

Science Teachers' Association of Victoria Inc

ABN 59 004 145 329

STAV Annual Report

1 July 2019 – 30 June 2020

President's Report

STAV's Vision

"To develop a science teaching community growing together through collaboration and professional learning, and supported by conferences, workshops and events, partnerships with industry and the wider community through Science, STEM and other innovations."

STAV's Mission

"To represent and advance the collective voice of science educators and to shape and influence policy in all aspects of science education. STAV is committed to offering a range of resources and services that will promote quality science teaching and learning. STAV provides opportunities for all students to become inspired, engaged and excel in activities that promote scientific literacy including: science talent search, science drama and BHP Foundation science and engineering awards."

The Science Teachers' Association of Victoria Inc. (STAV) is the professional association of Victoria's science educators. Members include those teaching science in primary schools and secondary schools, pre-service teachers, science educators and researchers in the tertiary sectors, retired teachers and individuals with an interest in science education. Teacher membership spans state, catholic and independent school systems. The principal activity of STAV is to promote the interests of science teachers and the teaching of science in the state of Victoria.

STAV is a not for profit member association governed by a voluntary Council elected by the STAV membership and supported by paid staff. As well as providing services of direct benefit to members, STAV has had a wider interest in promoting science education and public understanding of science in Victoria since its foundation in 1943. In the 2005-2006 financial year the entity, Science Victoria was established to manage all those activities conducted by STAV but not directly related to members, as well as to expand the activities that would broadly promote science education. The main current operations of Science Victoria are the conduct of a professional development program, production of educational publications and the organisation of student activities. STAV is the sole member of Science Victoria. This report will deal with aspects of Science Victoria's activities as well as with those of STAV itself. All activities conducted throughout the financial year are aligned with the 2016 – 2020 STAV Strategic Plan.

STAV is governed by a voluntary council. This Council is an executive body responsible for policy making and managing the business of the Association. and it receives, considers and acts on reports from officers and committees. STAV Council meets at least four times a year as well as via electronic communication. Given government restrictions due to COVID-19, Council and Executive meetings have taken place online.

President's Report

The STAV Secretariat staff worked remotely from home as of 24 March 2020 in accordance with the Victorian Government's instructions around non-essential businesses. I extend my thanks to all the staff for being able to pivot in making a seamless transition to remote working.

At the end of the reported period, STAV Council membership was as follows: Alexandra Abela, President (Penleigh and Essendon Grammar School), Dale Carroll (The Geelong College), Alyce Holland, Honorary Secretary (Yarrowonga College P-12), Adele Hudson (Aitken College), Jacinta Huntsman (Ruyton Girls' School), Georgia Lumb (Canterbury Girls' Secondary College), Dr. Robert Roe, Honorary Treasurer (STAV Honorary Life Member, retired), Michael Rosenbrock (Wodonga Senior Secondary College) and Dr. Fiona Trapani, Vice President and Editor LabTalk (Penola Catholic College).

In June 2020, we farewelled from STAV Council, Past President Soula Bennett, Former Vice President and Treasurer Joanna Alexander and Yuvadee Patchon. In this report I wish to formally thank them for their many years of dedicated and distinguished service to STAV and to recognise their individual and collective contributions since 2008. On a personal note, I would like to thank Soula for her support and guidance over the years, and on behalf of STAV Council and STAV's members, I wish Soula, Joanna and Yuvadee every happiness and success in their future endeavours.

STAV's working parties

When the new Council met in January 2020 to undertake a strategic planning day, the achievements of the previous Council was acknowledged and celebrated. Building upon this work, a number of focus areas were identified. Working parties were established and populated to commence work in these areas. Whilst STAV Council oversees the core business and operations of the Association, the working party model was seen as enabling greater engagement from the STAV community in support of STAV Council as well as the broader advancement of Science education across the state. Chaired by STAV Councilors and STAV Life Members the working parties were and are as follows: Regional and Rural Engagement (Alyce Holland, Chair); STAV History (Rod Fawns and Richard Gunstone, Life Members & Chairs); Beginning Science Teachers' Network (Georgia Lumb, Chair); Laboratory Technicians' Network (Dale Carroll, Chair); Professional Learning & Innovation in Education (Adele Hudson, Chair); and Website and Online Presence (Fiona Trapani, Chair). Membership of these working parties was and continues to be open to STAV Individual Members. In addition to those named above I acknowledge and thank the following individual members for their service on the focus groups throughout the reported period: Joanna Alexander, Soula Bennett, Dale Carroll, Sarah Chuck, Jacinta Huntsman, Don Hyatt, Leonie Lang, Mark Learmonth, Jacqueline Lupton, Michelle Lupton, Lisa Millili, Kim Mosbach, Yuvadee Patchon, Robert Roe, Michael Rosenbrock, Janice Teng and Peta White.

STAV's support of school communities affected by the 2019-2020 bushfires

At the same time and in the midst of the devastation of the *Black Summer* bushfires, I wrote to the mayors of the bushfire-affected Shires of East Gippsland, Indigo, Alpine and Towong and the Councils of Wangaratta City and the City of Wodonga. My letters, on behalf of STAV Council and STAV's members, offered STAV's solidarity and support to all affected school communities across the Victoria. Many of the Councils wrote back and some referred our offer of support to their respective Bushfire Recovery Directorates for their consideration. STAV continues to offer any and all support possible to communities in their recoveries.

STAV Publications and Publishing

STAV's Quarterly publications, *Lab Talk* and *Let's Find Out* (LFO) continued in earnest and undiminished throughout the reported period. I wish to thank all authors and contributors to the STAV journals, with special acknowledgement of the editors, Dr. Fiona Trapani (*Lab Talk*), and Peter Hope, Mahaelia Thavarajah and Matthew Bliss (*LFO*).

With the declaration of the COVID-19 pandemic, STAV Council took the decision to share the first 2020 issues of *LabTalk* and *Let's Find Out* (LFO) through the public access area of the STAV website. This decision was well received and in keeping with the desire to support all teachers of Science and STEM in times of remote learning. Subsequent editions of *LabTalk* and *LFO* featured articles and reflections on the ever-changing education landscape. Plans for the full transition of *LabTalk* and *Let's Find Out* online are well advanced and will be reported on in the 2020-2021 Annual Report.

STAV's monthly newsletter, CONTACT continued as an online publication, informing STAV members of professional learning opportunities and providing updates on conferences, workshops, events and resources. In addition, STAV's activities were published in the monthly newsletter of the Australian Science Teachers' Association (ASTA).

Teaching Science, the quarterly peer-reviewed Journal of ASTA, became available to STAV members through the STAV Member area of STAV's website in an online format from 2020 onwards when ASTA ceased producing print versions of the Journal. As an important side note, I wish to acknowledge Dr Fiona Trapani who sits on the Editorial Committee of *Teaching Science* as STAV's representative.

STAV Publishing Semester 1 and 2 Trial Exams were purchased by schools to be used by teachers in preparation of their students for the VCE Science Exams. Trial Exams were issued on time to all schools purchasing the resource. In response to COVID-19, trial exams became available in electronic form.

STAV Member Community Facebook Group and Social Media

In the reported period, STAV Council and its working parties prioritised the development of STAV's online presence to better support its members in connecting with each other. In April, STAV launched its members only Facebook group as a supportive professional learning community for Primary, Secondary, Tertiary educator and Laboratory Technician members. My thanks extend to STAV Councillor Fiona Trapani and STAV Individual Members Jacqueline Lupton and Michelle Lupton, for their instrumental roles in establishing and continuing to moderate what is a collegiate and dynamic group.

Professional Learning, Conferences and Workshops

During the reported period, COVID-19 and the associated state government restrictions and lockdown affected and may continue to affect STAV's operations. This included the inability to hold a significant number of face-to-face events, reduced corporate or individual donations and reduced volunteer activities, all of which impacted heavily on STAV's conferences and workshops.

Prior to the impact of COVID-19, the following conferences were hosted, receiving sound attendance and favourable feedback:

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2019 STAV Physics Master Class, Thursday 15 August 2019, delivered by Victor Sam, Leading Teacher and Science Coordinator Maribyrnong College (total delegates, 4).

STAVCON 2019 *"Science with Meaning"*, Friday 29 November 2019 at La Trobe University. Attending were over 365 delegates, presenters and exhibitors. The keynote addresses were delivered by Dr. Duane W. Hamacher, Associate Professor of Indigenous Astronomy & Science in the School of Physics at the University of Melbourne; and Professor Jill Slay, Optus Chair of Cyber Security at La Trobe University and Director of Cyber Resilience Initiatives for the Australian Computer Society.

VCE Biology Conference Tuesday 11 February 2020, La Trobe University attracting 291 delegates, presenters and exhibitors to the conference. The keynote was delivered by Dr. Nicholas Veldhuis, Joint Group Leader – Integrated Neurogenic Mechanisms Lab Drug Discovery Biology, Monash Institute of Pharmaceutical Sciences. ARC Centre of Excellence in Convergent Bio-nano Science and Technology (CBNS).

VCE Chemistry Conference Wednesday 12 February 2020 La Trobe University attracting 396 delegates, presenters and exhibitors. The keynote was delivered by Dr John Quinn, Australian Research Council Future Fellow at Monash Institute of Pharmaceutical Sciences.

VCE Physics Conference Friday 14 February 2020 La Trobe University, attracting 347 delegates, presenters and exhibitors to the conference. The keynote was delivered by Dr Kaye Morgan, School of Physics and Astronomy Monash University.

CONASTA 68, the annual conference of ASTA, was hosted in Darwin from 8 July 8 to 10 July 2019 at Darwin High School. The conference attracted delegates from across Australia, many of whom were Victorians and STAV members. The program provided a diverse group of workshops and keynote speakers around the theme – 'Uncharted Territory: Innovation in Science Education'.

As a direct result of COVID-19 and resultant government restrictions on face-to-face gatherings, a number of conferences were cancelled or postponed. Although planning was well advanced, the following activities were postponed to 2021: the VCE Psychology Workshop (planned for Friday 22 May 2020) and Science Leaders Conference (planned for Friday 12 June 2020). With regard to the latter, STAV is pleased and proud to be collaborating with the MGSE in the 2021 delivery of this conference, the theme for which is 'STEM Capabilities for Inclusive Learning'.

In postponing the LabTech Conference (Friday 5 June 2020), STAV Council took the brave and bold decision to accelerate its online professional learning strategy. To that end, the decision was made to merge the LabTech, STAV STEM Metro (Friday 28 August 2020) and STAV STEM Regional (Friday 11 September 2020) conferences and to offer this combined conference online over an extended period of time in Term 3 of 2020 with a blend of synchronous and asynchronous sessions. As those practicing in educational settings, members of STAV Council and its working parties understood all too acutely the professional learning needs of primary and secondary teachers and laboratory technicians in the online, remote learning space.

So too, STAV Council understood the value placed on flexibility and the unique opportunity to broaden its reach across Victoria's regions in times of remote learning. Within the reported period, the STAV website commenced reconstruction to cater for the shift to online professional learning.

I look forward to reporting on the successful conduct and rich outcomes of The STAV STEM and LabTech Online conference in the 2020-2021 Annual Report. Suffice to say, a reimagining of what student-learning could look like and the exploration of best practice in times of remote learning drove these watershed changes. And in times of rapid change, when threat and opportunity came

together, I am very proud of what STAV, the organisation, was able to achieve, with digital technology playing and continuing to play a critical role in helping us survive and rebuild out of the COVID-19 experience.

CSIRO – STAV Open Inquiry webinars (within the reported period, Tuesday 26 May and Thursday 18 June): CSIRO Education and Outreach and STAV through ASTA were pleased to offer teachers of Science and STEM the opportunity to engage in a series of free, on-line professional learning webinars about open inquiry. The workshops were sponsored by BHP Foundation in support of the BHP Foundation Science and Engineering Awards and supported by ASTA. These workshops helped teachers investigate ways to implement open inquiry and provide opportunities to further their understandings and successes through various Awards programs including CREST, state and territory science competitions, and the national BHP Foundation Science and Engineering Awards programs for students and teachers. The uptake of the webinars amongst Victorian teachers was high.

STAV Website redevelopment

In January 2020 the STAV online presence working party was formed. The terms of reference for this working party included an update of the STAV website to include more exclusive content for members. The website completion was projected as January 2021, with testing and migration of the old site and content to happen during Term 4 of 2020. As the COVID-19 pandemic has unfolded and as with many other enterprises, we needed to take the conferences online. The existing STAV website did not have the capacity to have the level of security, accessibility and functionality needed to host the conference. With the dedication of STAV Council and the working party members, we were able to re-develop the website in a much shorter time frame. Our members supported site testing and were patient while we worked out the few 'bugs'. This power of work was led and driven by Fiona Trapani and Michael Rosenbrock and supported by STAV Council. The August 2020 launch will be reported on in STAV's 2020-2021 Annual Report, although the bulk of the work was completed during the final months and weeks of this reported period. The intention of the new website was to not only support the delivery of STAV's first online conferences, but also to continue to be developed to provide access to members across a range of other STAV offerings, including online publications, member forums and professional development vodcasts called *STAV Grabs*.

Science Talent Search (STS)

The Science Talent Search (STS) has continued to attract wide interest and was ably conducted by volunteer committees with strong support from STS Coordinator Janice Teng and the STAV staff. Some entrants in STS were nominated to proceed to the national BHP Foundation Science and Engineering awards.

The 2019 STS Exhibition and Presentation Day took place at La Trobe University on Monday 28 October. The 68th Science Talent Search adopted the theme, 'Destination Moon: more missions, more science'. In 2019, STS attracted over \$35,000 in bursaries and more than 3,200 student participants. On presentation day, it was inspiring to experience how this cohort of students had connected with science beyond the classroom. The quality of the projects was outstanding. On the day 318 Major Bursary Awards, 567 Minor Bursary Awards were presented to students. I would like to congratulate all competing students and their passionate, dedicated teachers. A special thank-you must go to the STS Management and STS Committees, and to all the judges, sponsors and parents who supported this competition in 2019.

As already referenced, STS is one potential pathway to the BHP Foundation Science and Engineering Awards (BHPFSEA). The BHPFSEA and Indigenous STEM Awards represent a partnership between ASTA, the CSIRO and the BHP Foundation, and are widely regarded as the pinnacle of school science awards for inspirational students and teachers. STAV's congratulations extend to all student and teacher entrants across Australia in 2020; in particular, Hazel Glen College's Matthew Story for winning Victoria's nomination as its Teacher Finalist. Matthew has a rich history of exceptional service to the Science Talent Search and also to Science teaching more broadly.

In 2020, the STS Management and Committee and the STS Coordinator Janice Teng have been very successful in moving all aspects of STS submission, judging, and presentation and exhibition day online; the 2020 theme was '**Deep Blue: innovations for the future of our oceans**'.

Below is a table summarising the overall number of student participants:

Overall numbers	2019
Total number of schools entering the competition	165
Total number of <u>students</u> in entire competition	3272
Total number of <u>entries</u> in entire competition	2327

Below is the student participation in the two categories that provide entry into the BHP Foundation Science and Engineering National Awards:

Experimental Research	Entries received: 313
	Total Student Participation 427 (278 Female, 148 Male & 1 Indeterminate/intersex)
Inventions/Engineering	Entries received: 54
	Total Student Participation 77 (28 Female and 49 Male)

As with so much of STAV's core business, COVID-19 changed the way that STS was to be conducted. With the majority of students in Victoria studying online in the latter months of this reporting period, STS Management and Committee recognized a great opportunity for teachers to build STS projects into their existing curricula and mentor students online to complete them. For the past two years, the Research and Creative Writing sections and regional entries have been submitted and judged electronically. The facility to extend this model, already being in existence, enabled the extension of judging to include all sections. On behalf of STAV, I thank schools, teachers and students for making the transition online with us.

The Australian Science Teachers' Association (ASTA)

STAV is a founding member of the Australian Science Teachers' Association (ASTA) and, as well as being represented on that body's governing Board, it conducts ASTA activities within this state on behalf of the national organisation. STAV's representative on the ASTA Board is Alexandra Abela, STAV's Delegate to ASTA Council (Congress) is Dale Carroll and STAV's representative on the ASTA Communication and Collaboration Committee is Dr Robert Roe.

Victorian science teachers are able to access ASTA's national science teachers' conference, CONASTA, at discounted rates if they are STAV Individual members. STAV members also have access to the annual STEM X conference held in Canberra each summer, although cut short in January 2020 due to the bushfires. STAV Membership contributes to the ASTA presence in Canberra via the quarterly Capitation fee, which comprises approximately half of the STAV membership fee.

On 12 June 2020, the Education Ministers agreed to terms of reference for the review of the Foundation to Year 10 Australian Curriculum, the reported focus of the review being on content refinement within the existing structure and dimensions of the Australian Curriculum. ACARA curriculum officers leading the review process are engaging subject matter experts and practitioners to assist in the content refinement. ACARA is using existing and new advisory group structures as the formal mechanisms for consultation during the review. This includes consultation with ASTA. The Science Curriculum Reference Group comprises individuals nominated by their states and territories through subject associations, one of which is STAV. STAV has representation in both the primary and secondary areas. Subject to ministerial approval, ACARA intends to publish the next version of the Australian Curriculum in 2022. Further information as to consultative process and STAV's involvement therein, will be provided in the 2021-2022 Annual Report.

Challenging Stereotypes in STEM Project, STAV/DET

The Department of Education and Training (DET) and STAV entered into a Victorian Common Funding Agreement (VCFA) for the delivery of project entitled Challenging Stereotypes in STEM Project. The project commenced on signing of the VCFA in 2018, and is scheduled to cease on 30 July 2021. Following discussions in February 2020, DET and STAV agreed in-principle to variations to the VCFA including deliverables in 2020 and 2021. In this reported period, STAV continued the planning and implementation of activities attached to the DET grant, with significant disruption due to COVID-19, but nonetheless encouraging progress was made toward meeting deliverables, with a continued focus on challenging stereotypes and uncovering conscious and unconscious biases in Science and STEM. In this regard, STAV is collaborating with Education Services Australia (ESA) in the delivery of professional learning, with activities aligned with and underscored by ESA's The Girls in STEM Toolkit (ESA 2019), also known as The GiST.

A celebration of Science and Mathematics Teachers, Government House, Tuesday 30 July 2019

STAV members were recognised for the contributions made to the teaching profession at a reception in the State Drawing Room Government House on Tuesday 30 July 2019. Hosted by Victoria's Governor, the Hon Linda Dessau AC, the event honoured excellence in Science and STEM teaching in Victorian schools. 100 teachers of Science and 100 teachers of Mathematics, current and retired, attended the reception, enjoying the opportunity to be hosted by the Hon Linda Dessau AC, and her husband Mr Anthony Howard AM QC.

Partnerships and Collaborations

STAV continues to contribute to state and national initiatives and collaborates with the following organisations: Australian Science Teachers' Association (ASTA), The Australian Academy of Science, Australia's Chief Scientist, Australian Catholic University, The Australian Curriculum and Assessment Authority (ACARA), Australian Institute for Teaching and School Leadership (AITSL), Australian Technological Sciences and Engineering (ATSE), The Chemical Education Association (CEA), Council of Professional Teaching Associations of Victoria (CPTAV), CSIRO / BHP Foundation (Student and Teacher Awards), Charles Sturt University and the Wangaratta Regional Study Centre, Deakin University, Education Services Australia (ESA), Engineers Australia, DTAC (Digital Technology Advisory Committee Wangaratta), Federation University, La Trobe University, Monash University, The Royal Australian Chemical Institute (RACI), Rowe Scientific (BHP Billiton/CSIRO Student sponsorship), RMIT, Swinburne University, The Office of Victoria's Lead Scientist, The Victorian Curriculum Assessment Authority (VCAA), Vicphysics Teachers' Network Inc., The Victorian Department of Education and Training (DET), The University of Melbourne.

Financial Management

As the Special Purpose Financial Statements outline, the financial results of the Association saw the financial year close with a deficit of \$35,669. In 2019 the deficit was \$26,459. It is acknowledged that COVID-19 has impacted the operations, including the inability to hold some face-to-face events, reduced corporate or individual donations, reduced volunteer activities and impact on other projects and initiatives. I also refer you to the STAV Treasurer's Report for greater detail.

STAV Council resolved that STAV Executive engage the services of a consultant to conduct a review of STAV's operations and, in conjunction with Science Victoria (SV), report on the relationship between STAV and SV. Such a review would explore where there are opportunities for improvement in efficiencies, effectiveness and economy of processes and systems in the areas of finances and governance. At the time of writing this report, the review was underway, the outcomes of which will be reported in STAV's 2020-2021 Annual Report.

In summary and on reflection

With the declaration of the COVID-19 pandemic, the education landscape became a vastly different space and in a remarkably short amount of time. And whilst we had sense of what was on the horizon in March, most would not have fully comprehended the unprecedented shock to humanity that COVID-19 would bring. The roles of all those working in schools have changed and we have seen countless examples of members of school communities working together to adapt to changing circumstances as we have all adopted new platforms, methodologies and pedagogies for the delivery of curriculum.

As a practical subject, the remote teaching and learning of Science has presented unique challenges. We acknowledge that those teaching in schools and supporting teachers have been adaptable and resourceful. Throughout these times, the members of STAV's community have worked tirelessly to represent the voice of science teachers across the state and to unreservedly acknowledge the integral and specialist role that laboratory technicians play in enabling effective teaching and learning of the Sciences across all year levels.

President's Report

I trust this report affirms with you, our valued membership, STAV's critical role as a not for profit organization, in building the capacity and agency of laboratory technicians, teachers, science coordinators, principals and system leaders. Through its advocacy work, it should be evident that STAV contributes to the improvement of the quality of science teaching and learning through enhanced professional learning, resources and the promotion of professional best practice. In times of challenge and adversity, STAV has stood strong and has been unwavering in its support of the science education community to continue to work collaboratively and with agility.

STAV, in its 77th year, is a timeless Association recognized as a group of people with common interests, common problems, and common aims, pursued in a spirit of friendship sufficiently strong to welcome and survive challenges but also to leverage great opportunities brought by change. It has never been an association based on shared knowledge so much as shared values.

STAV's future has continued to depend on the huge personal voluntary investment of time and expertise by a dedicated few individuals. We all continue to find in STAV a source of guidance, support and inspiration.

To those who embody and enact STAV's Vision and Mission – its dedicated Councilors, working party members, many other volunteers, staff and above all, its members – I express my gratitude and best wishes.

Alexandra Abela

STAV President