Technical Staff in Schools, staffing and conditions

Policy Statement

LTAV 2007

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Technical Staff in Schools, staffing and conditions

This policy statement represents the view of Laboratory Technicians' Association of Victoria (inc.) of the minimum levels of staffing and conditions of employment required to provide for the efficient operation of laboratories in Victorian Schools.

The operation of laboratories in schools is far too big a task for teachers, however dedicated to do for themselves, the skills required are not normally possessed by most teachers and this is not a task that can be safely and efficiently carried out by an untrained person.

Recent years have seen an enormous increase in the administrative load imposed on technical staff in maintaining a safe working environment for themselves, for academic staff and for students.

Typically the decisions made on matters of technical staffing and conditions are made by people who have little or no expertise in laboratory operations and therefore little understanding of the problem. This policy will provide guidance for them in these matters and also for other stakeholders in this arena.

1) The current situation

a) Historically staffing levels for technical staff in education have been inconsistent and usually inadequate with workloads varying from heavy to impossible. LTAV conducted a survey in 2006 of our members to identify a number of issues (App C) and this shows clearly that staffing is in serious need of review. In 2008 a similar survey was conducted nationally by prof Mark Hackling and he published a report on this (Hackling, Edith Cowan University 2009). Haclings reomendations were largely consistant with

LTAV's 2007 policy. This is also consistent with the results found by CLEAPSS in the UK.

b) Our survey indicates a service factor (the ratio of tech staff man-hours to number of science classes taught) of 0.47, and this is significantly lower that the optimum level which the CLEAPSS policy recommends as 0.6 and our own policy that will be stated later in this document.

c) Anecdotal evidence points to situations in some schools of a single technician servicing school populations in excess of 1400 students and technician to student ratios of greater than 1: 800 are not uncommon.

d) The relative importance of the practical component of Science education also varies a great deal, the number of practical activities varying enormously between schools. It is logical to conclude that practical work is and should be an important part of the science curriculum. Presently the following issues often prevent the effective delivery of the services to provide this content.

   i) Insufficient time for technical staff to prepare the materials

   ii) Insufficient time for technical staff to implement a safe work environment for these activities to occur.

   iii) Administrative loads in technical staff increase lead times to the point where academic staff have difficulty planning the practical component of their teaching.

   iv) The responsibility for the acquisition and provision of physical resources for science is not well defined and this results in great difficulties in the provision of the equipment needed to effectively and safely deliver the practical part of a science program.

e) Remuneration for Technical staff is inconsistent and arbitrary, the ESS structure used by DEECD and which is also followed in modified form by CEO schools is centered around the need to provide administrative staff and assumes a public service style of progression through on the job training, it does not cope well with the need for technical staff to have specific skills and training. Anecdotally we have seen instances where the "one size fits all" approach has been used to "promote" a clerical worker into a technical position with no provision for training.

f) Typically technical staff are undervalued and their pay is not adequate for their responsibilities or expertise. It is scandalous that the most qualified and experienced of technical staff in education are paid less than the most junior teacher.

g) There is no provision for advancement among technical staff and little chance to obtain those aspects of experience that the ESS and similar structures require. For example, since technical staff work largely alone or in very small numbers there is no scope for supervisory duties.

h) There is no graduated progression of positions. All technical staff are seen as the same irrespective of experience or qualifications or of responsibilities.

i) There are currently no mandatory qualifications for technical staff in schools for the major employers. Schools often do insist on specific qualifications but there is little consistency in this, no recognition of experience in most cases. The possession of qualifications does not result in any improvement in salary in most cases.

j) Existing technical staff possess qualifications ranging from none to PhD level and many have extensive experience not only in educational laboratories but also in research and in industry (see App B).

k) Demographically technical staff in schools fall largely into two categories, those that are new to the profession and those that are in their forties and fifties who have extensive experience. As this second group reach the end of their working lives and retire there is likely to be a crisis in staffing of laboratories in schools within the next 5 years.

l) Since there is no chance of advancement in this profession for most technicians many leave the profession completely moving to research or industry to further their careers.

2) Policy recommendations

a) **Staffing**

i) Staffing of laboratories in Victorian Schools be set at a ***minimum*** service factor[1] of 0.6 with an additional 0.1 service factor loading for each of the following difficult circumstances;

(1) Where laboratories are not on the ground floor or are on multiple levels and no lift is provided.

(2) Where the number of laboratories provided is inadequate for the school population resulting in occupancy rates regularly in excess of 85% or where construction or other works impinge on the working environment of the Science Department in the school

(3) Where science facilities are spread over more than one site or where labs are widely separated.

[1] A definition and explanation of Service Factor can be found in Appendix D

(4) Where there is no separate chemical store or where the chemical store is located away from the laboratories.

(5) Where preparation laboratories do not include adequate facilities such as fume cupboards (not shared with teaching laboratories) or adequate storage.

(6) Where a school has identified itself as having particular difficult circumstances such as a high non-English speaking population, or other problems that may be the basis of additional grant funding.

b) **Career Structure**

i) That a system of four levels of technician be instituted (see App A) and that there should be a progression through these levels. This will ensure some prospect of advancement and encourage technicians to remain in education. These levels should be (see App A for detail);

(1) Laboratory Assistant (This is an entry level and should be seen as a training position only).

(2) Laboratory Technician.

(3) Senior Laboratory Technician.

(4) Laboratory Manager.

c) **Qualifications**

i) That the following qualifications or equivalent experience be considered normal for positions as Technical staff in schools;

(1) Laboratory Assistant

no formal qualification (this is a training position).

(2) Laboratory Technician

passes in at least 4 VCE science subjects or a certificate IV in a relevant discipline or equivalent other training or experience.

(3) Senior Laboratory Technician

a Diploma of Applied Science or equivalent or a Cert. IV with significant experience or extensive experience in a related field.

(4) Laboratory manager

at least a Diploma of Applied Science and extensive relevant experience preferably in an educational environment.

d) **Classification and salary range**

i) that the previously mentioned levels of technical employment be seen as equivalent in terms of responsibility and remuneration to the (DEECD) classifications of; (See App A for details).

Technical Assistant (trainee)	ESS 1-1
Technician	ESS 1-2 to ESS 2-3
Senior Technician	ESS 2-3 to ESS 2-5
Laboratory Manager	ESS 3-6

Appendix A

Job descriptions

The positions described here are based on the need to provide a structure for laboratory staff and as such only loosely fit in the generic job descriptors used by DEECD and the CEO.

As a guide the equivalent levels within the ESS structure used by DEECD are as follows

Technical Assistant (trainee)	ESS 1-1
Technician	ESS 1-2 to ESS 2-3
Senior Technician	ESS 2-3 to ESS 2-5
Laboratory Manager	ESS 3-6

1. Science Technical Assistant (trainee)

This is the entry level position for someone coming into the profession. It is intended to be a training position and therefore of a short term nature only. As soon as the training has been completed the trainee position should be replaced by a position at the Laboratory Technician level. This includes work placement students from tertiary institutions.

There are no requirements for qualifications at this level but it would be expected that someone in such a position would be undergoing training in a TAFE college or doing extensive P.D.

The occupant of a Technical Assistant position needs work under the supervision of a trained Technician, Senior Technician or Lab Manager. It would not be appropriate for such a person to be supervised by a teacher.

A Technical Assistant position should only be created for the purpose of training a person to continue in laboratory work and it would be expected that a training plan would be in place for the duration of such a position.

This is an entry level position which entails routine support tasks in the laboratory and does not require unsupervised work.

a) Typical duties of a science technical assistant (trainee):

- Under direction prepare solutions, stains and media for general use.
- Set out equipment and materials for classroom/department use.
- Clear classroom demonstrations/activities.
- Assist with care of flora/fauna.
- Assist science teaching staff and senior technical staff with enforcement of safety measures.
- Assist with stocktaking of equipment/materials.
- Assist with record keeping.
- Carry out simple maintenance of equipment and materials.
- Report damage to equipment and arrange repairs.
- Attend relevant professional development in accordance with a PD plan.

2) ***Job description of the Laboratory Technician***

This is the level of most Technicians in schools, some experience or qualifications are expected as is a degree of autonomy in carrying out duties and this position would be expected to be at a higher pay scale than that of the Technical Assistant.

Normally the occupant of this position would be expected to have completed at least 4 VCE Science units (or equivalent) or hold a completed Certificate IV in a relevant area, or have equivalent other training or experience.

This position does not require constant supervision and what supervision is required would come from a senior technician or laboratory manager. This should not be the position of a sole technician in a school. Since the sole technician has responsibilities for ordering and budgeting that are beyond the expectation for this level. Such a position would be a senior technician in a small school or a lab manager in a larger one.

a) Typical duties of a science laboratory technician:

i) Teacher Support

1. Liaise with science teaching staff on their needs for practical work and maintain an efficient system for use and allocation of materials and equipment, setting a priority system where necessary.
2. Advise science teaching staff on technical components of curriculum.
3. Assist science teaching staff with demonstrations.
4. Assist science teaching staff in instructing students on use/care of equipment during science experiments.

5. Advise and assist science teaching staff in safety matters relating to the science laboratory.
6. Prepare safety assessments in relation to Preparation tasks.
7. Demonstrate laboratory techniques to science teaching staff/students.
8. Assist with the use of computers and learning technologies within the department.

Preparation & Maintenance

1) Prepare solutions, stains and media for use in the laboratory.
2) Maintain a safe chemical storage/handling/disposal system in accordance with current regulations.
3) Assist with security of science laboratory and equipment.
4) Maintain an inventory of equipment.
5) Acquire relevant catalogues and price lists.
6) Assist with labelling, storage, stocktaking and ordering of equipment and chemicals.
7) Manufacture simple glassware/general equipment for laboratory use.
8) Service and clean simple laboratory apparatus/equipment.
9) Develop maintenance procedures for laboratory equipment.
10) Attend appropriate professional development.

i) Care

- Care for flora and fauna within the science department, in accordance with current handling and prevention of cruelty regulations.
- Collect and maintain living specimens (in accordance with regulations).
- Collect off campus scientific materials and field samples, utilising the school vehicle.

ii) Liaison

- Liaise with organisations and industries for purpose of acquiring equipment etc.
- Liaise with other schools to share resources.
- Be a member of a professional association relevant to the duties of the position.

iii) Budget

- Assist with the science budget and petty cash system.

iv) Supervision

- Supervise the work of the technical assistant.
- Assist the senior technician or Laboratory Manager in the coordination of the professional development of the technical assistant(s).

3) Job description of a Science Senior Laboratory Technician

This position involves the coordination of the work of the science department and requires significant expertise and qualifications/experience. The Senior Technician is expected to work autonomously and may be responsible for the supervision of trainees and less experienced technicians.

The Senior technician is the minimum employment level for a sole technician in any school.

The Senior Technician may be responsible for administering the Science Department budget.

Normally a Senior Technician would be expected to have a Diploma of Applied Science or equivalent or a cert. IV with significant experience or extensive relevant experience in a related field.

a) Typical duties of a science senior laboratory technician:

i) Teacher Support

- Liaise with science teaching staff on their needs for practical work and maintain an efficient system for use and allocation of materials and equipment, setting a priority system where necessary.
- Advise science teaching staff on technical components of curriculum.
- Assist science teaching staff with demonstrations, including acting as a demonstrator.
- Assist science teaching staff in instructing students on use/care of equipment during science experiments.

- Advise and assist science teaching staff in safety matters relating to the science laboratory.
- Prepare safety assessments for activities in the preparation area and, in conjunction with the teacher, in the teaching laboratory.
- Demonstrate laboratory techniques to science teaching staff/students.
- Assist with the use of computers and learning technologies within the department.
- Assist with the development of operational, OH&S and budgetary policy within the science department.

ii) Preparation & Maintenance

- Prepare solutions, stains and media for use in the laboratory.
- Maintain a safe chemical storage/handling/disposal system in accordance with current regulations.
- Assist with security of science laboratory and equipment.
- Maintain an inventory of equipment.
- Acquire relevant catalogues and price lists.
- Carry out and/or coordinate labelling, storage, stocktaking and ordering of equipment and chemicals.
- Manufacture simple glassware/general equipment for laboratory use.
- Service and clean simple laboratory apparatus/equipment.
- Develop maintenance procedures for laboratory equipment.

iii) Care

- Care for or coordinate the care of flora and fauna within the science department, in accordance with current handling and prevention of cruelty regulations.
- Collect and maintain living specimens (in accordance with regulations).
- Collect off campus scientific materials and field samples, utilising the school vehicle.

iv) Liaison

- Liaise with organisations and industries for purpose of acquiring equipment etc.
- Liaise with other schools to share resources.
- Be a member of a professional association relevant to the duties of the position

v) Budget

- Maintain the science budget in conjunction with the Lab Manager or Science coordinator and operate a petty cash system.

vi) Supervision

- Supervise the work of the technical assistant(s) and the technician(s).
- May assist in the provision of professional development for assistants and technicians in conjunction with the Lab Manager or Science coordinator, where required.

4) Job Description for Science Laboratory Manager

Science laboratory managers are responsible for managing the efficient operation of the science laboratory area, and the implementation of strategies to assist the delivery of key school objectives. Science laboratory managers receive limited direction and instructions, and are expected to work autonomously.

A Laboratory manager would be expected to hold at least a Diploma of Applied Science or equivalent or extensive relevant experience in laboratory work (preferably in an educational setting).

Science laboratory managers may have responsibility for supervising and directing the work of technicians and assistants (if any are employed).

Science laboratory managers usually report directly to Principal or science co-ordinator on laboratory issues.

The Laboratory Manager may be a member of the management/leadership team.

a) Typical duties of a science laboratory manager:

i) Management

- Responsible for the efficient operation of the science laboratory area.
- Develop and implement measures for safe handling/storage/disposal of hazardous substances in accordance with relevant regulations.

- Develop and implement operational guidelines and practices in laboratory (e.g. safety policy for science).
- Obtain appropriate licences/permits for use of plant/animals/chemicals etc in the science laboratory.
- Co-ordinate use of all science materials around the school.
- Use department computers for record keeping and classroom experiments.
- Assist with the development of laboratory designs and plans for new or upgraded science facilities.
- Maintain asset register – annual stock-take.
- Conduct safety audits for the laboratories.
- Oversee the production of safety assessments for all activities within the Science Department.

ii) Finances

- Keep accurate records of purchases/incoming orders.
- Maintain a petty cash system.
- Develop budgetary proposals for laboratory.
- Be responsible for approved capital expenditure in the Science department for laboratory use in conjunction with the Science coordinator/head of department.
- Administer the Science Department budget.

iii) Personnel

- May perform a role in the selection of laboratory staff and provide induction for new laboratory staff.
- May be responsible for the supervision of other laboratory staff in the school.

- Coordinate the professional development of the other laboratory staff in the school.

iv) Teacher Support

- Trialling of experiments.
- Review, evaluate and modify laboratory practice - suggest alternatives/develop practical exercises.
- May assist in unit formulation or curriculum planning.
- Produce resource materials.

v) Equipment

- Create and maintain chemical and equipment databases.
- Perform calibration checks and operate specialist laboratory equipment and instruments.
- Oversee maintenance of equipment.
- Evaluate and select equipment, and make recommendations for purchase.

vi) Liaison

- Liaise with companies regarding excursions/use of materials.
- Liaise with other schools to share laboratory resources.
- Liaise with sales representatives.
- Be a member of a professional association relevant to the duties of the position.

Appendix B

Analysis of the 2006 LTB-STAV Laboratory Technician Survey

Overview:

The 2006 LTB-STAV Laboratory Technician Survey was conducted in the first quarter of 2007. The survey form was sent out in the LTB-STAV Publication *Lab Lines*[1], December 2006 edition, and posted on the Science Victoria Web Site (Laboratory Technicians page) where it could be downloaded.

Unlike the most recent previous attempts to collect data, this most recent survey had a good level of response, with 249 surveys collected. Most questions were answered to a meaningful level, and good data was able to be collected. Where there were problems with the question, either in the understanding of the respondent or technical errors, the data was discarded unless otherwise noted. These cases will be noted with the Detailed breakdown listed below.

The questions in the survey related to several different factors which we were investigating, which can be broken down into several broad categories. The questions can be grouped according to:

Q1-3: School type, employment category and salaried extras

[1] *Lab Lines* is sent out to all registered members of LTB-STAV, comprising of Laboratory Technicians in educational institutions in Victoria and interstate, at primary, secondary and tertiary levels.

Q4-14: Conditions

Q15-17: Experience and qualifications

Q18-20: Professional Development

The Survey:

Responses to the survey, including some limited data correlation where appropriate. Original questions from the survey are underlined. Figures in **bold** represent responses to the survey. Comments are in *Italics* :

1) Which sector of the education system are you employed in:

a)	**Government Primary/Secondary School (DE&T)**	**141**[1]
b)	**Catholic Primary/Secondary School (CEO)**	**55**
c)	**Independent Primary/Secondary School (RSB)**	**52**
d)	**University/TAFE**	**1**
e)	**Other (please list)**	**0**

There did not appear to be any problems with this question. The questions in the survey showed an obvious bias to secondary school positions, so there was no real surprise at the lack of non-secondary school responses.

[1] There was one interstate respondent. This person's data was included where relevant, and discarded where inconsistent with laboratory conditions in Victoria as analysed.

2) Which salary category does your position fall under in the above system? (e.g. ESS1-2 in DEECD)

a) DE&T

i) ESS1-1 = 31

ii) ESS1-2 = 82

iii) ESS2-3 = 20

iv) ESS>2-3 = 3

v) Undefined = 5

b) CEO

i) Undefined = 5

ii) ESS1 = 1

iii) ESS2 = 3

iv) ESS3 = 7

v) ESS4 = 24 (commonly 4-13 = 17)

vi) ESS5 = 12 (commonly 5-16 = 7)

vii) ESS6 = 3

c) RSB[1]

i) SAB/G2 = 2

ii) SAB/G3 = 14

iii) SAB/G4 = 2

iv) ESS3=1[2]

[1] There are a number of unusual categories unlisted here due to single instances occurring. These were categorised as "undefined" for purposes of this analysis.

[2] There appears to be an overlap where a catholic school is also an independent school and therefore pays according to the CEO wage scale.

v) **ESS4=2**

vi) **ESS5=1**

vii) **Undefined = 30** [1]

Several factors could be Determined in failing to answer this question effectively, and therefore recording an" undefined" response. These were:

- *Not knowing which category the position fell into.*
- *Not being willing to answer the question at all (fears of an invasion of privacy).*
- *Confusion over which category the position fell.*
- *Not falling into a category (individual contract or uncategorised position).*
- *Partial completion of the question (unknown sub-level).*

3) Do you receive any other allowances on top of your base salary for extra duties performed in your position? (such as a first aid allowance)

(please list)

There were not many technicians who received additional allowances on top of their award. Where allowances were received, they were typically for duties listed in later areas of the survey (Testing and Tagging, First Aid etc.).

One interesting factor emerged: Where schools had problems with merit and equity considerations of lab technician duties i.e. where the school was not willing to promote a technician but would have had to limit the technicians duties to align with the award, many schools decided to pay an allowance for extra duties beyond those listed for the award but below the next award level (i.e. no promotion to ESS2-3, but an allowance paid on top of ESS1-2 to do some additional duties that didn't equate to the

[1] The unusually high level of the "undefined" salary category can also be blamed on individual contracts being used in Independent [RSB] schools.

full descriptive level for an ESS2-3)

4) <u>The following table is a summary of the typical working cycle in terms of the total science teaching load for your school.</u>

The length of a session/period at your school is: _____

(i.e. 1 period = 50 mins)

The number of days in a cycle at your school is: _____

(i.e. 1 cycle = 5 days)

The student population of your school is: _____

[table]

Minimum = 6, Maximum = 269.17, Average = 99.9

The wide variety of conditions and loads makes summarising the raw data from this question in isolation meaningless. With that in mind, a method of analysing this data was sought after, and the method developed by ASE[1] in the UK was decided on as our preferred method of data analysis[2]
This question proved to be the most problematical of the survey. In all, ~80% answered this question in the expected way, with a further ~10% able to be inferred from the provided data. This ~10% can be categorised as answering the question correctly but in a way inconsistent with the original intent, showing the ambiguity in the question, but still forming valid data.

For the ~10% unable to complete the question to a level understandable by the person doing the data entry, the following sources of error were encountered:

- *Missing data (~8%) – table either incompletely filled in, or not filled in at all.*
- *Confusing data (~1%) – where the data seemed to be inconsistent or nonsensical.*

[1] "Technical Support for School Science, ASE, 1990, ISBN 0863571425"
[2] See Appendix D for full information on the Service Factor.

- *Undifferentiated data (~1%) – where data was collected over a number of year levels or subjects and it was impossible to ascertain with certainty how many periods each class attended.*

Where the data was confusing it was discarded and ignored. Where the data was undifferentiated, it was either treated statistically to ascertain true values, was averaged where there was more than one interpretation available for the undifferentiated data, or it was used intact where neither of the other options gave a statistically relevant answer. Undifferentiated data was still useful in DEECDermining service factor, the primary use of this data.

5) What is the total number of technician hours per week employed by your school? (For this exercise, we have defined 1.0 FTE (full time) as 38 hours per week)[i.e. 2 F/T Lab techs = 2 x 38hrs = 76hrs]

Minimum = 0 (6), Maximum = 316, Average = 43.55

This question was answered satisfactorily in 99% of the cases. There was some data interpolation required in some instances where FTE numbers were given rather than the number of hours, but all these were able to be interpreted correctly.

6) In your opinion, are the technical support needs of your school met by this number of technician hours (please circle)? Yes/No

YES = 66%, NO= 34%

The question posed no problems. Where technical issues were encountered (see Q10 for more Detail), the answer to Q7 was used as a sanity check.

7) If No, what number of technician hours would you consider adequate?

Minimum = 5, Maximum = 106.4, Average = 53.36

This question was answered with >95% confidence. With the exceptions to this, the problem encountered was that there was no estimate made, and a comment that was unable to be interpreted as a legitimate figure. In these cases, it was assumed that a 20% increase in line with the statistical average of the rest of the respondents was used. This occurred for less than 1% of respondents.

8) Please indicate if any of the following apply to you (please tick):

a) You don't have a dishwasher. **55**

b) You keep any live animals/insects/fish/reptiles etc. **150**

c) You keep any live plants/fungi. **147**

d) You do not have a dedicated chemical store. **47**

This question provided no problems for respondents.

The following are a list of combinations and the number of respondents that matched

a&b = 33	**a&c = 29**	**a&d = 17**	**b&c = 109**
b&d = 28	**c&d = 28**	**a,b&c = 23**	**a,b&d = 11**
a,c&d = 12	**b,c&d = 22**	**a,b,c&d = 10**	

There is a strong correlation between keeping plants and animals – if you keep one, chances are you keep both.

There was no statistical correlation able to be drawn between the answers to this question and the general job satisfaction levels drawn from Questions 4-7.

9) Please indicate who is responsible for writing/updating risk assessments in your school:

a)	The laboratory assistant/technician/manager(s).	**117**
b)	The science coordinator/science staff .	**17**
c)	Both technician(s) and science staff.	**107**
d)	Other (please list).	**8**

This question was problematical in that more than one answer could have been selected in answer to this question, depending on whether you considered the two categories of risk assessment (preparation and classroom) as one.

In order to gain statistically relevant answers, it was assumed that the two categories could be answered by using option C alone, rather than option A and C.

There were a statistically significant (~5%) number of respondents who indicated that legal compliance in this area was either partial or totally non-existent. The vast majority of these cases fell in categories b) and d).

10) Are your science rooms/prep areas/chemical store widely dispersed or on more than one floor of a multi-story building? Yes/No

YES = 42%, NO = 58%

There was no Detected correlation between a "Yes" in this question and a "No" for question 6. (Total number = 17).

The only problem posed by this question was entirely technical in nature. Where respondents had used an electronic medium to respond to the survey, there was a technical glitch in some instances where a respondent had chosen to use an inserted picture object (a circle or oval) to circle there answer rather than differentiate their answer in another manner. Because picture objects are not anchored, the printed version of their survey response failed to distinguish an answer.

In all these cases (<5%), it was assumed that the answer was "Yes" where other confirmation could not be obtained.

11) Are you required to provide induction for new staff/student teachers? Yes/No

YES = 45%, NO = 55%

This item is not currently reflected in any list of duties for technicians at LTB-STAV, STAV or DE&T levels. Clearly this is something that needs to be considered in any modification of position descriptions. This is appears to be something that is needed in schools for technicians to be providing this service at such a high level of occurrence.

This question provided the same technical problems as Q10.

12) Are you required to provide any of the following additional services outside the LTB-STAV laboratory technician role descriptions:

a) Testing and tagging of electrical equipment. 21

b) Driving the school bus. 20

c) First aid/nursing duties. 58

d) OH&S Committee. 89

e) Budget Management. 122[1]

f) Other (please list).

There was some overlap of information from this question with some respondent's answers to question 3. In those cases, it was assumed that duties that carried salaried allowances should not be included as part of the regular duties of the position, unless there was a legal requirement for the position to be salaried (i.e. OH&S elected delegate).

A wide variety of other duties were listed, although most respondents weren't required to do any duties outside those listed. Most common were Excursions(13) and Photocopying (5).

Some technicians were required to fill multiple roles in the school, most often aESSciated with office duties. Some filled POR's in schools (i.e. timetabling).

1. **DE&T >=ESS2-3 = 17**
2. **CEO >=ESS5 = 9**
3. **RSB >=SAB4 (or equiv) = 7**

Eliminating these from the above numbers gives us our closest approximation to unsalaried considerations of 89

[1] Unfortunately, the survey failed to adequately address whether this category was part of the job description for their position. Many Lab Managers would have this as part of their routine duties. The correlation between Budget Management as a duty requirement and higher seniority by pay scale is as follows:Minimum = 0, Maximum = 33, Average = 2.52

13) Are you required to **regularly** design and/or trial new experiments? Yes/No

YES = 83%, NO = 17%

From the level of response, it is clear that this duty is still a high expectation of technicians, regardless of salary level. Comments on this question were more about time constraints than anything else. This requirement was not a high-level expectation – most people listed "sometimes" as the frequency, or more rarely "sometimes in conjunction with the requesting teacher".

14) Are you required to attend and assist in science classes where practical activities are taking place? Yes/No

YES = 79%, NO = 21%

The high frequency of this response is a warning at two levels: 1) It appears to be an expectation of schools, even though this is well outside the LTB-STAV, STAV and DE&T position descriptions and 2) most technicians felt that this was a safety consideration of paramount importance – they attended class even when specifically not required to improve OH&S in practical classes.

15) What is the maximum **relevant** qualification you have attained:

a)	VCE (or equivalent) science subject pass level.	**21**
b)	Full VCE (or equivalent).	**15**
c)	Part completion of a tertiary level qualification.	**21**
d)	Full completion of an certificate 4.	**21**
e)	Full completion of an aESSciate diploma.	**36**
f)	Full completion of a diploma/advanced diploma.	**36**
g)	Full completion of an undergraduate (bachelor) degree.	**97**
h)	Completion or part-completion of a post-graduate qualification.	**22**

There was one case of an entirely unqualified person working as a lab-tech, where "qualified" was a minimum of a single VCE science subject.

16) How many years experience do you have working in a school laboratory?

Minimum = 0, Maximum = 33, Average = 2.52

Number with no experience (≤ 1 year) = 18

The relative inexperience shown by the average and the number of technicians with no experience is a concern. It shows that there are a great number of technicians with little or no school experience working in school labs. This probably indicates a high level of turnover or loss of experience from the system as technicians retire.

17) How many years experience do you have in any other relevant laboratory/industry?

Minimum = 0, Maximum = 30, Average = 1.44

Number with no experience (≤ 1 year) = 83

It is pleasing that there are a great number of technicians who have some industry experience coming in to school labs. It also appears that a high number of technicians in the system have significant industry experience, which perhaps needs to be recognised within the system.

18) How many hours of professional development did you complete in the previous calendar year? (count each full day as 8 hours)

Minimum = 0, Maximum = 100, Average = 4.3

Number with no Professional Development = 34

The relatively small average indicates that professional development for laboratory technicians is not a priority for schools. This is worrying given the high level of danger associated with the profession in relation to other members of the academic sector, and the high level of regulation associated with the risks involved in the profession.

19) What form(s) did the professional development take:

a)	In-house.	**97**
b)	Union-sponsored/run training.	**12**
c)	Conferences.	**156**
d)	Industry-provided training.	**16**
e)	Other accredited training provider.	**33**
f)	Professional Association.	**68**

There is an element of error associated with this question, where the answers for c) and f) could have double entries. This is due to LTB-STAV being responsible for running LABCON, a laboratory technician's conference held annually in December. Anecdotally, the level of response for f) would appear to be too low, as LTB-STAV also organises regional Professional Development sessions, usually running for several hours per term.

20) Does your employer provide study leave or other support for your professional development? (please list)

YES = 36%, NO = 16%,

Other considerations: 24 respondents said they had a limited level of support, where there were some constraints on attendance to PD. An example of this was time allowance given, but expenses had to be met by the respondent.

Appendix C

Survey raw data
(reserved)

Appendix D
Definition of Service Factor

Overview:

When analysing the data from questions 4-7 of the survey, the wide variety of conditions and loads made summarizing the raw data from these questions in isolation meaningless. With that in mind, a method of analysing the data was sought after, and the method developed by ASE[1] in the UK was decided on as our preferred method of data analysis.

The ASE method relies on two variables: The number of hours of science taught in a school and the number of technician hours employed by the school. The ratio of these two variables is defined as the service factor thus:

Service Factor = Technician Hours/ Hours of science taught in the school

Analysis:

The information from the survey was broken into 2 sections for the purposes of analysis. The first section was to simply calculate the service factor for each survey. This was done by using the complete information from the table in Question 4 and calculating the total number of hours of science taught in the school, then comparing it to the number of technician hours available in the school.

Minimum = 0.16 (0)[2], Maximum = 2.62, Average = 0.47

Section 2 was a comparison of the number of technician hours required to satisfy the needs of the school as depicted by the technicians in the school. This required a direct comparison between the

[1]] "Technical Support for School Science, ASE, 1990, ISBN 0863571425"

[2]] One school surveyed does not have a technician

schools that had a satisfactory level of technician hours according to their technicians with the projected hours required by the schools that indicated that more hours were required.

Minimum = 0.26, Maximum = 2.62, Average = 0.53

Taking this a step further, analysing just those schools that were unhappy with the number of technician hours currently and using their projected requirements, we DEECDermined:

Minimum = 0.27, Maximum = 2.38, Average = 0.55

The data from those same schools reflecting their current level of service is:

Minimum = 0.16 (0) *[2], Maximum = 1.44, Average = 0.38

Conclusion:

From the analysis presented, the average service factor is a clear indicator as to what level of service is required to meet the requirements of a school, independent of specific school requirements as defined by position descriptions. This has been independently reinforced anecdotally by time-in-motion studies of laboratory technicians in a variety of workplaces.

There also appears to be an obvious average threshold at which it becomes necessary to employ more staff, and an equally obvious point at which a position becomes untenable.

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