11 cohort has a full class, whereas year 12 and 13 students are combined for their mentoring time due to small numbers.

Table 4 shows how students are recruited into the HSA programme and how they are supported in their science studies. Data was obtained from students at both schools. This table will help to understand the different structures at each school and how they may impact student learning and health science identity.

**Table 4**

*Summary of Health Science Academy (HSA) at both schools.*

| | School A | School B |
|---|---|---|
| School joined HSA | 2021 | 2020 |

| | | |
|---|---|---|
| Advertisement of academy | The teacher in charge advertises the academy at assembly for year 10's. the purpose of the academy is clearly outlined. The students that are interested as asked to apply. The students are clearly told about the purpose of academy. | |
| Student involvement with the promotion of academy | - | The students help in the promotion by going to different year 10 classes to advertise the academy.<br><br>Current students sometimes also help with the application process. |
| Initial application steps | At the end of year 10. | |
| Criteria at schools | Pacific or Māori students (Pacific students are given 1st chance). | Pacific students only. |
| Academic achievement at year 10 | Reasonable results and interest in science/ healthcare related career. | |
| Mentoring (mentor class/ homeroom class) | Year 11- Same mentor and same science class with the HSA students only | Year 11- Same mentor and same science class with the HSA students only |
| | Year 11- mentor teacher is a science teacher.<br><br>Year 12 and 13 – different mentor teacher, different Science classes with all students | Year 12 and 13 – same mentor teacher carries on with the class, different science classes with all students.<br><br>Year 12 and 13 students in the same mentor class because of small numbers. |

| | | |
|---|---|---|
| | Year 12 and 13 – mentor teacher may or may not be a science teacher. | Mentor teacher is always a science teacher. |
| Science tutorial | Two after school compulsory tutorials, one hour each<br><br>Other tutorials for all students that are optional.<br><br>All tutorials are after school | Three hours of mentoring session per week which is sometimes used for tutorials.<br><br>The students need to approach their academy mentor teacher or subject teachers if they need support. |
| Science subjects | At least one | At least two |

**Collection of data**

Focus groups were used to collect data (Cohen et al., 2018). However, talanoa was used to inform the focus group by providing a culturally affirming environment for the participants to share their stories. The focus groups took place at the two participating schools during lunchtime. All data was collected within one focus group meeting.

On the day of the focus group, a prompt sheet (see appendix 12) was provided to the participants which allowed the students to think about the questions (see appendix 13) that guided the focus group session. The idea was to have a semi - structured conversation that would be guided by the questions given to the students on a prompt sheet. The students could note down their thoughts on the prompt sheet as they spoke about their experiences. The prompt sheets were collected at the end of the focus groups session and used as part of field notes (appendix 15). These aided the data analysis process.

During the meeting, the students spoke of their experiences of being a part of the HSA. In the form of field notes, I wrote my observations of the school and the participants in both instances in field notes. For both focus groups, the participants further elaborated on certain points once the recording had been concluded. Their comments were included in my field notes.

**Transcripts**

The focus groups session was audio recorded by the researcher to ensure that I did not miss out on any points that were discussed. The audio-file was transcribed by a professional transcriber. I went through the recording and transcript to ensure that it all matched and the transcript was accurate.

**Data analysis**

Data analysis involves the process of unpacking and repacking a data set while looking out for patterns (Joy et al., 2023). The data was influenced by the social interactions, cultural beliefs, customs, learning processes and multiple viewpoints of the participants (Lodico et al., 2010). To ensure that reliable and valid conclusions were drawn from the data it is crucial the analysis process is rigorous. Therefore, the audio recording and transcribed data was analysed repeatedly to ensure that nothing was missed out and the themes were properly identified.

All the data was processed using thematic analysis, where the data is analysed, and major themes are identified across participant reflections (Lodico et al., 2010).

Thematic analysis is a qualitative strategy that involves looking for themes and patterns. Thematic analysis is method that requires a researcher to have a thoughtful and deliberate analytic process, where various elements show integrity, connection and build upon each other (Braun & Clarke, 2021). Reflexive thematic analysis encourages the researcher to be transparent about their theoretical underpinnings that inform the research (Braun & Clarke, 2019). The phases of reflexive thematic analysis includes; familiarising, coding, generating themes, reviewing themes, refining themes and writing up (Joy et al., 2023). Themes are generated creatively through the data analysis process. The process requires active construction of themes as the researcher collects and analyses data. These themes are creatively, developed, generated, or created. The researcher is actively engaged with the analysis process (Braun & Clarke, 2019).

As I located myself as someone with Pacific connections and a teacher at a school with the HSA programme, it was essential to be reflective and constantly question my own position. Reflexive thematic analysis is more of a journey where the researcher keeps interrogating, unpacking, and repacking their data set. It requires the researcher to fully embrace their role in the research and reflect on what they as a researcher bring or not bring to data analysis (Joy et al., 2023).This process was chosen because it lines up well with interviews. It can be used to

address a wide range of questions, here the students were asked about their experiences of the HSA, future options, and their family life (Joy et al., 2023).

As the data was collected and analysed, I could see common and different outcomes from both focus groups. My field notes were also used to support the data generated by the focus group participants. This also ensured that data was not misinterpreted and reflected the data acquired. The prompt sheet allowed for the transcribed data to be confirmed.

Once the themes were identified, the data was broken down and placed in the 'baskets' of themes (Braun & Clarke, 2019). This is further elaborated in the data analysis section. To reduce the risk of having surface level/ underdeveloped themes, the themes were developed carefully. Scanning of data was done concisely and consciously. The themes were crossed checked with literature. This ensured that the findings made connections to literature as well as shed more light on it.

Creswell and Creswell (2018), advocate that it is important to "assess the accuracy of the findings as well as convince readers of that accuracy" (p. 200). They identify eight primary strategies, including identifying researcher bias including rich description, member checker, triangulating, presenting contrary information, peer review, spending prolonged time and external auditor (pp. 200-201). In this study data was triangulated from audio recording, prompt sheet and field notes and was confirmed with two focus groups. A rich description of the participants of their sights and settings was given. I described my bias and I member checked; I discussed the themes with my supervisor to attain whether they were apparent in the data (Creswell & Creswell, 2018). This ensured that the data did not lose its meaning and could be used for writing the analysis and discussion.

**Ethical considerations**

The ethical principles were considered in every step of this research. Approval was taken from Auckland University of Technology Ethics Committee (AUTEC) to ensure that the research design and procedures all the AUTEC standards. The Ethics application was accepted on the 6th of April 2023, AUTEC reference number is 23/66.

The information sheet and consent forms are attached in appendix 1.

**Limitations**

As the participants were from different countries, it was important that their cultural values and beliefs were all appropriately acknowledged and approached in an acceptable way. I would

have liked to use a Pacific methodology such as talanoa however, I do not have a deep understanding of the approach. Therefore, I decided to used focus groups as the main methodology with underpinnings of talanoa to support the participants culturally.

Finding a time when all students would be available for focus groups was difficult, therefore the choice of using a lunchtime was made. The students needed to be comfortable with the place where the focus group session was taking place, so their school was chosen for the session. The HSA coordinator had arranged the boardroom for the focus group session.

The session was recorded with the permission of all the students. I assured them that their identities would remain confidential, and they will not be identified in the reporting of the findings. The use of the prompt sheet allowed the students to write their thoughts while someone else was talking, and the shy ones could write their responses on the prompt sheet if they felt more comfortable that way. Confidentiality procedures of Auckland University of Technology were explained to the students and that no one will have access to the audiotapes apart from myself and the transcriber who also has signed a transcribers agreement agreeing to confidentiality.

**Strengths**

A strength of this research was that the conversations were face to face, rather than on an online platform or in the written form. For the participants, the face-to-face conversation helped them to develop understanding of the research and they trusted me and fellow participants with the information they are providing. It was easier for them to respond, and the prompt sheet aided their responses. The students were willing to share their thoughts and I was able to record their tone in the fieldnotes.

The focus groups took place in the boardroom. These student participants were comfortable in that environment. The day for the session was chosen as per the convenience of the school and their HSA coordinator who helped in the setting up of the focus group session. Lunchtime was used for the focus group session. This decision was made so that students do not miss out on any lesson time, and they did not have to spend time outside of school hours for the interview. As lunchtime was used, lunch was provided to ensure that they went to their next class prepared and were not hungry.

**Summary**

This chapter describes the method used. Focus group was chosen as the most appropriate method for this research where talanoa was used to inform the focus group. The values of talanoa were used to enhance the focus group setting. The methods chosen allowed for the collection of data to take place in a warm environment where the participants built on the life experiences of other participants. Ethical considerations were included in this chapter. The following chapters will focus on the findings from the focus group session with the participants.

# CHAPTER FOUR: Data and Findings

**Introduction:**

In this chapter the findings from focus group sessions are delivered. Data from the focus group interviews has been analysed and categorized into themes. The themes are the reasons why students joined and continued with the HSA, factors that motivate students to continue learning science, support received, relationships, additional responsibilities that affect a student's wellbeing and academic progress. The findings and themes are further discussed in the discussion chapter.

**Theme 1:**

**The reasons why students entered and continued with Health Science Academy (HSA)**

Both participating schools are new to the programme. The aim of the academy is to ensure that Pacific students are supported in secondary school sciences so they can continue into tertiary science courses and choose a career in the healthcare sector. The students were explicitly informed about the academy and its aim.

In this section factors that contributed to students entering the programme and continuing past Year 11 are discussed. While the main recruitment drive into the academy was via a school assembly (see table 4 in Methodology for more information) there were two factors that encouraged students to enrol. The first, highlighted by students at school A was teacher invitation. When asked how they first came to know about the academy, a student responded, "because our teacher" and another student continued, "yeah, she recommended it to us because apparently, we were good at science" (laugh). "Apparently". The year 10 science teachers also played a role in selecting students. They recommended the HSA to students they thought would benefit from the academy. The students might not have thought of themselves as being good at science or were not confident about learning science, but their science teachers' trust and positive affirmation of their capabilities made them join the HSA. Another factor influencing student enrolment was their peers and their enthusiasm towards joining the HSA. This was seen in student comment from school B with one student stated, "my friend also joined so I joined it". Another student continued, "my friends planned to join it together, but they all dropped out and I continued".

The reasons why students left the programme varied. A student at School A said, "they just weren't interested", "some of them were just not interested in science the whole time. They just chose to do it because it was something new". At School B a student responded with, "they

found that it wasn't in their future, like it wasn't something that they would want to do for their future". Another reason highlighted was "having to take at least three or two sciences" to be part of the HSA class at school B. This was not a requirement at school A in year 12/13. When asked if their friends would have still been part of the academy if they were allowed to stay in with just one science subject, a student responded with, "I reckon probably yes". Students' experiences of learning science impacted how many science courses they took in year 12 and 13. For example, one commented "science was quite hard for them, like they dropped science". When asked why they find science challenging, the responses included "the workload", "I think it's just for me is understanding…" and "like different concepts that I've never heard of before".

Another aspect that affected the engagement of students in the HSA programme was the quality of the mentoring. As noted in table 4, in the methodology section, the two schools differ in how their mentoring is structured. While students who are part of the HSA academy are placed in a mentor class with a science teacher in year 11, this may not be true in year 12 and 13. At school B, one of the students did not move from her junior mentor class to the HSA mentor class in year 11. She explained her decision, "I just decided to just stay in my mentor class that I'm normally with, because I've already built a bond with them and my mentor teacher. I can't just break that bond and try and build another bond somewhere else where I'm not comfortable". This student acknowledged that it would be logistically easier if she moved to the HSA mentor class as "I was never put into the tutoring group that they (other HSA students) were a part of. I was always out and then they just give me notices, come to this, do this, participate in this, and then I'm just like, oh, okay. And then there are sometimes where I miss out because I'm forgotten (laugh) like she forgets to tell me. It would have been easier if I did join the HSA mentor class". During mentoring sessions at both schools, students were expected to devise a study plan, with the teacher provided support on study techniques. "At the moment it is individual catching up time". "In my mentor class we're supposed to make a study timetable but…we just study in that mentor class, eh?"

**Theme 2:**

**Factors that motivate students to continue learning science**

This section sheds light on how trips to healthcare services and, healthcare career awareness motivates students to learn science through the HSA programme.

Students described visiting local secondary and tertiary healthcare settings and University campuses as an important aspect of the HSA. One student explained why the trips were meaningful, "growing up I've always been told to go be a doctor, but I wasn't aware that there were different like…types of doctors", "none of [us] knew that there were over 80 careers in healthcare and when we heard 80 that's when we were like, oh." The advantage of visiting different health care settings and talking to health professionals was valuable to students because, "it broadens [our] perspectives". Student's comments suggest that there is a lack of awareness regarding career opportunities available in the health sector.

Another advantage of talking to health professionals was motivation. For example, "as they're speaking, they could go into talking about their career right now, where they're at, how they feel that they're benefiting the community, because then it will help us feel more motivated, we could also do that for our community, family and friends, helping in the health industry". Finding out about the different opportunities provided an incentive for the students to persevere in their studies. A student mentioned, "since you know what you want to do and it's interesting for you to do that and pushes you to do more in your schoolwork so that you can achieve it". Another noted that the HSA helped them along their planned health career pathway as it provided "something new". When asked if they enjoyed science more because of the HSA, they responded in the affirmative.

While the students enjoyed the programme and the visits to healthcare providers, there are areas that could be improved. Namely, seeing "more health professionals". Another student built on this saying, "they just show us like presentations". While they did learn from the video presentations at the fono meetings. The fono meetings are information evenings for the parents where they presented with the opportunities that come with being part of the HSA. These include information about assessments, external tutorials, trips and careers. Presentations are done by the teachers of HSA and the organisers (Te Whatu Ora – Counties Manukau). The students stated that they expected more presenters to come in and talk about their experiences including the "challenges faced while studying in university, and the struggles they went through", the students voiced their opinion that they would prefer "first-year students because they are still studying, not like people who are in their sixth year or fifth year". The reason given for this was that "learning from their experience could teach us that if we do the same things, that could happen to us, so we should choose like make proper decisions while we're there". Students will have a better chance of knowing what professions suit their identity, what

they will enjoy and how they can serve their community through that profession. This motivates the students towards academic success so that they can achieve their career goals.

**Theme 3:**

**Support**

**"I love science, but it gives me anxiety"**

This section looks at how the students felt about learning science and the aspects of the HSA that supported science learning.

Students from both schools identified the support they received from their mentor teachers was more than the support that the non-HSA students received from classroom teachers. As outlined in Table 4 (methodology section), at school A the students have compulsory structured tutorials twice a week for an hour after school. At school A, when asked about expectations from the HSA, one of the participants said, "I think it went beyond what I expected it to be" and another responded with "yeah, it's better than what I expected". Another student further explained that "I didn't expect there to be much of solidity, I guess. I only understood that we'd have extra classes. I thought it would be more like a homework centre, but it's provided more than just what a homework centre provides".

For school B, (see table 4 in methodology section), the timetabled mentor time during the school day was less structured, with support provided on demand. Students described mentor time as "more like a catch up on subjects and if there's something important that's going to come up within the HSA, she would give us a notice or heads up. Or if we need to prepare for something really important, she will tell us to do it". It is pertinent that when asked if the students wanted more tutorials or more structured support sessions, the students responded in the affirmative, noting that "those three hours could benefit us through tutoring" with another student adding "instead of just catching up [with homework]".

When asked if students felt comfortable asking for help. A student in school A responded with "This year I'm really confident because I need it. I need it". Another student suggested that there was less fear and it felt safe for them to ask questions by saying "I think that's one thing we liked about HSA is we're all surrounded by our own people so none of us were too uncomfortable to answer in class, which meant everyone feels safe to do everything". Whereas a student at school A mentioned that "it's difficult for us to ask questions" followed by another student "especially when you don't understand what they're talking about. You don't know

when or what to ask". This referred to the times when they were together on the same subject class with all students (including the non-HSA students).

Another aspect to consider is the placement of the HSA students. As identified in table 4 in the methodology section, all the HSA students were placed in the same science class for year 11 and had tutorials together. At school A, when asked if everyone being in the same class was better, a student responded with "yeah, the continuity of having just one teacher for that one subject especially. It means after school we can all learn at the same pace". A student at school A mentioned "it's also an environment where we can all be like…" "safe" and another student continued to explain with "safe, yeah, like if we're all struggling, we're like all struggling. It's not like one person struggling and someone's extra smart".

As the conversation continued, another student added "and we're all on like the same level because when we go to Year 12 and 13, some of us would be like ahead, some of us would be behind, and it was hard to catch up or be on the same… because the classes were at different paces". The rest of them all agreed to these statements. Students could see that they were not alone, the other students were struggling too.

When asked what the positives of the HSA were and how they promote the HSA to other students, a student at school A said, "you get a free Chromebook". A student further explained that all students are eligible for a device "but being in Health Science Academy means we don't have to pay the bond. We get it for free". They later confirmed the bond amount to be $50.

The students agreed that their interest and grades in science had improved. When asked if the HSA has benefitted them academically, a student responded with "definitely" and the rest all agreed. They believe that being in the HSA has improved their academic achievements, their grades are better and their overall attitude towards studies and science improved. Knowing their career pathway and working towards it was a contributing factor towards this success.

The students acknowledged that, during tutorials the year 13's could help with the year 11's and 12's but this created extra work for them. They realise they can help the younger ones but "we've also got a lot to do ourselves, so having to worry about other people won't benefit us". As the senior students of the HSA, the students are ready to promote the academy to younger ones but may not be that keen to tutor them as they also have a lot of responsibilities themselves that they are trying to juggle.

Overall, the students at school A suggested the tutorials and the solid structure of the HSA was most helpful. The students at school B suggested that regular tutorials within their mentoring time would be more helpful. "so, we have around three hours of mentor time and those three hours could benefit us through tutoring, instead of just catching up". The students at school B think that a more structured mentor time would be more beneficial.

**Theme 4:**

**Relationships**

This theme elaborates on the relationship between students, teachers (school) and parents.

**"…like, he really cares"**

The relationships the students had with their teachers had an influence on their academic achievements. At school A, the students particularly stated that they had a mentor teacher in year 11 that cared about their academic achievements. Mentor teachers often play the role of careers advisors as well when it comes to students asking about different careers, courses, and application process. "Like the support we get. We get a lot of support in science. Like sir, he'll help us right now do scholarships and stuff. He'll send us scholarship stuff and how to apply and all. There's a lot of support not only in science". The careers advisors helped with choosing career options by organising career information evenings. The HSA mentor teachers provide students with information about courses and guiding them through university course applications.

"And like sometimes if we all can't make a class, then sometimes our teacher would set up a class during lunchtimes that was helpful, so instead of doing after school class, we did a lunchtime class". The teachers made time for their students to ensure that every student was on track and was given enough support for academic success. At school A, after the focus group session the participants explained that when they moved to year 12 with another mentor, they had a positive relationship with the new mentor too. However, the year 11 mentor always showed more care and compassion towards students. Knowing that a teacher cares about your academic achievement made students feel accountable for their learning. The relationship that students have with their teachers and the interactions they have on a daily basis can positively affect student achievement. Teachers must take a positive and non- deficit stance for Māori students. Teachers must also view themselves as capable of making a difference for their Māori and Pacific students (Bishop & Berryman, 2009). Students knew the teacher would ask them

about all their subjects and future assessments and help them plan for revision and support them with revision resources. When results are handed back, they know their mentor teacher will ask them about the results, this made the students accountable and encouraged the students to do their best and strive for academic success.

Students felt more confident with certain teachers, hence, would approach them when they needed help. At school B, the students noted that they felt more supported during their mentor time as they could easily ask for science tutorials and their mentor would arrange it "…she said if you need help with any subject, just tell her and then she'll get one of the physics teachers to come…and she'll swap classes" however, the "other students have to approach different teachers and arrange time themselves". School B has three hours of mentoring time each week. The students are expected to catchup on schoolwork in these mentoring sessions "most people in the class like the same subjects so we just help each other out when we're all confused". Having access to a science teacher during mentor time meant they could get their doubts cleared during that allocated time, rather than using their break time or afterschool sessions. Having a teacher who is available for their students at lunchtimes or afterschool hours made them respect their teachers more. Students at school B acknowledged that arranging teachers for tutorials during mentor time is logistically complicated. Teachers need to swap classes and arrange for relief if needed. Tutorials are prearranged but irregular, students are sometimes not aware so miss out on these opportunities. For example, the HSA students in different mentor classes were sometimes not aware of these tutorials so missed out on opportunities. Tutorials were arranged in the two-week holidays; some students were not aware of these tutorials so did not attend.

The support from the teachers extended to providing opportunities to meet the HSA students from other schools as well. At school B, the students found a conference to be helpful which was organised by Te Whatu Ora. The HSA students from different schools met for tutorials in this conference. "The conference was the best". Confirmed by another "yeah, it was really good knowing and talking to other students who had similar interests". The students found meeting other students with similar interests encouraging and motivating. The students thought their teachers, especially their HSA coordinator was mindful about the students' workload "I feel like now that we're Year 13 they're mindful of everything else we do. They kind of like… oh, they're respectful of our duties, so it's nice". The teachers have shown respect towards all other aspects of their life. This helped in making communication with teachers easier and the students overall, felt supported.

A recommendation from the students is to keep the mentor groups together throughout the year levels with the same mentor teacher, who is preferably a science teacher. When the students were split at year 12 and 13, they had other non- HSA students in their classes and suddenly there was competition between everyone. “Fitting in, yeah, I was just really uncomfortable because everyone in there was like it’s kind of a competition between everyone, like who’s the smartest, and there was no really solid help from the subject teachers”. This made it harder for the students to adjust. The classroom culture in the year 11 science class and the HSA sessions was different as everyone was collegial and tried to support each other. This was no longer the case in year 12 and 13 as the amount of support from teachers was reduced to mentoring or tutorial sessions. A student mentioned that “it’s difficult for us to ask questions in class”. At this point, the students are left on their own, they must figure out where the gaps in their knowledge are and ask for help in front of other students or wait until they find time with the HSA teachers during mentoring sessions or tutorials.

**“My mum likes the idea of HSA”**

When asked about what the parent community thinks, the students responded with “my mum likes the idea of HSA”, “they were supportive”, “yeah, my parents were all for it”, “they were really happy”, “they just want us to do better for them and also for ourselves”, “they also like the concept behind it because it is trying to break down barriers for Polynesian and Māori”. From these statements, it is evident that the parent community overall has positive views about the HSA and support the HSA and its aim.

**“It gets awkward very quickly”**

Although, the students reported that they had good relationships with the other HSA students and teachers, there was some tension between the HSA and the non- HSA students. The HSA students explained that the non-HSA students felt that they were being disadvantaged by not being part of the academy. This was because they did not have access to these trips or regular tutorials. One of the students said the non-HSA students were “jealous”. The non-HSA students deem the HSA students to be “lucky” for having support readily available to them.

The non- HSA students believed they were deprived of opportunities. Students that were previously part of the HSA but were not allowed to continue as they only studied one science subject also felt disadvantaged. Later a participant said they understood the purpose of the HSA, so they knew why it is targeted for Pacific students however, they suggested including

those who only continued with one science, Māori, Fijian-Indian or any other minority groups into the academy provided they are interested in a healthcare career. When asked what they would change about the HSA to improve it, a student responded with "I think its focus, how it's mainly focused on Pacific Islanders, even though that's the main thing, like the main reason why HSA is there, but if we could just open it up a bit more… like have some exception… have exceptions for students that are really… like we don't have to involve everyone but we should involve those that are not Pacific Islanders but that are really willing to excel more, like to gain the knowledge that they're wanting. So, I would want to change its focus".

At school B, a lot of students had left the academy, so the year 12 and 13 classes were merged for mentoring sessions. The students suggested, since the classes were small, students of other ethnicities who were interested in healthcare could be given guidance and benefit from the HSA too. Those who left the academy left a spot behind which other students of other minority ethnicities could utilise. "Yeah, I feel like that's better because we can't have a 50/50 student join and then constantly drop out as soon as they're in. Then there's no point opening it up if they're gonna constantly do that, like just come in for a few sessions then decide, oh, this is not for me, and they just leave. Even though some Pacific Islanders do that, but we would want them to stay (laugh)". Adding onto that, another student continued with "sorry, I was gonna say something because I feel like those Pacific Islanders that came, that joined it but then they dropped out, I reckon that could have been used by other students very well. They could have made use of the opportunity better compared to them. I don't know".

**Theme 5:**

**Additional responsibilities**

This section considers the responsibilities a student has outside the classroom. The female participants mentioned they had responsibilities that came in the way of academic achievement. "Yeah, responsibilities come with getting older, so that means a lot of the after-school classes we can't make, which means our education kind of drops at some point". The responsibilities included family commitments, church commitments, travelling back to Islands in case of emergencies, house chores, sport clubs, work, and other school related activities.

A huge part of a Pacific students' life is their family. The participants agreed they had to look after their younger siblings until their parents came from work. When asked what other commitments you have after school, the students responded with "chores", "babysit". This included responsibilities such as dropping off and picking siblings from school. A student also mentioned that their mother was "terminally ill", so she often had to look after her as well as

the rest of the family as she is the eldest sibling. When asked about how much time the students generally devoted for schoolwork outside of school, a student responded with "like two hours I can fit in or maybe one". Another student said, "I prefer studying at night-time". "In my alone time…Because there's a lot going on", "I get home, I just go to sleep and then wake up at like 10pm start studying (laugh). Don't know. I just prefer studying at night. I focus more. Just because we have alone time. And there's no one babysitting". Another student agreed with "yeah, no babysitting, children are sleeping. I know because I have to look after my sister, but I get distracted myself so…". "Just baby sitting and cooking" "I have to look after my grandpa". All the participants were females and they briefly spoke about household chores and their role at home. This included a lot of their time at home going towards cooking and cleaning because "they were the only females" in the house. This also speaks a lot about the set roles of males and females in our society. Other family commitments included religious activities, serving at the church and the community is a major aspect of a Pacific student's life. "Do the chores, babysit, youth, church". These were the common factors that everyone agreed with.

Overseas travel due to having extended family back in the Islands contributed to low attendance rates. A student at school B acknowledged that her attendance was low. This was mainly because she had to go back to her Island. "For me, I have to fly out because I have no other family here. So sometimes me and my brother, we have to fly out back to the islands. We can't just say no since we're just children, not the parents. So, I get taken and then I miss out on somethings". This quote speaks about the family demographics and the expectations that Pacific families have. The children cannot be on their own so had to go with their parents. Because of these long trips, the student misses a lot of schoolwork and had to catch up on their own. Another participant said that when they are away for long periods of time, they "sometimes I have to come late to school because I have stay up the whole night before trying to catch up". Showing that these students are committed towards their academic success but have hurdles to pass through.

The participating students were either part of the school sports teams or play for clubs outside of school. "I usually have netball trainings or work after school". Another participant said, "or like sport commitments, like straight after class I go straight to sport and then come home and then go to sleep". These students were also involved with other school related activities "such as sport and cultural groups" at their school, "I guess prefect duties clash with after school tutorials" and "like some stuff the prefects are required to stay back after school to help with and that clashes into that. Sport clashes sometimes".

Students at school B reported that they usually prepared for the fono sessions as well. The night before the focus group session, some of them had stayed awake to prepare their speech, programme list, kai for the fono and goodie bags for the fono meeting happening on the night of the focus group session. “We baked some brownies”. Another student elaborated with “...at her house to prep for it because during the time that we were in mentor class I wasn’t really focused on prepping for it, so we had a last-minute preparation for just today”. This fono was to introduce the HSA to the parents of current year 10’s and the year 13’s were expected to play a part as well. When asked what exactly they had to prepare for the fono meeting over night, they said, “we had to write up a plan for how our… the outline of the programme”. “Our scripts for what we’re meant to be saying”. “Changing the arrangement of the stuff, preparing food and goody bags” “baked brownies”. “Yeah, we had to do all that and it kind of put us behind because we were trying to balance it with our schoolwork, but we were more focused on trying to get that finished before our schoolwork, homework, that was given to us to complete”.

**Summary:**

Both schools are different in their demographics and in the way they have adapted to the HSA programme. They both are new and are trying to find ways that suit the students better and enhances their academic achievements. Through the focus group sessions, the students spoke about what aspects of the academy they found helpful and what could have been done differently for a better outcome. These findings are further discussed in respect of literature in the next chapter.

# CHAPTER FIVE: Discussion

This chapter analyses and sheds light on the findings regarding the experiences of Pacific students in the HSA and compares it to the literature. The findings are discussed under three headings – tutorials that are mostly outside of school hours, mentoring sessions that is time allocated within the school hours, career awareness and finance for trips and devices. In each section, I will discuss what the students who are involved in HSA find helpful in supporting their learning in science (Research Question One). Then I will outline the recommendations suggested by the current HSA students that could be implemented to support future students in the programme (Research Question Two).

The findings show that both schools have constructed a programme that suits their needs and benefits their students. The students found that being part of the HSA was a positive experience. They felt that they were privileged to have additional mentoring, tutorials, and trips to healthcare settings. They felt supported and acknowledged that being part of the HSA enhanced their academic journey. Additionally, there were aspects pointed out by the students as weak points of the academy. This meant that students felt that certain changes could be made to improve the experiences of current and future students.

**Tutorials**

The findings show additional science focused tutorials were a helpful aspect of the HSA. For example, the students identified tutorials helped them to prepare for assessments and allowed time for regular revision. These tutorials were mostly held by the mentor teachers hence, the students were also more comfortable to ask questions about the content and get their queries resolved. Tutorials also allowed the students to learn from each other and support each other. It gave the students an opportunity to connect with friends and motivate each other. This aligns with Menard et al. (2015) who found that the success of first year students in an economics course was affected positively by the number of tutorials attended. While this study did not analyse their grades, data reported in the annual report for counties Manukau health 2021/2022 identified that being part of the HSA has led to greater academic success, with attendance at tutorials being one component that may have supported student success (Counties Manukau Health, 2023).

It was clear from the findings that configuration of the tutorials affected their efficacy. When tutorials were placed outside the normal school day as identified in chapter four under the support theme, there were clashes with sport and community commitments. But the students

worked around it when the expectation from the mentors and the HSA coordinators were clear that students must attend tutorials or have a valid reason for not attending the tutorials. Students at school A preferred after school tutorials instead of lunchtime ones even though it sometimes clashed with other commitments like "work, games, church, polyfest practices and other homework centres". The expectation regarding attendance at tutorials was made clear at school A at the initial assembly. They had tutorials twice a week "once for biology and once for chemistry" where attendance was compulsory. The expectation is that students will inform their mentors in circumstances where they are unable to attend tutorials. The students mentioned that "teachers are really mindful…as long as we communicate". The teachers were "really respectful of our duties" and "if we can't make it to a class, they sometimes would set up a class during lunchtimes". Attendance at tutorials can be correlated to academic achievement, provided that the tutorials are well structured and support learning (Louw, 2018).

Tutorials are an important aspect of the HSA programme as it supports learning and assessment preparation. Having regular access to support through tutorials in science was identified as important in the findings. The HSA tutorials are small group tutorials with a clear focus and goal to be achieved in a set amount of time. This does not mean the exact structure and timing of the tutorials must be prescribed across all the HSA schools. The tutorials at each school were configured differently with school A having two hours of after school tutorials and school B having tutorials during mentor time when asked by the students (see table 4 for more information). The tutorials were not ad hoc but were an integral component of the HSA programme. While they were not specifically integrated into the course, they were a key component, as Louw (2018) suggested, tutorials need to be an important and integrated part of courses. It is important that the space is organised in a way that promotes dialogue to support understanding (Anderson, 1997). Having two hours of compulsory tutorials at School A did allow the learning to be focused and goal driven, which Anderson (1997) asserts is a useful component of learning in small group tutorials. In contrast to school A, the tutorials at school B were not specifically science focused. However, the students still deemed them useful. The students felt comfortable to ask for assistance from their mentor teacher who is also a science teacher. Having a positive relationship between the teachers and students allowed students to feel more comfortable to ask for support. Students must be able to approach their teachers as and when needed to enhance their school experience and academic journeys (Spiller, 2012; Vivili, 2022). Tutorials provide a way for the students to obtain targeted support as these tutorials allocated time for "understanding to be clarified and deepened" (Anderson, 1997, p. 185). This promotes active participation and listening (Anderson, 1997). The small group set

up also allows students to comfortably discuss their ideas. The discussions can also be done in their mother tongue where applicable which reduces the language barrier, especially for the new Pacific immigrants (Chand et al., 2021). These tutorials are well planned with resources (Louw, 2018) to ensure that students are well prepared for the assessments.

The recommendation from the students was that they would like to have weekly structured tutorial sessions, rather than randomly on student requests. Having a more structured tutorial timetable would mean that all students are aware of it and tutorials become a consistent commitment, so all are present for the tutorials. When tutorials are randomly set, all students may not be aware of it or may forget about it, hence, do not attend it. Having regular and consistent tutorials means that students have a commitment towards it. Attending tutorials becomes an expectation and shows commitment towards the HSA. The students at school A have regular tutorials which require compulsory attendance, these students seemed to have more positive view about the HSA and how it helped in their academic success. Whereas students at school B only have tutorials/ help sessions when they asked for it. In such situations, it is only those students who are confident in asking for help benefit from this arrangement but those students who lack confidence are not able to ask for help hence are left with their doubts.

Having a mentor teacher (who was also a science teacher) was identified as an important factor as they were able to make the tutoring meaningful (Louw, 2018) by focusing the learning. They were also able to arrange for other expert teachers to tutor if required by the students. This facilitation was not as readily available for the non-HSA students. Being part of the HSA gave the students more confidence in asking for help. It must be noted that the students' ease in asking for help was only possible because of the relationships with their mentor teacher over time. School B's structure allowed for the same mentor teacher to continue with the students as they progressed to the next year level. Over the years, the students were able to build a relationship with their mentor teacher where they are comfortable in asking for help.

**Mentoring**

Mentoring helps in fostering a positive relationship with the mentees and their family.

The mentor becomes the first point of communication for the parents and is an important link between the school and the family. It is important that the school clearly communicates with the family, as students only bring in their parents into school if they feel that parents are

respected (Ministry of Education, 2020). Both parents and teachers can influence a student's approach towards school work and academic achievement (Spiller, 2012). The parents in this study understood the purpose of the HSA and encouraged their children to join in and remain in the HSA, as stated by a participant at school B "mum likes the idea" and "they like the concept behind it because it is trying to break down barriers for Polynesian people". As mentor teachers have the opportunity to learn more about the students during mentor time, there is a better chance of knowing the student and their background. The chances of having positive relationships with students increase when teachers acknowledge a student's cultural identity (Vivili, 2022). As the cultural identity of these students is given importance, it helps in developing understanding between students and teachers, allowing for a safer study environment. It is important for the students to feel safe to be able ask questions and discuss learning (Anderson, 1997).

Since the mentoring structure provides a space for relationships to be established and nurtured, there is a sense of comfort allowing spontaneity from the students' side. This encourages students to ask questions, discuss and learn from each other (Chand et al., 2021). The support provided by the mentor teachers encourages students to continue with science subjects. This opens opportunities for students towards a healthcare career (Middleton et al., 2019). The mentoring group allows students to bond with each other. This gives the students an opportunity to work as a team towards a common goal of academic success and healthcare career (Porter-Samuels, 2013). The mentees become each other's support system, encouraging each other to do better. The students also attended a conference with students from other schools who shared common interests. This gave the students hope and motivation to keep working towards their career goals. Through the mentoring process, the students achievements can be enhanced, opening further opportunities not only for the individual but for the wider community as well (Middleton et al., 2019), contributing to success being a collective concept (Ministry of Education, 2018).

During mentoring sessions, the students have access to tutorials and pastoral support. Career advice and help with tertiary education and scholarship applications were also available to these students. Positive relationships with mentors and teachers allows students to prosper academically as students are more confident in asking questions (Chand et al., 2021). The findings showed that students felt that their mentor teacher understood their situation and cared for their academic progress. There were less chances of feelings judged or belittled when approaching teachers. The more a student is comfortable with their teacher or with their

classmates, the high the chances of class participation. This includes taking part in class discussions and asking for help more confidently (Chand et al., 2021).

The recommendation from students was that the same mentor teacher should move on with the same group of students as they progress through the year levels. The main reason for this was the relationship they had with the previous mentor was held of great importance. Having a new mentor every year meant the students and teachers had to learn about each other again and form a relationship again. When the same mentor teacher continues with the same group of students, teachers will know their students and their families, making communication easier.

**Career Awareness**

The development of knowledge about the range of careers available in healthcare was noted in the findings. This is important as there is not enough awareness around the career opportunities available in the healthcare sector (Bolstad & Hipkins, 2008). The lack of career awareness is an issue as a limited number of workers join healthcare. Since, the population is growing, more healthcare workers are needed to ensure that services are provided in a timely manner. When students are not aware of the healthcare careers available, they opt for other pathways they have knowledge about. In contrast, Middleton et al (2019), found that the HSA students were well aware of the range of careers available to them. This was also confirmed in this study with the participants where students were choosing from the vast range of career opportunities available, these included doctors, nurses, dentists, midwifery etc.

Attracting and retaining senior students in science courses may be achieved by providing more information regarding science career opportunities available (Bolstad & Hipkins, 2008). While, the career advisors are mostly relied on for career information, the role of science teachers in creating create awareness regarding healthcare and science related careers cannot be underestimated (Elsom & Munro, 2000). The role of the science teacher or in the case of this research – science mentor teacher – as a conduit of knowledge about health science careers and how to apply for scholarships and university courses was highlighted as crucial in the findings. Due to the guidance provided by the teachers and having information about the careers, the HSA students may be able to choose a healthcare career more confidently.

As the HSA students visited the different healthcare providers, they were able to meet professionals and see careers available and what each career entails. As the HSA students had seen what the job entails and are aware of the expectations, they are able to be make better and

informed choices about what they want to do (Middleton et al., 2019). The students also indicated they knew about more careers now which they may not have learnt about if they were not part of the HSA.

It is clear from literature that many students do not choose or continue with science as they are not aware of the opportunities that come with learning science at secondary schools and beyond (Bolstad & Hipkins, 2008; Elsom & Munro, 2000). The current group of students were affected by the COVID- 19 lockdowns which restricted the number of trips these students went on. The students were expecting to go on more trips however, they understood that it was not possible due to lockdown restrictions. The non-HSA students have not been on any such trips. They might not be aware of all the details about careers available. Hence, may not know what careers to choose for themselves. Therefore, may end up choosing a career outside of healthcare.

Since, students are more aware than before about career opportunities, they can choose their careers much earlier on. Students are more aware of the job descriptions, and they can make better informed decisions regarding courses and professions they choose. Knowing what they want to do in their future makes it easier for them to work towards that goal. This way they know what is required of them. For example, what subjects to take, what grades to get, which university to apply at and where to look for that job. This keeps them motivated towards achieving their academic goals.

Sometimes, being underprepared for the university course hinders students' success. The students are not aware of what to expect as most are the first in their family to attend university. It is hard for the family members to help students prepare for university or support them throughout their journey. There may be a mismatch between what is expected by the family in terms of a student's contributions to family finances and the need for students to achieve good grades for university. This puts the students under pressure and limits their academic capabilities (Theodore et al., 2018). Being more prepared and knowing what university life would be like can help students adequately prepare themselves for university. Through the HSA trips, students are aware of the roles related to careers and can make informed career choices. Not having a clear understanding of what a job entails may lead to students choosing courses at tertiary level that are different to their expectations. This may lead to them feeling discouraged, having to change their majors, and /or dropping out of university (Theodore et al., 2018). Learning more about careers and courses from first-year university students and

healthcare professionals may reduce the chances of students making uninformed decisions regarding career choice, students can make better suited choices for themselves.

The participants recommended that more healthcare professionals should be invited to into schools as meeting healthcare professionals gives the students an idea on how to start their journey towards a preferred career option. This is because the healthcare professionals help clarify the roles and responsibilities that come with it. Students were able to see how they could immediately support their family and community by joining that profession (Middleton et al., 2019). It was also evident that students wanted to join a career where they could support their local community in making a difference and achieving better health outcomes (Middleton et al., 2019).

**Responsibilities**

Findings suggest that students had a lot of responsibilities. These responsibilities often are barriers that affect academic achievement. Similar to the literature, these responsibilities included serving the community through church and sport (Hawkes, 2023; Siope, 2011). In particular, for females, it was the responsibilities they had towards their families (Fairbairn-Dunlop, 2010; Hawk & Hill, 1996).

Students have a lot of responsibilities and commitments outside of school that could come in the way of academic achievements. The additional responsibilities included church commitments, sport, or other family commitments such as looking after the young or sickly (Fairbairn-Dunlop, 2010; Hawk & Hill, 1996; Hawkes, 2023). Pressures from being part of the HSA such as preparing for the fono evenings can add to the stress levels of these students. The students from school B mentioned they had to prepare for the fono evenings. Around the time of the focus group session, they were also involved in preparing for a fono session where they were to introduce the HSA to the year 10 students. This included preparing their speeches and preparing goodie bags for those that attended. Instances like these required a lot of planning and preparation from the student's side.

Service towards the community is important. Students wanted academic success that led to healthcare careers where they could make a difference and help in improving the health outcomes for their community (Middleton et al., 2019). Highlighting a communal concept of success (Ministry of Education, 2018) as well as allowing academic success to enhance the socioeconomic status of a family (McAllister, Naepi, Wilson, et al., 2022; Theodore et al.,

2018). Families with better income may be able to afford basic healthcare services as well as the services that are not funded, leading to a healthier community.

Since, responsibilities can also pressurise students and have an effect on their academic progress, a recommendation is to allow students enough time for academic work at home as well. Parents/ caregivers and teachers can help the students to come up with a timetable that supports and balances their academic and other aspects of their lives. The responsibilities regarding HSA and fono sessions could be more planned and distributed so that students can help but at the same time not feel pressurised.

**Finance for trips and device**

The HSA programme and the trips are fully funded by Te Whatu Ora. This means that there is no extra financial pressure on the students and parents. As stated earlier in the literature review section under academic success and careers, Pacific peoples are more likely to have low household incomes (Ministry for Pacific Peoples, 2022a; Ministry of Business Innovation & Employment, 2021). Having extra financial pressures from school and the HSA would have been a turning point for many, as it would then become an affordability issue. Since the HSA is fully funded, it does not add to the financial strain that Pacific families are going through. In fact, the HSA has enhanced the schooling experiences for many of the Pacific students without adding onto the current financial pressures.

This included the support students get with electronic devices like laptops. At school A, the students are allowed to take a device home, ie borrow a device from the school for the whole year. While all the students are eligible to loan a device, the HSA students do not have to pay a bond amount of $50. This way the school has acknowledged the financial challenges of Pacific parents and have come up with a way to reduce that financial pressure. This has shown care for the students and their academic achievements as the school has tried to take away a hurdle. The students feel more confident and supported by their school as they understood the "school was making sure there were no barriers to prevent students from learning".

The aim of the HSA is to ensure that more Pacific people join the healthcare profession which may increase culturally responsive practices at healthcare providers. Hence, students must succeed in secondary school science and progress to tertiary science courses. Currently the number of Pacific healthcare workers does not match the population it serves (Counties Manukau Health, 2023). Māori peoples are in a similar position where there are not enough

Māori healthcare workers to serve Aotearoa's population (Brown, 2018; Ratima et al., 2007). Hence, Māori students should also be allowed into the HSA. Currently School A gives first preference to Pacific students and if there is any space then Māori students are allowed into the HSA. Whereas school B does not allow Māori students at all.

School B also has a significant Fijian-Indian population. The participants from school B recommended that Fijian- Indian students should also be allowed into the HSA. Fijian-Indian students may not be of indigenous Fijian descent (i-Taukei), however, they do belong to a Pacific Island nation. The students identified that there were certain students that joined the HSA programme in year 11 but were not very serious about it and left the HSA after finishing year 11. Or they were not taking two or more sciences in year 12 and 13 so they were no longer allowed to stay in the HSA. This meant that those students took up a spot that could have been used by someone who actually is interested in the HSA and wants to have a career in healthcare. These included students that are Fijian-Indians who were interested but not allowed to be part of the HSA as they were considered not to be Pacific students. As stated in the introduction chapter regarding my position in this research, Fijian-Indians are descendants of Indians that were brought to Fiji under the indenture system in the late 1800's and early 1900's. Indians have been living in Fiji for more than 100 years and consider Fiji as home. In such an instance, my personal view is that Fiji-Indians should be allowed into the HSA if they show commitment towards a healthcare career.

The participants had also reported that some students who were not part of the HSA had tried to either put them down for being part of the HSA or were jealous of their advantages and the amount of help they received. Dealing with students who are jealous of the HSA students can also be stressful and add pressure on their friendship with the non-HSA students.

While the aim of HSA is to support all the students enrolled in the programme, the study identified that the programme is not meeting the needs of all students, and some students drop out of the programme. This may be due to inconsistency of entry into the programme. To enhance the HSA programme a recommendation is to make the criteria for joining the HSA more consistent across schools, thus allowing all students who are interested in a healthcare career to benefit from it. The participants at school B suggested that having both, a passion for science and wanting a career in health is important when recruiting students. They also considered to crucial that all students receive tailored support to aid their academic success.

**Summary:**

The experience of being in the HSA is an overall positive one for students where they are supported with tutorials, mentoring, and trips to healthcare settings. The trips allow students to learn about the career opportunities available for them and the mentor teachers can help with the university application processes. There are certain negatives for being part of the HSA. For example, sometimes certain students may look down on the HSA students, making them feel belittled or not smart enough to succeed on their own. This may lead to students doubting their own capabilities. This may happen when other students are jealous of the opportunities these HSA students have, which can affect their friendship. The responsibilities of preparing for fono sessions can be stressful for the students. However, the support they receive throughout their senior years of high school can be attributed to the HSA as otherwise the support received may not have been possible.

A strength of this study is that it allowed the experiences of marginalised students who are part of the HSA to be documented. However, there are limitations which do not allow for the research findings to be generalised. Further research around how the responsibilities of Pacific students affect their academic achievements, how much tutorials influence assessment preparation and results and how much the HSA has increased the number of Pacific peoples in the healthcare industry need to be explored.

# CHAPTER 6: Conclusion

The aim of this research was to learn more about the experiences of Pacific students in the Health Science Academy (HSA). The HSA programme is funded by Te Whatu Ora and runs in 13 schools across Auckland. The academy aims to uplift the achievement of Pacific students so they can continue into universities, leading to healthcare careers. Having more Pacific healthcare workers can help in making the healthcare more culturally responsive. Pacific people may find it more comfortable and encouraging to seek medical advice with a more culturally responsiveness healthcare system. This may improve the health of Pacific peoples as they will be more likely to seek medical advice and receive treatment in a timely manner.

This section includes final comments about the findings of this research. The participants spoke about their experiences during the focus group session. The participants provided insights of what worked for them and what aspects of HSA could be improved. The findings showed that being a member of the HSA supported student learning in several ways. These were through participating in trips to health providers such as Middlemore hospital and Greenlane eye clinic and receiving information about careers in health; attending tutorials and being mentored by science teachers.

Participating in trips was valuable because trips to various healthcare settings allowed students to see what the different professions entailed. Knowledge about what careers are available to them gave them insights about the working environment. This allowed the students to choose a career pathway with more confidence. Since, the students knew what career they wanted, they knew what courses to take. Having a career goal kept the students motivated at school as they had a clearer idea of what they were aiming for.

Tutorials turned out to be an important aspect for students. Tutorials gave the students an opportunity to work collaboratively with the other HSA students and their mentor teachers. The HSA tutorials were a comfortable place for the students to ask questions from their teachers as well as supporting each other's learning.

Mentoring has been an important aspect of the HSA. Having the same mentor teacher across three years of senior secondary school allows students to bond with them. Students are more comfortable when asking questions, contributing and participating in class. The relationships established between students and their mentors throughout the years allows them to learn comfortably. Since, the students stay together for mentoring sessions for three years, they tend

to form friendships where they support each other's learning through helping and by being each other's morale support (Chand et al., 2021).

This research documents the experiences of Pacific students in the HSA. It identified that trips, career information received, mentoring and tutorials are of great importance, as they support learning and academic success for Pacific students. It adds to the current literature on the HSA and aspects that support students in academic success. This research extends the information available on how students feel about the programme and what aspects they largely feel provide support or hinder their academic progress. It also makes a contribution towards Pacific education, sciences education along with career advisory services at schools.

In regards to science education, there is a decline in students taking and achieving in science. This research has helped in identifying/ reidentifying that students are not able to see themselves in science or science related careers. Through the HSA, the career opportunities available are clearer. The HSA provides a model on how to support all students in science education. Building relationships through mentoring, additional tutorials and career information through trips being the most important aspects.

**Recommendations:**

This section includes the recommendations for the HSA programme organisers, schools with the HSA, schools without the HSA, science teachers and Pacific parents.

Several factors have been raised in the research that would be of interest to the convenors of the HSA programme. The HSA was established so that more Pacific students can succeed in school science and qualify for tertiary science courses. Success in tertiary science courses may increase the number of Pacific peoples employed in the healthcare sector. Pacific peoples are a minority and are underrepresented in the healthcare workforce. The same can be said for Māori as they are also underrepresented in the healthcare workforce (Brown, 2018; Ratima et al., 2007). Extending the HSA programme to Māori students can be beneficial for the individuals as well as for the community. On the other hand, Fijian-Indian students who are interested in pursuing a healthcare career could be included in the HSA. This way the students who are interested in science and healthcare careers can be given opportunities to optimise their health science trajectory.

The trips that students attended were useful in extending students' knowledge of the variety of careers available in healthcare (Middleton et al., 2019). However, the number of trips the students in this study attended were limited by the COVID-19 epidemic. It is recommended that the number of trips to healthcare providers be increased to allow students to experience a greater range of healthcare careers, providing them with more information about what each career entails.

Tutorials should be organised regularly and have clear participation and attendance expectations. This means students will be aware of the tutorial times and will attend it regularly. Attendance should be taken at these tutorials to ensure that students are showing commitment towards the HSA and are benefiting from tutorials. Tutorials can be done within school hours. For example, during mentoring sessions if time permits.

The amount of time dedicated for mentoring at schools can differ. While mentoring sessions are generally used for pastoral aspects, they can be used for tutorials. Each mentoring session can be dedicated towards a subject. For example, one mentor session can be assigned for biology tutorial, another session for chemistry and another for physics. This would be a good opportunity for the students to stay focused during these mentoring sessions. Mentoring sessions can also be used to create awareness regarding career and tertiary study opportunities available. Professionals or university students could also come in during mentoring sessions to help create awareness by answering questions that students might have about a particular profession or university course.

More consistency is needed in the way the HSA programme is structured in schools.
The two schools in this study have configured the HSA programme differently and this has impacted on its success. For example, at school A, the number of students enrolled in the HSA did not vary considerably between year 11 and year 13. They were able to have a full class and retained majority of the students. Some students left as they had changed schools or realised they did not want a healthcare career. In contrast, School B saw a decline over the years where students opted out of the HSA or were not allowed to remain in the HSA as they did not fulfil all the requirements. Due to low retention rates and limited role numbers, the year 12 and 13 students had to be put into the same mentor class. There seems to be a disparity in how the HSA is advertised to students and parents and the criteria followed to allow students to be part of the programme. The extent of support students receive from their schools also differs, this includes support from subject teachers, mentor teachers, career advisors, Pacific liaison team

and the financial support from school specifically for the HSA students. The programme coordinators at Te Whatu Ora should make the criteria for student enrolment and schools' commitment much clearer to the HSA directors at schools to ensure consistency and fairness across schools.

It is important not to overburden senior students with social duties within the programme. The senior HSA students can be role models for the younger students. However, they are sometimes given responsibilities such as planning the HSA fono meetings which can be time consuming and stressful for the students. The students should not be given too many responsibilities as it can affect their wellbeing and their academic work. The HSA organisers must remember that these students already have responsibilities towards family, church, work and sport that impact learning (Hawk & Hill, 1996; Hawkes, 2023; Siope, 2011).

The HSA programme allows students to work together during mentor sessions and tutorials which can be a factor that enhances their school experiences and motivates them to learn together for academic success and accomplishment of career goals. Academic success and a positive learning environment may help in increasing Pacific student numbers in science courses as well. Since, students are more likely to achieve, they are more likely to encourage and motivate year 10 students to join the HSA when in year 11. The general trend shows the HSA students tend to achieve better academic results compared to the non- HSA students (Counties Manukau Health, 2023; Middleton et al., 2019). Therefore, schools with a high number of Pacific students should consider joining the HSA programme. Having the HSA programme can support students with their academic success. Even if schools do not join the HSA programme, they could have their own similar programme that supports Pacific students and their learning through tutorials, mentoring along with inviting speakers from a range of careers or visiting healthcare settings. Although, trips could add to the financial pressure on families if not funded by the schools.

For the schools without the HSA programme, career information could be included into lessons as this can make the lessons more interesting, engaging and relatable for the students (Bolstad & Hipkins, 2005). For teenagers, sometimes the skills they learn during lessons are not easily seen as transferable so teachers must explicitly link their lesson content to the current scenarios such as COVID-19, increasing rates of heart diseases, mental health issues, obesity, pollution, global warming, loss of biodiversity etc, enabling students to learn and understand the world and their surroundings better (Elsom & Munro, 2000). This also includes, linking content to

relevant career pathways and study options. The mentoring sessions can also be used to create awareness around healthcare careers.

A recommendation for secondary science teachers is to ensure they incorporate culturally responsive practices into their lessons. For this to be effective, the teachers must understand the importance of culturally responsive practices and feel confident enough to incorporate cultural responsiveness into teaching (Hipkins & Waiti, 2002). Awareness can be created through professional development opportunities. Encouragement coming from people in positions of authority e.g. the principal, can influence the degree to which teachers incorporate cultural responsiveness or seek professional development. These include the influence that cultural responsiveness can have on the structure of lessons and activities, for example, encouraging the use of small groups which can create a comfortable environment to share and discuss ideas (Chand et al., 2021). There is a need for more professional development that encourages and provides resources to science teachers and mentor teachers so they can effectively support their students learning, through resources that incorporate culture with science content knowledge (Hynds & McDonald, 2010).

It is important that awareness is raised with the parents of the students involved in this programme. The expectation that their children will need to study at home to achieve their potential in this programme must be clearly stated. This means parents need to allow time and provide a suitable location for them to study for an hour or two per day after school throughout the year, rather than only during assessments. Usually, other commitments such as church, sport and work take up majority of the time outside of school hours. While these aspects of a student's life is important for their holistic development, enough time should be set aside for homework and school related work to be completed to the best of the students ability (Hargraves, 2018; Hawk & Hill, 1996).

Data suggests that missing even two days of school can affect academic progress (Education Review Office, 2023), therefore parents must be educated on the importance of attendance so they can encourage students to come to school regularly. The attendance rates for Pacific students are much lower than other ethnicities (Devine et al., 2023). Although Pacific students are less likely to be away for holidays, they are more likely to be away from school for reasons such as work or looking after young and sick family members or visiting family in the Islands during celebrations or emergencies. Financial precarity can impact students' academic performance, due to the necessity to contribute to the family income. Providing information

about support available in a culturally affirming way and information about the importance of keeping students in school may mitigate the pressure on students working long hours in employment while attending secondary schools.

**Strengths**

A strength of this research is that the participants are drawn from schools across different locations in Auckland. These students are from different socio-economic backgrounds, giving a wider picture of the experiences of students in and outside of school. Exploring the experiences of a minority group – Pacific students is another strength, as they can otherwise be overlooked when it comes to research. The focus group conversation was informed with talanoa. Pacific peoples are familiar with it, hence, it created a comfortable environment for the students to be in and share their experiences. The focus group sessions underpinned with talanoa vave and talanoa faka' eke' eke gave the participants an opportunity to reflect on their experiences and the setup configuration of the HSA at their schools in a culturally affirming way. Through this, the students may have realised how the HSA has given them more support to achieve academic success.

**Limitations of the research design**

While this research aims to shed light on the experiences of Pacific students in the HSA programme, which is in Auckland and add to the literature, there are a few limitations to this research. Only two schools out of the 13 schools involved in the HSA programme participated in this research. Each school had one participating group with five female participants. The findings are specific to the participating schools in Auckland so cannot be generalised as being representative of all the schools in the HSA programme.

While the experiences of Pacific students is recorded in this research, it does not resemble the experiences of all Pacific students in New Zealand. Only ten participants took part – five from each school. This small number is not proportional to the Pacific population attending secondary school in New Zealand. Both participating schools are co-ed however, both groups only had female participants. The findings are from a female perspective only, it cannot be generalised as the common experience of all students.

Talanoa can give insights about experiences and perceptions. However, if the researcher is not familiar of the Pacific ways then interpretation of the data can vary in accuracy (Vaioleti, 2006). While, I am not of a Pacific descent, I identify as a Fijian-Indian and have some understanding

of the Pacific ways. That is why I chose to use focus groups as my main approach but used aspects of talanoa to inform the focus group session as it initiated the warmth required for the participants to open up about their experiences.

This is a qualitative study where the study is about the real world, and the experiences of Pacific students. Since the research is demanding and not necessarily standardised, it is not always possible to achieve reliability as participants were talking about their experiences which is subject to individuals' prior experiences and their perception of reality (Schonfeld & Mazzola, 2012). The Interpretation of data is based on knowledge and experiences of the HSA students and their Pacific community. To reduce the chance of misinterpretations of data from the focus group session, I made sure that I went over the recording and the transcript again and confirmed the conversation as it proceeded. The responses on the prompt sheet also helped in confirming the findings. I made fieldnotes during the focus group sessions. These observations supported me to understand and interpret the data.

**Further research**

Further research should be undertaken to explore the experiences of the HSA students in comparison to other Pacific students taking science. This is important as it can shed more light on how Pacific students can be academically supported.

Schools with the HSA programme have adapted to different structures that suit their school. A study could be done to investigate which structure supports the students the most. Counties Manukau Health's annual report for 2021 – 2022, shows that the HSA students academically perform better than the non- HSA students (Counties Manukau Health, 2023). The students that are part of the programme are academically capable, motivated, and interested in science and or healthcare career (Middleton et al., 2019). Further study needs to be done to compare the students' previous and current academic progress, to see if the HSA has positively impacted their results.

The purpose of the academy is to help students achieve in secondary school science so that students' progress to a tertiary healthcare course. Māori and Pacific peoples are more likely to be doing jobs that require minimal academic achievements (Ratima et al., 2007). Research could be done to investigate how many of these HSA students' progress to tertiary courses and how many join the healthcare workforce. A study could be done to see if the establishment of

the HSA has improved the number of Pacific people's healthcare jobs that require a degree or above.

Further research could be undertaken to see the number of the HSA students who have entered the healthcare workforce but have migrated to other countries. Aotearoa might not be benefiting from having the HSA programme due to migration of healthcare workers to nations such as Australia. New Zealand may not be retaining the Pacific healthcare workers as other countries offer better pay and work environments.

The HSA has become an integral part of these students' lives and has supported them socially and academically. The HSA's aim is to ensure more Pacific students achieve in science at high school, allowing students to continue into tertiary courses and jobs related to healthcare. The findings have shown that the programme has supported the students in this study in learning science and identifying possible study programmes in health science. Through the HSA, these students have been given greater access to support in schools, enabling more opportunities for academic success.

With the implementation of the HSA, more Pacific students are succeeding in secondary school science. There might be a better chance for these students to get into tertiary healthcare courses, leading them into healthcare careers. If more Pacific students enter healthcare careers, then they will be more likely to help in enhancing the cultural responsiveness practiced at healthcare setting. This may encourage Pacific peoples to seek medical advice more frequently and in a timely manner leading to better health outcomes for Pacific peoples.

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# Appendix list

1. Ethics approval


**Auckland University of Technology Ethics Committee (AUTEC)**

6 April 2023

Carolyn Swanson
Faculty of Culture and Society

Dear Carolyn

Re Ethics Application: **23/66 The experiences of Māori and Pacific students in Health Science Academy at Auckland secondary schools.**

Thank you responding to AUTEC's conditions.

Your ethics application has been approved for three years until 6 April 2026.

**Standard Conditions of Approval**

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC.
2. All public facing documents must have the AUTEC approval number and be of a high standard of spelling and grammar. Dates on the Information Sheet(s) and Consent Form(s) must be consistent.
3. Any amendments to the project must be approved by AUTEC prior to being implemented.
4. A progress report is due annually on the anniversary of the approval date.
5. A final report is due at the expiration of the approval period, or, upon completion of project.
6. Any serious or adverse events must be reported to AUTEC, this includes unforeseen issues that might affect continued ethical acceptability of the project.
7. AUTEC grants ethical approval only. You are responsible for obtaining management permission for access from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

The application number and title need to be referenced on all correspondence related to this project.

All forms are available online http://www.aut.ac.nz/research/researchethics

For any enquiries, please contact ethics@aut.ac.nz
(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
**Auckland University of Technology Ethics Committee**

Auckland University of Technology, D-88, Private Bag 92006, Auckland 1142, New Zealand.
T: +64 9 921 9999 ext. 8316: E: ethics@aut.ac.nz: www.aut.ac.nz/researchethics

2. Invitation email

*Email to Principal*

*Subject line:* **Invitation to participate in research about the Health Science Academy**

Kia ora
My name is Tika Sharma and I am a Science teacher. This year I am undertaking PG research as part of my studies for a Master of Education. My research is investigating Year 12 and 13 student experiences of the Health Science Academy (HSA) programme. Attached is a Participant Information Sheet about the research project.

For reasons of research ethics I am unable to interview students a my own school, so I am reaching out to you as one of the other schools running the HSA programme. I would very much appreciate your permission to invite up to 6 Year 12 and 13 HSA students to take part in a lunchtime group interview with me. With your permission, I will make contact with the HSA coordinator teacher and ask them to assist me to invite and recruit the student participants.

If you give me permission to include your school in my research, please sign the attached Permission Form, scan and return to me by email within two weeks of today's date. If you would like to discuss further, please contact me by email or phone (see below). If I do not hear back from you after one week, I will contact you again to see if you have any questions and follow up on this invitation.

With thanks and regards,
Miss Tika Sharma

3. Permission to access site


## Permission for researchers to access school staff/students

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***

*Project Supervisor:* ***Dr Carolyn Swanson***

*Researcher:* ***Miss Tika Sharma***

- ○ I have read and understood the information provided about this research project in the Information Sheet dated dd mmmm yyyy
- ○ I give permission for the researcher to undertake research within [NAME OF SCHOOL]
- ○ I give permission for the researcher to contact the HSA coordinator teacher to assist with recruiting up to 6 students for a lunchtime interview about their experiences of being in the HSA

Principal's signature: .....

Principal's name: .....

Principal's contact details: .....

.....

Date: .....

***Approved by the Auckland University of Technology Ethics Committee on 6th April, AUTEC Reference number 23/66.***

*Note: The head of the organisation should retain a copy of this form.*

4. Information sheet for school Principal/ Teachers


# Information Sheet – School Principal/Teachers

**Date Information Sheet Produced:** 6 March 2023

**Project Title:** Talking about the Health Science Academy with Year 12 and 13 students

**An Invitation**

Kia ora, my name is Tika Sharma, and I am a Science and Chemistry teacher. I am currently studying towards a Master of Education degree at Auckland University of Technology. My Masters research investigates the experiences of students in the Health Science Academy (HSA) programmes in Auckland secondary schools.

I would like to invite your school to be part of my research. I wish to interview a small group of senior students in your school's HSA programme. First I will seek permission from the Principal, then I would contact the HSA Coordinator and seek their assistance to invite and recruit students who meet the criteria (16 or older, in Year 12 or 13 and have been in the HSA for at least one year).

**What is the purpose of this research?**

The purpose of this research is to ask HSA students about their experiences of the programme. The HSA are designed to help Māori and Pacific students studying science in senior secondary, and this research will provide feedback on the HSA from the student perspective. The information the students provide will contribute to improving the HSA and supporting its overall aims.

**How was my school identified and why are we being invited to participate in this research?**

Your school is on a public list of 13 secondary schools in Auckland running HSA programmes. As a science teacher I cannot interview students in my own school, so have selected to reach out to your school and invite you to agree for your students to participate in my research.

**How do I agree to support this research taking place at my school?**

Your agreement to support this research is voluntary (it is your choice). If you consent to be involved, please sign and return the Permission Form (Principal) or Assistance and Confidentiality Agreement (HSA Coordinator) to X

**What will happen in this research?**

This research will involve a small group interview between myself as the researcher and up to 6 Māori and Pacific students who are 16 years or over, in Year 12 or 13, and have been in the HSA for at least one year. I plan to conduct the interview at school one lunchtime and anticipate that it will take about 40 minutes. I will ask the students to tell me about their experiences in the HSA. The interview will be audiotaped and transcribed to generate the interview data, which I will use in writing my Masters dissertation.

**What are the discomforts and risks?**

No significant discomfort or risk is foreseen on the assumption that the HSA students will feel confident to talk about their experiences at school. Some unexpected discomfort may arise due to an unpredictable relationship or event in a particular community.

**How will these discomforts and risks be alleviated?**

School counselling and pastoral care systems are available to any student who may feel discomfort after the interview.

**What are the benefits?**

Students will have the chance to reflect on their experiences in the HSA programme. As the researcher and also a science teacher, completing this research project will inform my future classroom practice. The information collected will contribute to improving the programme in the future.

**How will the privacy of participants be protected?**

No student or school names will be used in the dissertation or any subsequent publications. Consent forms and data will be stored securely and destroyed after six years.

5. Information sheet for parents


# Participant Information Sheet - Parents/Caregivers

**Date Information Sheet Produced:** 6 March 2023

**Project Title:** Talking about the Health Science Academy with Year 12 and 13 students

**An Invitation**

Kia ora, my name is Tika Sharma, and I am a Science and Chemistry teacher. I am currently studying towards a Master of Education degree from Auckland University of Technology. My Masters research investigates the experiences of students in the Health Science Academy (HSA) programmes in Auckland secondary schools.

I am writing to ask you to give consent for your child to take part in a research interview I am conducting at their school as part of my studies.

**What is the purpose of this research?**

The purpose of this research is to ask students in the HSA about their experiences of the programme. The HSA are designed to help Māori and Pacific students studying science in senior secondary, and this research will provide feedback on the HSA from the student perspective. The information the students provide will contribute to improving the HSA and supporting its overall aims.

**How was I identified and why am I being invited to participate in this research?**

Your child is in the HSA at Mount Roskill Grammar School where the Principal has kindly agreed to allow me to invite students to participate in my research. Because your child is aged between 16 and 20 and is at school, they can give their consent to participate, but your consent is also required.

**How do I agree to participate in this research?**

Your agreement to your child's participation in this research interview is voluntary (it is your choice) and whether or not they participate will neither advantage nor disadvantage them. The first six students who return their signed consent forms will be invited to take part in the interview.

They can withdraw from the study at any time before or during the focus group interview taking place. Because it is a group interview, if they leave during the interview, it will not be possible to remove their data from the audio file.

If you agree they can take part in this research, you will need to sign a consent form and have your child return it to the HSA coordinator teacher. You can keep a copy of the signed consent form. Only people working on this project will have access to your consent form.

**What will happen in this research?**

This research involves a small group interview between myself as the researcher and up to 6 Māori and Pacific students who are 16 years or over, in Year 12 or 13, and have been in the HSA for at least one year. The interview will take place at school during lunchtime and will take about 40 minutes. I will ask the students to tell me about their experiences in the HSA. The interview will be audiotaped and transcribed to generate the interview data, which I will use in writing my Master's dissertation.

**What are the discomforts and risks?**

No significant discomfort or risk is foreseen on the assumption that the HSA students will feel confident to talk about their experiences at school. Some unexpected discomfort may arise due to an unpredictable relationship or event in a particular community.

**How will these discomforts and risks be alleviated?**

School counselling and pastoral care systems are available to any student who may feel discomfort after the interview.

**What are the benefits?**

Students will have the chance to reflect on their experiences in the HSA programme. As the researcher and as a science teacher, completing this research project will inform my future classroom practice. The information collected will contribute to improving the programme in the future.

6. Information sheet for students


# Participant Information Sheet - Students

**Date Information Sheet Produced:** 6 March 2023

**Project Title:** Talking about the Health Science Academy with Year 12 and 13 students

**An Invitation**

Kia ora, my name is Tika Sharma, and I am a Science and Chemistry teacher. I am currently studying towards a Master of Education degree from Auckland University of Technology. My Masters research investigates the experiences of students in the Health Science Academy (HSA) programmes in Auckland secondary schools.

I am writing to invite you to take part in a research group interview I am conducting at your school as part of my studies.

**What is the purpose of this research?**

The purpose of this research is to find out about your experiences of the HSA programme. The HSA is designed to support you in studying science, and this research will provide feedback on the HSA from the student perspective. The information you and other students provide will help to improve future HSA programmes.

**How was I identified and why am I being invited to participate in this research?**

Your school has kindly agreed to allow me to invite HSA students to participate in my research. You need to be at least 16 years old and in Year 12 or 13, having been in the HSA for at least one year.

**How do I agree to participate in this research?**

Your participation in this research is voluntary (it is your choice) and whether or not you participate will neither advantage nor disadvantage you. The first six students to return their consent forms will be invited to be part of the focus group interview.

You can withdraw from the study at any time before or during the focus group interview taking place. Because it is a group interview, if you leave during the interview, it will not be possible to remove your data from the audio file.

If you agree to take part in this research, you will need to sign a consent form and give it to your HSA or form teacher. You can keep a copy of the signed consent form. Only people working on this project will have access to your consent form.

**What will happen in this research?**

This research involves you participating in an interview with myself as the researcher and up to 5 other students. The interview will happen at school during lunchtime and will take about 40 minutes. I will ask you about your experiences in the HSA. The interview will be audiotaped and transcribed to generate the interview data, which I will use in writing my Masters dissertation.

**What are the discomforts and risks?**

No significant discomfort or risk is foreseen in relation to talking about the HSA.

**How will these discomforts and risks be alleviated?**

School counselling and pastoral care systems are available if you feel any discomfort as a result of the interview.

**What are the benefits?**

You will have the chance to reflect on your experiences in the HSA programme and add your voice to the information I am collecting. Completing this research project will benefit my future classroom practice as a science teacher. The information collected will contribute to improving the programme in the future.

**How will my privacy be protected?**

Your name and the name of your school will not be used in the dissertation or any subsequent publications. Your consent forms will be kept in a secure location and all data will be destroyed after six years.

**What are the costs of participating in this research?**

Nil – you attend one lunchtime interview taking about 40 minutes.

7. Email to HSA coordinator

*Email to HSA Coordinator*

*Subject line:* **Request for assistance with my research on the Health Science Academy**

Kia ora
My name is Tika Sharma and I am a Science teacher. This year I am undertaking PG research as part of my studies for a Master of Education. My research is investigating Year 12 and 13 student experiences of the Health Science Academy (HSA) programme. Attached is a Participant Information Sheet about the research project.

Your Principal has kindly given permission for me to include your school in my research, so I am reaching out to you as the Coordinator of the HSA programme. I would very much appreciate your assistance to invite and recruit 6 Year 12 and 13 HSA students to take part in a lunchtime group interview with me on a date to be agreed.

If you agree, please sign the attached Agreement and Confidentiality Form, scan and return to me by email within one week of today's date. If you would like to discuss further, please contact me by email or phone (see below). If I do not hear back from you by then, I will contact you again to see if you have any questions and follow up on this request.

With thanks and regards,
Miss Tika Sharma
Science teacher
AUT student

8. Consent form for HSA coordinator


## Assistance and Confidentiality Agreement – HSA Teacher

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***

*Project Supervisor:* ***Dr Carolyn Swanson***

*Researcher:* ***Miss Tika Sharma***

- ○ I agree to assist with recruiting HSA students for this research by inviting them (using the script), distributing the forms, and collecting signed consent forms.
- ○ I understand that the forms related to the project are confidential and can only be discussed with the researchers.
- ○ I will not keep any copies of the information, nor allow third parties access to them.

HSA teacher's signature: .....

HSA teacher's name: .....

Contact details: .....

.....

Date: .....

Project Supervisor's Contact Details: Dr Carolyn Swanson, email X

***Approved by the Auckland University of Technology Ethics Committee on 6th April, 2023 AUTEC Reference number 23/66***

*Note: The HSA teacher should retain a copy of this form.*

9. HSA teacher script


## Script for HSA teacher to invite students to participate

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***
*Project supervisor:* ***Dr Carolyn Swanson***
*Student researcher:* ***Miss Tika Sharma***

*For reading out to students:*
Miss Sharma is a science teacher and a postgraduate research student at AUT. This year she is completing her Master of Education. She has taught tutorials for HSA students at her own school, which sparked her interest in researching how well the HSA is working for students.

Research ethics mean Miss Sharma is unable to interview students she teaches for her research, so she has approached our School, and our Principal has given her permission to interview a group of students in our HSA programme.

She will interview a small group of up to 6 students here at school one lunchtime. She will bring lunch in return for your time and sharing your thoughts about the HSA. By sharing your unique experiences in this interview, you will contribute to this research, adding to what we know about the success of the HSA.

To take part in the interview you need to be at least 16 years old and in Year 12 or 13, having been in the HSA for at least one year.

I have agreed to help Miss Sharma invite students to participate in this research. I have an Information Sheet and Consent Form for you, and another of each for your parent or caregiver.

If you would like to participate, you need to read the information sheet and give the parent forms to your parent or caregiver. Both consent forms need to be signed and returned to school within two weeks from today.

Any questions?

Thank you for giving this your attention and I will remind you about returning the forms next week.

***Approved by the Auckland University of Technology Ethics Committee on 6th April, 2023 AUTEC Reference number 23/66***

10. Consent forms for parents


## Parent/Caregiver Consent Form

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***

*Project Supervisor:* ***Dr Carolyn Swanson***

*Researcher:* ***Miss Tika Sharma***

- ○ I have read and understood the information provided about this research project in the Information Sheet dated 6 March 2023.
- ○ I understand that the interview will be audio-taped and transcribed, and notes may also be taken.
- ○ I understand that agreeing for my child/children to take part in this study is voluntary (my choice), and that I may withdraw my child/children from the study at any time up to the date of the interview, without being disadvantaged in any way.
- ○ I understand that if I withdraw my child/children from the study then I will be offered the choice between having any data that is identifiable as belonging to my child/children removed or allowing it to continue to be used. However, once the findings have been produced, removal of our data will not be possible.
- ○ I agree to my child/children taking part in this research.
- ○ I understand that my child is able to refuse to give consent to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Child/children's name/s : .....

.....

Parent/Guardian's signature: .....

Parent/Guardian's name: .....

Date: .....

***Approved by the Auckland University of Technology Ethics Committee on 6th April, 2023 AUTEC Reference number 23/66***

*Note: The Participant should retain a copy of this form*

11. Consent forms for students


## Student Consent Form

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***

*Project Supervisor:* ***Dr Carolyn Swanson***

*Researcher:* ***Miss Tika Sharma***

- ○ I have read and understood the information about this research project in the Information Sheet dated 6 March 2023.
- ○ I have had an opportunity to ask questions and have them answered.
- ○ I understand that the identity of my fellow participants and our discussions in the focus group are confidential to the group, and I agree to keep this information confidential.
- ○ I understand that the focus group interview will be audio-taped and transcribed, and notes may also be taken during the interview.
- ○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study (leave the interview) at any time without being disadvantaged in any way.
- ○ I understand that if I withdraw from the study, I will be offered the choice between having any audio data that is identifiable as belonging to me removed, or allowing it to continue to be used. However, once the findings have been produced, removal of my data will not be possible.
- ○ I agree to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature: .....

Participant's name: .....

Date: .....

***Approved by the Auckland University of Technology Ethics Committee on 6th April, 2023 AUTEC Reference number 23/66.***

*Note: The Participant should retain a copy of this form.*

12. Prompt sheet

13. Focus group questions

***Talking about the Health Science Academy with Year 12 and 13 students***

*Overview for the interview session:*

- Introduce myself and ask each student to introduce themselves
- Check they understand what the interview is for and the aim of the research
- Ask if they have any questions
- Tell them I am about to start recording [RECORD]
- Hand out the prompt sheets (have some spare pens to offer), say they can write on them as they wish and I will collect them in at the end
- Turn to the questions.

**Focus Group Interview Questions**

1. How did you come to be part of the Health Science Academy?
2. What do you like about being in the Health Science Academy?
3. Is it what you expected? Tell me a bit more about that?
4. Do you enjoy learning science? Has being in the Health Science Academy made you enjoy science more?
5. What do you intend to do after you finish school?
6. Do you have a career goal in mind? Tell me a bit more about that?
7. Are there downsides to being in the Health Science Academy? Tell me a bit more about that?

14. Transcriber agreement

## Confidentiality Agreement

*Project title:* ***Talking about the Health Science Academy with Year 12 and 13 students***

*Project Supervisor:* ***Dr Carolyn Swanson***

*Researcher:* ***Ms Tika Sharma***

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- ○ I understand that all the material I will be asked to transcribe is confidential.
- ○ I understand that the contents of the tapes or recordings can only be discussed with the researchers.
- ○ I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber's signature: .....

Transcriber's name: X

Transcriber's Contact Details (if appropriate): X

Date:

Project Supervisor's Contact Details (if appropriate):

.....

.....

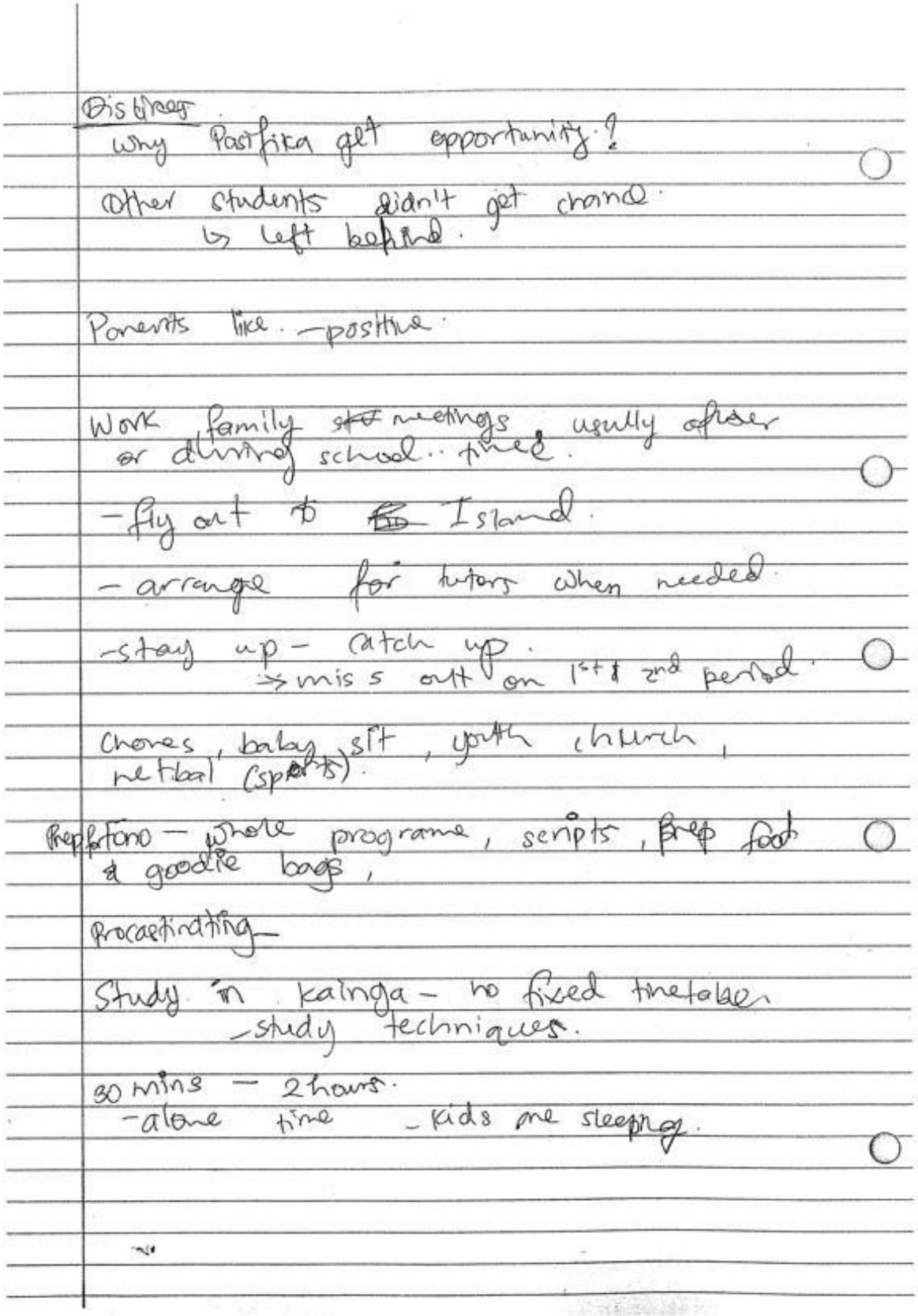
.....

.....

***Approved by the Auckland University of Technology Ethics Committee on 6th April, 2023 AUTEC Reference number 23/66***

*Note: The Transcriber should retain a copy of this form.*

15. Field notes



Disbursement

Why Pasifika get opportunity?

Other students didn't get chance.
↳ Left behind.

Parents like. – positive.

Work family ~~stu~~ meetings usually after or during school.. tired.

– fly out to ~~Ed~~ Island.

– arrange for tutors when needed.

– stay up – catch up.
⇒ miss out on 1st & 2nd period.

Chores, baby sit, youth, church, netball (sports).

Preparation – whole programme, scripts, prep food & goodie bags,

Procrastinating –

Study in kainga – no fixed timetable
– study techniques.

30 mins – 2 hours.
– alone time – kids are sleeping.

16. Late note


*Project title:* **Talking about the Health Science Academy with Year 12 and 13 students**

*Project Supervisor:* **Dr Carolyn Swanson**

*Researcher:* **Ms Tika Sharma**

**Late Note**

*For use if required*

Date:

Time:

Dear Teacher,

Please excuse _____ (student name)

for being late to class. They were participating in an interview about the HSA programme.

Thank you for your understanding and support,

Tika Sharma

AUT student researcher

***Approved by the Auckland University of Technology Ethics Committee 6th April, 2023 AUTEC Reference number 23/66***