Valuing School Science Technicians

A Science Technician Pay Equity submission

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Table of Contents

1. The Task Ahead

There is ample evidence that school Science Technicians - in common with other groups of employees who are predominantly women – have traditionally been underpaid. While gender bias may be assumed as a reason for this, appropriate grading determinations and deserved pay increases have also been unduly constrained through school operational underfunding.

To value this group of school employees, we need to establish their calibre; the commitment and skill they show in meeting and exceeding role expectations; and the (often unrecognised) qualifications, enabling experiences, and practiced expertise that make their performance possible.

2. Science Technician demographics

The school Science Technician workforce survey in 2007 (de Stigter, 2007) found 92% were women. A follow-up survey ten years later (Kiernan and de Stigter, 2017) recorded 90% were female. Both surveys recorded female school Science Technicians as beginning in the school role at a median age of 40, and at survey had a median age of 50 in 2007; 51 in 2017. The male Science Technicians in the 2007 survey had been recruited at a median age of 51; in the 2017 survey, 52. Their median age at survey was 59 in 2007; 61 in 2017.

3. Family Influences

No questions were asked in these technician surveys about children, but my 2010 support staff survey (de Stigter, 2010a) did include queries about children. Four of the 120 respondents did not indicate their gender, but 99 of the other 116 were female (85%), and 17 were male (15%).

These people took up school support staff employment at an average age of 40.5 years for women, and 43 for men. Of the 99 women, 86 had children, and 83 of these gave the age of the youngest when they commenced employment. The average age of their youngest child when they started school employment was 10. The average service for all these survey respondents was 7 years.

Of the 116 support staff in that survey who indicated their gender, 76 (66%) were women who had pre-school or school aged children when they commenced support staff employment. Their children were then some years older, according to their years of service, and it was calculated that only 41% still had pre-school or school aged children.

So, the female support staff in that survey commenced in schools at a similar age to surveyed Science Technicians. Allowing for the higher proportion of women among Science Technicians, this suggests something like 70% of Science Technicians are mothers who start in schools while their children are pre-school or school-aged, but with Science Technicians' longer service it is likely no more than a quarter remained mothers of school-aged children when surveyed in 2007 and 2017.

4. Science Technician identity

The data show school Science Technicians as very similar to the larger school support staff group of mainly women. They share with other support staff in the inferior pay and terms of employment often found in female-dominated occupations. A key characteristic that sets support staff apart from other female employment groups - such as primary teachers and nurses – is that the large majority of women in this group have started in their school roles after commencing their families. Furthermore, as many still have children of school or pre-school age, this narrows their employment options.

They choose school employment only or primarily because NZ employers give them little other option of family-friendly employment. These women resorted to working in a school, despite the otherwise dim prospects on offer there, because the work hours and vacation breaks suited their family commitments (at the time of commencing the work).

5. Employment data

In 2007, the median for weekly hours of employment for Science Technicians was 25, with employment usually term-time only. (With term-time-only employment at 39 weeks/year, the average for surveyed technicians was 39.6 weeks).

Respondents in the 2010 support staff survey worked an average 28 hours each week. Out of these 120 respondents, 62 (52%) had no change in hours during employment. The other 58 (48%) recorded changes in their hours during their employment, with the initial hours averaging 19, and the average at survey time also at 28 hours. So there has been some accommodation of a desire for more work hours as children have become less dependent. The 2007 Science Technicians' survey also noted a trend for technicians to look for more working hours as their children grew up, and some schools had provided either more technician hours, or other paid work. Some Science Technicians also have found work in more than one school, or added roles out of school.

6. Qualification of school Science Technicians

The workforce surveys of NZ school Science Technicians in 2007 and 2017 provided data on the formal qualifications these employees bring with them to the role, and their previous experience. In a support staff gender equity report (de Stigter, 2010b) 2007 qualification data for NZ Science Technicians was used in comparisons with school science technicians in Australia and the UK.

"Most NZ school science technicians are sole technicians, so their competence is particularly important. Fortunately, the majority of applicants are science-trained mothers (from a variety of science backgrounds) returning to the work force. This means that they begin their busy school role with ability and maturity already to meet basic requirements while managing their own professional development, and the survey found they had an average 10.8 years school experience.

The Laboratory Technicians' Branch of the Science Teachers Association of Victoria recommends (LTB-STAV, 2007) a minimum qualification level for a school sole technician of a Diploma in Applied Science (equivalent to Level 6 on the NZ Qualifications Framework).

Of NZ state/integrated school female school science technicians, 70% had qualifications equivalent to Level 6 or better on the NZ Qualification Framework; independent schools had 94% (in the survey, all but 1 technician, who had two Level 5 diplomas in science).

This information gives a strong vote by NZ schools to accept the minimum qualification level proposed in Victoria for science technicians. Independent schools have almost achieved it; for state and integrated schools there have been compromises in achievement, as with everything funded from the operations grant.

The NZ workforce was better-qualified than Australian or UK school science technicians: the 70% who had qualifications at Level 6 or above compared with 40% in the UK (The Royal Society, 2001) and about 60% (Hackling, 2009) in Australia. The lower qualification levels in Australia and the UK are possible because far fewer are sole or supervising technicians.

Compared with the 70% of NZ state/integrated school science technicians qualified at Level 6 or above, the Statistics NZ 2006 Census (Statistics NZ, 2007) showed only 19% of the NZ population were."

"Occupational groups better matched in qualifications with the school science technicians have been identified from the 2006 Census data. The comparisons with the Central Government (Statistics NZ, 2010c) average and the Public Service average are shown in the following table:

Qualifications	Sci Technicians	Central Government	Public sector
NZQF Level 6 or above	70%	55%	52%
NZQF Level 7 or above	45%	42%	40%
NZQF Level 8 or above	23%	16%	15%

It can be seen that here also, school science technicians are better qualified than the Central Government and Public Sector employees."

The follow-up 2017 workforce survey showed a modest increase in school science technician qualification over the 10 years; up from 70% for NZQF Level 6 and above, to 77%, and with essentially identical in-school average experience of 10.9 years.)

7. Previous paid employment

From the 2017 workforce survey (Kiernan and de Stigter, 2017) the *"range of experiences before starting technician work in a school are difficult to categorise. Some staff have had a succession of differing roles, and others spent an extended period in just one position.*

Of those employed in a school for more than 5 years, 68% had science-related previous work, while 86% of those hired in the last 5 years had a previous science-related job. Some also had experience in education (including teaching) while many had administrative, leadership, and business backgrounds."

Schools rely heavily on the experience Science Technicians bring to the role. Some appreciate its value, though the value of older workers is often under-rated in retention and hiring policies. Cassidy-Mackenzie (Cassidy-MacKenzie, 2017) of Diversity Works (formerly the Equal Employment Opportunities Trust) says *"It's short-sighted given they offer skills, expertise, knowledge built up over a lifetime of working."* The school Science Technician role is one where maturity can be a strong factor in enabling role fulfilment. A fair assessment of staff personal contributions needs to allow for this.

8. Varied experiences

A survey of mothers returning to work (Ang and Briar, 2005) established that *"Mothers … felt that their skills gained while out of the paid work force were not valued. As one put it: 'being a mother at home means you almost become a nonentity'. It is not only unpaid work in the home that fails to count. Motherhood-related voluntary work in the community such as serving on the school's trustees' board or working as a play centre coordinator, may carry considerable responsibility and adds to a mother's work experience. For instance, one participant had been in sole charge of an $80,000 building project. Yet none of the participants felt that the skills obtained from such work was valued by employers."*

Gloria Feldt argued (Feldt, 2016) that parenting not only provides experiences that come in handy at work, but helps develop skills that are becoming increasingly valued by organisations. On this basis, she suggests working parents should put "parenthood" in their resumes; should list skills in leadership and organisation developed through parenting experiences. Things like:

Organizational skills that have helped juggle multiple high-stress priorities.

Effective communication skills for managing a diverse range of personalities.

Developing innovative solutions to seemingly intractable problems on a daily basis.

Leading high-pressure negotiations with no advance preparation.

*[For a school situation, particularly with a Science Technician role in mind, it might also be relevant to add: **Careful purchasing and inventory management on a tight budget**.]*

Feldt pointed out, however, that although such contextual character and skill development is real, overcoming entrenched bias to have such parenting experience accepted and fully valued will not be easy. It will require some to lead the way, and others to champion its acceptance.

9. Job description

The 2017 workforce survey asked about 24 elements that may be included in a **basic** Science Technician job description. The table indicating the % of science technicians doing each shows the role variability.

Basic Science Technician Job Description (Kiernan and de Stigter, 2017)

#	Element abbreviated description	Inclusion
1	Advise staff about practical work and resources	91.8%
2	Prepare solutions and materials for practical work	100.0%
3	Prepare materials and equipment for practical tests, assessments	100.0%
4	Deliver orders to teaching spaces	91.0%
5	Recover orders from teaching spaces	90.6%
6	Assist teachers, students with set-up, equipment use	95.3%
7	Demonstrate experiments when required	39.2%
8	Assist students with equipment for individual projects	77.6%
9	Set up, operate, run checks, on departmental equipment	94.9%
10	Make simple equipment, carry out simple repairs	97.3%
11	Arrange for repairs and maintenance	96.1%
12	Review equipment and maintenance needs in Science	94.9%
13	Work with Lab Manager, in accord with Code of Practice and H&S requiremnts	87.8%
14	Ensure all hazardous substance storage, labelling, use, disposal complies	98.8%
15	Maintain Safety Data Sheet records for hazardous substances	95.3%
16	Assist Lab Manager where relevant in advising staff on safety issues	77.3%
17	Operate effective system to stack, store, transport, return, gear	99.2%
18	Stocktake of equipment, books, paper resources, chemicals, & maintain	98.4%
19	In cooperation with Head of Science provide budget input	92.5%
20	Obtain and care for living specimens and plants	76.5%
21	Obtain/collect non-living specimens for dissection & experiments	92.9%
22	Clean specialty equipment/glassware needing special treatment	99.2%
23	Assist with security of science laboratories and equipment	89.0%
24	Assist with use, maintenance of computer, digital devices & associated	47.8%

The survey looked beyond a basic job description to role enhancements (associated with specific competence) and extra duties (which some schools add to a Science Technician role). The complexity of individual technician roles was then assessed by looking at all three groups of possible duties.

For a more complete understanding of what technicians offer in their workplace, the survey also asked about trade, technical and craft skills; instrument maintenance and calibration; and access to computers and computing capabilities.

10. Job descriptions and clients

NZEI has given attention to evaluating the work of teacher aides, largely through job descriptions - though teacher aides have also been encouraged to write their stories, to fill out some of the experiences and interactions that a job description may not fully capture. For teacher aides, the

customer is an individual student, or possibly a small group of them, but these are not usually clients who can readily provide a clinical analysis of the quality of services provided to them.

Science Technicians differ in that their primary clients are science teachers, and these are customers who are both discerning and articulate regarding the standard of services they receive. Science Technician job descriptions are helpful indicators of much of what a technician does. Some of the functions in the job description are important backroom ones, that while important to service delivery, are not easily rated by (or obvious to) clients. Other aspects of the job description are more readily evaluated by teachers, and these assessments of job performance, though only partial, are important in defining the value of the technician role.

11. Beyond Job descriptions

I want to go further with this assessment of value, however, and suggest that many Science Technicians, finding themselves in a position where they are able to use abundant talents to serve a team of people they like and respect, are adding value to their roles in ways that would not be expectations in a job description.

To illustrate the point, I provide two case studies of technicians whose service has been well-attested to: Michelle and Sarah. The documentation will convince you that these are excellent employees. However, you should not be unduly impressed by them – while Michelle and Sarah have done their best to be of service to science staff and to others, they are not unique among school Science Technicians in attitude, ability, or application. More stories like theirs are waiting to be told.

a. Case study 1: Michelle Kiernan

In 2018, Michelle Kiernan won the John Wright plaque, donated by a former revered Head of Science, and awarded annually in the Mt Albert Grammar Science Faculty to a staff member who has made an outstanding contribution. The award is decided democratically by Science staff: everyone is invited to put their nominations to the Head of Science (who is ruled personally ineligible) and Michelle received the most votes. And at MAGS we have some pretty amazing teachers, so there is plenty of competition. (A staff member can however get the award only once). We had a staff of 31 science teachers and 2 technicians, so being judged as making the most significant contribution was something special.

I have collected some data around the John Wright awards made between 2014 and 2018, to help understand more of the context for this one:

In 2014, the plaque was awarded to a young chemistry teacher, recruited in 2010. Then in 2016 she was appointed Head of Chemistry.

In 2015, the award was to a young biology teacher, recruited at the start of that year as Head of Biology.

In 2016, it went to a teacher who started in 2014, was then appointed in 2016 as Head of Junior Science, and did so well at this that he got the award.

In 2017, it went to a Physics teacher, at MAGS since 2011, who then in 2018 became Head of Physics.

In 2018, it went to Science Technician Michelle, employed in that role in 2013.

It can be seen that the award is recognising new and emerging leadership.

In 2018, nominations for the award were recorded by Head of Science, Aase Diegel, as received from 24 staff in total, and for 7 candidates in all. Michelle received 11 votes, 5 were for teacher A, 3 for teacher B, 2 for teacher C, and 1 vote each went to three other candidates.

Some of the nomination comments received about Michelle:

"She unfailingly ensures all teaching staff always have what they need - Michelle is awesome at pre-empting peoples' need and looking ahead. She doesn't wait to be asked for stuff – she can see what I will need and often organises it before I ask."

"Michelle has an awesome ability to keep her finger on the pulse of the department – she is like the centre of wheel – ensuring that the wheel does not collapse. Her technical expertise and ability to relate to people means the science department runs like a well-oiled machine. Nothing is too much for Michelle. When you have a request, the answer is always yes – we can make a plan."

"Michelle works tirelessly in ensuring that all members of the Science faculty are well served in terms of laboratory and practical activities for the students. Nothing is ever too much bother. She will try out new things for staff who are keen to trial new experiments and is always supportive of new projects. She definitely has a can-do attitude which in a department the size of MAGS' makes a huge difference to staff morale etc – I think Michelle would be an awesome recipient for the greatest contributor to Science department award."

"In my time of working with Michelle – she never seems to tire. Her unfailing enthusiasm and energy is infectious and she bends over backward to make sure all our technical needs are met. She is excellent at planning ahead and appears to have an awesome ability at not getting flustered and ensuring that the science department at MAGS runs smoothly."

Sadly, Michelle was off on leave by the time the presentation was made. Fortunately, this meant the award was recorded for her to view. See the picture below, or view the 2 minute video at: https://drive.google.com/a/mags.school.nz/file/d/1J_QTSJdVaoW8kirxgdDBGTc2mdogadAa/view?usp=drivesdk

Aase Diegel with Michelle's 2018 John Wright Plaque presentation

b. Case study 2: Sarah Garner

Sarah Garner, the Science Technician (and Lab Manager) at Kamo High School, was nominated in 2015 by Nicola Younger (of Whangarei Girls' High School) and Terry Price (of the STANZ executive) for the Kay Memmott Award, which is named after an amazing former school science technician. Presentation is at the biennial conference, ConSTANZ. Supporting information came from Sarah's Head of Science at Kamo High, Hazel McIntosh.

Sarah was unsuccessful in 2015, but was renominated in 2017, and received her Kay Memmott award at ConSTANZ 2017 held at Kamo High, where she was heading the conference organising committee.

Hazel McIntosh's 2015 comments about Sarah:

Been a technician since 2007.

Helpful, knowledgeable, enthusiastic great organiser.

- *Provision of equipment for all and every practical lesson carried out in the science department. There have been as many as 15 science teachers and on occasion 5 practical lessons every hour for five hours several days a week.*
- *Provision of safety data sheets for each practical and advice to teachers when necessary. Sarah is our lab manager and when this was first mooted I was asked if staff would take direction from a technician. Silly question really - clearly they had never met Sarah.*
- *She attends technician conferences and runs a local cluster group that aims to support technicians throughout the north, as inevitably they are the only one in that role in the school. She is planning on hosting the next conference ConSTANZ17 here in the north.*
- *Sarah controls on a daily basis the science budget. Once our priorities are set for the year she sources, researches and advises what might be available. Once presented to the department she then orders and engraves and logs and demonstrates and appropriately stores. Thanks to her systems we all work in an exceptionally well resourced department.*
- *This year we bought a 30 chrome book COW. It is used virtually every lesson by a different class and thanks to the procedure for booking and Sarah's meticulous follow up we continue to have a fully functional 30 Chrome book COW. The only department in the school to still have a functioning COW at this stage in the year.*
- *Sarah works very closely with the local Polytechnic to improve any learning opportunities for adult learners and on a voluntary basis supported them in the provision of a holiday program for local science high school students.*
- *We depend on her excellent people skills to maintain good relationships with local businesses that provide things we need like cows eyes or lung plucks and so on.*
- *As health and safety rep Sarah is frequently called on to support other areas of the school and of course her lab manager role covers other departments as well. I believe we are one of the few schools to still have a traditional photography department and they too depend on Sarah for safe chemical use and disposal.*
- *Sarah is the NZEI rep for the branch and attends all union meetings supporting other members not only in her branch but in the wider support staff community. This has been especially important with recent pay awards that have not been implemented exactly smoothly.*
- *On a very personal level we are grateful for her efforts to lift our spirits with her organised trips out to local cafés for shared breakfasts. Her delicious cakes for department birthday celebrations, cards and secret Santa celebrations. The department parties at her home and the Christmas decorations, Science appropriate. A Christmas tree which is lovingly hung with chemical symbols and hazard cards. All of which happen only because of her drive and energy.*

Soon after Sarah received her Kay Memmott award at ConSTANZ17 in October 2017, and returned to work, she was interviewed by a 6 person judging panel for the Gratnells' International Science Technician

of the Year 2017/18. There were prizes offered which would benefit her Science department and the school - and she thought it worth a try. Her submission included all of Hazel McIntosh's comments, and also that she had just run a very successful conference for 100 technicians, with 18 workshops, 7 field trips and 5 guest speakers, and been awarded the Kay Memmott Award - nominated by her peers. She had also worked (in her own time) with a partnership school in Whangarei, Kapehu Wheta, to set up their science facility. The Kamo High School newsletter had an article on Sarah's Gratnell award presentation by Whangarei MP Shane Reti.

International Science Technician Award – Sarah Garner

Sarah Garner, KHS Science Technician, was presented with the Gratnell's International Science Technician of the Year Award 2017-18 by Dr Shane Reti at a recent school assembly. This is a prestigious award which recognises outstanding commitment, excellence and community support of Science.

In order to win this International accolade, Sarah had to demonstrate to a panel of 6 judges an outstanding commitment to Science, not just in her own school role but in the wider community.

Daily tasks include trialling new science experiments, supporting beginning teachers, overseeing health & safety, management of resources and chemicals.

In the community Sarah set up the Northland Science Technicians Cluster Group - providing networking and support across many local schools. Sarah gives ongoing Science support to local primary and intermediate schools. She has volunteered at the Rotary Club Science Extravaganza based at NorthTec, and was the technical support to Te Kapehu Wheta when setting up their Science facility.

Sarah Garner receiving her award from Dr Shane Reti MP

Sarah was the Convenor of ConSTANZ17 - the Science Technicians' Conference held in Whangarei 2017 which brought in over 100 delegates, speakers and workshop presenters from NZ, Australia and the UK. It showcased Whangarei with many interesting field trips and activities, and provided professional development for Science Technicians in state, state integrated and independent schools.

She was also the recipient of the Kay Memmott Award - which is the NZ Science Technician Award for Excellence 2017-18.

Sarah says she loves her job and the teachers she works alongside, and wants to make Science education the best is can be.

Congratulations Sarah, you have done well and we are all very proud of your outstanding achievement!

12. Service in Education

The service ethic of the Science Technicians in the two case studies shines through everything written about them; it is central to their outstanding contributions. Service is understood by committed teachers; indeed, a service ethic is central to teaching. A teacher without competence and commitment to enable individual students to reach personal potential is no more than a lecturer, and unfit for purpose in a current NZ school context.

Great teachers are responsible for wonderful service to, and greatly appreciated by, their students. Such service is not measured just in years. And the job is a demanding, exhausting one. Because this is so, strong bonds develop between colleagues working together as a team; they stand together in the front line; staff farewells can be emotive events. The Science Faculty's teaching team includes the Science

Technician. The technician's primary role is to supply what teachers need; to serve the teachers. We saw in the case studies that technicians can become highly valued team members, deeply appreciated for their role in assisting science teaching and teachers.

Schools uphold the value of service of various kinds (if not always very consistently). Teachers (particularly) are honoured for long years of employment – seen as great service to the school. Students also are encouraged to serve in various ways and given service awards. Prefects are chosen not just for prowess in sport, academic and artistic achievements, but to serve the students and the school.

I note that Michelle Kiernan, from Case Study 1 above, is the mother of two daughters, who both served their school as prefects. One of them served with distinction as Head Prefect (in a school of 3000+ students; no mean achievement). The service ethic is deeply engrained in the next generation.

13. Service in society

It must be said that attitudes in our society to service are at best ambivalent. On one hand we honour examples of "good sorts" who quietly serve others, and some well-known figures (such as Sir Edmund Hillary) who have used their high profiles for charitable purposes. The Queen's Birthday Honours and New Year Honours commend in a very public manner those who have served the nation and various communities within it.

On the other hand, those who serve can be regarded as less important, weak, and suitable for scorn or worse. Employees in service industries are particularly prone to wage theft and various kinds of economic abuse. Furthermore, a group of largely women, returning to the workforce after having families, is particularly vulnerable to employment on poorer terms than others. The record shows that school support staff have not had their skills fully recognised and rewarded, despite bringing valuable experience relevant to their employment, and making important contributions in their school roles.

14. Science Technicians as Support Staff

The long-term underfunding of school operations has been borne as a cost by these (mainly women) school support staff, through deliberate mis-grading, failure to pay increments and qualification allowances, and enforced, continuing, and often illegal, use of short-term contracts. Recognition of the administrative and relational skills which mothers bring to service roles in the school workplace (because they want hours and weeks employment that fit family requirements) has also been denied by government departmental employment negotiations determined to limit education costs at the expense of this workforce of susceptible returning mothers.

In earlier years, the Ministry of Education used language which reflected some of the less commendable attitudes of society; it long favoured terminology which reduced the status of those whose wage review prospects were being resisted. ESPA represented associate staff up to 1991, and the official title on their collective contracts referred to the employees as "ancillary staff". The Ministry continued with the term until at least 2004. "Ancillary" means a less important, a subservient role: derived from the Latin "ancilla"- a maidservant or female slave. In Roman society: no-one of consequence; they might be lucky to get enough to eat. Actual disposable income in exchange for their service might even be regarded as generous.

Whether this was a deliberate strategy of the Ministry of Education negotiators or an unconscious bias, our colleagues were described and viewed in this way during hard-nosed (and generally very successful) efforts to minimise wage gains.

Science Technicians were not only demeaned by being labelled as "ancillary", but their specific role was further minimised with a misleading job title and a matching pay rate. Until 1996, collective agreements recognised school employment of only lab assistants rather than Science Technicians, though there was provision for a small pay premium for lab assistants with some qualification. (Librarians and nurses were

similarly treated, by being designated as only library assistants and nurse aides, whether qualified or not.)

15. Progress for Science Technicians

In 1991 the Employment Contracts Act was passed, and ESPA was forced to merge with NZEI to get the numbers now required for bargaining. NZEI made a small step in the right direction by using their first collective agreement title in 1991 to rebrand associate and administrative staff together as "Support Staff".

In the 1991 collective agreement, the maximum for qualified Science Technicians was **64%** of the public service ordinary time hourly rate. (This and following percentages were calculated from Statistics NZ Quarterly Employment Survey wage rates).

Kay Memmott, Havelock North High School Science Technician, had been on the ESPA executive, and in 1991 joined the NZEI executive. Kay did her best to have the incorrect terms for Science Technicians and other associate staff changed (Memmott pers.com, 23rd July 2007) but she needed help. In 1996, Canterbury and Hawkes Bay Science Teachers' Associations, and the Central Districts Technicians' Network (in which Kay had a leading role) persuaded NZASE to study school Science Technician employment (Baker, 1997).

The survey led to NZASE policies about trained and qualified Science Technicians who have the knowledge and skills to contribute to schools by enhancing the science programmes offered, adequate weekly hours of work, and pay rates that reflect the value of the position. With NZASE advocacy, NZEI were able to get some improvement in pay rates for qualified Science Technicians; effective April 1997. Qualified Science Technicians were then expected to be graded at least as Associate B, based on their responsibility for resources used in teaching. The top of this Associate B scale was **67%** of the public service average rate. A small qualifications allowance (q.a.), introduced in January 2001, together with the Associate B maximum rate, reached **69%** of the public service average.

In 2000-2002, then NZASE President Jenni Edwards also took a personal interest in the terms of Science Technician employment. She noted that school boards had different interpretations of requirements for a B or C-graded position (Edwards, 2001) due to some ambiguities in the NZEI Support Staff Agreement. Some Science Technicians were being paid on the Associate B scale, while others with similar responsibilities were regarded as Associate C. She argued for Associate C as the appropriate scale.

The next NZEI support staff contract, with effect from January 2002, responded to this expressed concern, with a Memorandum of grading guidelines: "Under the new definition, librarians and science technicians in particular will be in Associate Grade C because of their specialist knowledge and high levels of responsibility in managing specialist resources, even though they do not manage staff." Jenni Edwards appears to have had a pivotal part in NZEI's obtaining the best outcome for school Science Technicians that we have yet had. Under this contract (NZEI, 2001) the clearly defined expected maximum hourly rate for science technicians (together with q.a.) was for the first time higher than the NZ average hourly wage, and **82%** of the public service average rate.

Unfortunately, it has been all downhill since then. Increasing deficits in operations funding have placed extreme pressures on support staff pay negotiations: by February 2007 the Science Technician maximum hourly rate (with q.a.) was only **76%** of the public service average hourly wage; in September 2011, **72%**; in June 2016, **67%**, and in June 2019, **63%** - worse than in 1991 (before science teachers spoke up, and insisted the technician role was recognised and rewarded). Principle 2 for Pay Equity Working Groups to establish the merit of a claim is lack of effective bargaining. If investigators are looking for evidence that bargaining has been ineffective, here it is!

Despite all the efforts made in the past on technicians' behalf, and the significant gains which resulted, all those gains had been lost by 2019. Not only has the C scale maximum become lower relative to public

sector employees than it was in 1991, but it is now harder for technicians paid on the B scale to successfully challenge their positioning on that lower scale.

The "flexibility" in school grading of staff introduced in 2014, means that a large proportion of Science Technicians (shown in our 2017 workforce survey to be carrying out the same job) have been unjustifiably confined to a B grading. The modified and vaguer wording of the 2014 grading rules has made such decisions difficult to challenge. This group, **30% of school Science Technicians** is, at February 2020, much worse off than in 1991; these technicians are now being paid only a maximum **51%** of the public service hourly rate. Fortunately, the imminent prospect of all school employees being paid at least a **Living Wage** offers them hope of a better outcome.

There have been bright spots along the way. In April 2007, NZEI (Gibbs, 2007) organised an Auckland specialist meeting, mainly for Science Technicians and Librarians. NZEI had argued in the Review of Schools Operational Funding (Ministry of Education, 2006) that specialists such as Librarians, Science Technicians and Nurses should be core-funded according to school rolls. Identified Science Technician and Librarian issues were discussed, including PD and increased responsibilities.

The meeting looked at having 3 gradings for Science Technician positions, and NZEI input suggested this could include access to a new D grade for Lab Manager or Science Resource Manager positions. It was recognised that the hazardous chemical Code of Practice, which took effect in 2007, required Lab Manager appointments in schools and some of these positions were filled by Science Technicians. (However, once schools realised that they were not going to be held accountable for their hazardous chemical obligations, many of the LM appointments made (both teacher and technician) became more nominal, and as outlined later, many Lab Manager payments also became more nominal.)

Meanwhile, the continued and increasing operational funding deficits made not only grade progression, but also adequate cost of living adjustments for the technician role, unattainable, as shown by the declining relativity against the public service average rates.

At ConSTANZ in 2007, conference delegates voted on perceived advocacy priorities. One of these was progress on gender equity. In 2009, I proposed a support staff gender equity project, which proceeded (de Stigter, 2010b) with NZEI Support Staff Scholarship funding. During 2010, NZEI also funded a first attempt to evaluate the content of support staff jobs, based on the jobs of 35 support staff members. This preliminary report (Briar, 2010) did not mention Science Technicians, but it included Librarians and administrators. Briar suggested that starting rates for the then C-graded Administrative and Associate positions should increase by about 40%.

However, the political reality was that prospects for gender advancement took a backward step after the 2008 parliamentary elections, and by 2011 it was clear that equity progress would need to await a further change in government. NZEI archived its material on gender equity.

The disparity in hourly rates from those of the average for public sector employees, as noted previously - who cannot match the qualifications of this group, yet are now paid 60% more – suggests strongly that the Compulsory Sector Schooling P&EE Review (Ministry of Education, 2008) should have been able to recommend a pay investigation for school Science Technicians. It seems this Compulsory Sector Schooling review was the only one set up on an adversarial basis: deliberately designed to limit unbudgeted extra costs for financially stretched school operations. Now that funding is promised to make pay review recommendations feasible, we look forward to participating with NZEI in looking at job content alongside that of suitable comparator groups.

16. Science Technicians in Chemical Hazard Management

In 2007, when schools adopted a Code of Practice for chemical hazard management, STANZ arranged with University of Otago for their Level 8 paper HAZX401, Managing Chemical Hazards, taught by distance learning, to accommodate the chemical safety management requirements in schools. School-based participants, aiming to be Lab Managers, were particularly aided in taking on the role through a

case study in which they prepared a chemical emergency plan for their school. It was expected that both science teachers and Science Technicians would take the paper.

From 2008 to 2015, a total of 39 school Science Technicians (but only 1 science teacher) completed the HAZX401 paper - later re-branded HAZA401 - with an A average mark. However, only 2 of those students studied between 2011 and 2015. The drop-off was attributed to the general poverty of school operations; the refusal of the Ministry of Education and ERO to properly acknowledge school responsibilities for hazard management; and a resulting tokenistic approach to LM roles which makes it difficult for schools to justify the tuition fees.

The Real World Laboratory Manager Programme is an alternative course currently available, and some school Science Technicians have completed this. Unfortunately, with limited uptake due in part to the nominal approach many schools have continued to take to the Lab Manager role, Real World has decided to cease offering this course in New Zealand after 2020.

I am not familiar with the Real World course, but I completed HAZX401 in 2003. As an experienced chemist, I found it gave a valuable chemical hazard perspective not normally presented in chemistry studies. It has also enabled those technicians with less theoretical and practical experience of chemical hazards to upskill, so that there is no question they can manage chemical hazards better than a science teacher with little chemical expertise - for whom Lab Manager is a third or fourth string responsibility.

Our schools survey in 2015 on hazard management (Kiernan and de Stigter, 2015) found that a variety of Science staff (particularly Head of Science, and Head of Chemistry, but also other science teachers, chemistry teachers, and Science Technicians) had been obliged to take on the chemical hazard management role. Of these, 60% were paid nothing, and most of the others were paid very little. Technician time provision was hard to evaluate, but three-quarters of teacher Lab Managers had no time provision, and only 3% were given more than 1 non-contact period/week.

The situation was disturbing, though it can be understood in terms of very limited school strategic and financial options. The PPTA teaching contract provides for teachers to be paid MMAs or a MU for the Lab Manager role at the principal's discretion, but it was clear that these were not usually made available for this purpose.

Technicians taking on the LM role have not been clearly provided for in the NZEI support staff collective agreement. Responsibilities additional to the C grade are provided for in a D grade, but the current D grading criteria refer to "usually involving supervision or management of staff". Unfortunately "supervision" is understood in education to mean anything from the lightest of mentoring to an intensive and direct control, so schools have taken different views on whether the Lab Manager role qualifies.

The word "accountability" (for actions of staff) is also used to describe someone on a D grade. This suggests a direct line management role rather than one merely stating expectations and formalising procedures. Science Technician Lab Managers need a clear D grade guideline for the role – like the Memorandum about Science Technicians and Librarians in the 2001-3 collective agreement. As would be expected, the better-paid Science Technician LMs have been paid at an rate equivalent to the 1MU teacher appointments. This level seems suitable for the responsibilities if they are taken seriously and COP compliance is intended by the school.

In 2015, from the 75% of schools in our survey which had recognised hazard management responsibilities by appointing a Lab Manager, 24 schools had a Science Technician as Lab Manager. This had increased by 2017 when data were collected in the workforce study. In November 2019, a brief

questionnaire was given to Science Technician Lab Managers to establish changes made since then. (This update of the current situation for Science Technician Lab Managers will be reported separately.)

If school operational funding was more adequate, or Science Technician Lab Managers were not paid out of the operations grant (and schools could then assign the responsibility without undue cost to them) then the number of Science Technician Lab Managers would be expected to increase substantially. This administrative responsibility for hazards is not a core teaching function – teaching and overseeing student learning is already onerous enough.

While some teachers may be keen to take the primary role in managing chemical hazards, in general they do not need this distraction from their necessary priorities, and would welcome the opportunity to pass it on to someone competent.

When Lab Managers were first appointed, there were doubts expressed about technicians taking these positions. Although a Science Technician may already take care of much in managing chemicals, and offer hazard management assistance to teachers, this LM position would be a step-up. Indeed it must be seen as a significant promotion, not as part of the science technician job description.

The appointment carries with it the authority and responsibility to establish safe practices, generally working collaboratively with the Head of Science and science staff to introduce and maintain safety disciplines. It is as logical to fill this role with appropriately trained support staff as it is to have non-teachers as Finance Managers.

The 2015 survey established that safety achievements in schools with Science Technician Lab Managers at least matched those for the Lab Managers from all of the teacher groups. The early reservations expressed about Science Technician appointments as LMs have now been well resolved.

17. A Science Technician Pay Investigation - Bring it on!

We look forward to an evaluation of the content of the school Science Technician role, and to a comparison of that job content with the work of one or more suitable comparator position – one where gender bias is not an evident issue and where dominant constraints (such as those of a restrictive operations budget) do not prevent fair assessment of worth.

We are keen to showcase the multiple talents of our Science Technician group acquired through educational qualifications, science and other previous paid and unpaid work experiences, together with a maturing in relationship, attitude, and commitment to excel.

Also, imagine the important responsibility many Science Technicians now shoulder as Lab Manager being adequately recognised and properly paid! We invite an examination of the job content of that extra role. If/when there is appropriate funding available from beyond the operations budget for Lab Manager appointments, we see many more schools also choosing to appoint a qualified Science Technician (in preference to a science teacher) to manage hazardous substance requirements.

Ian de Stigter Science Technician, Mt Albert Grammar School 25th February 2020

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