

Careers with STEM program evaluation 2023



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ABOUT CAREERS WITH STEM

Careers with STEM is a multi-platform student-focussed careers hub that aims to inspire more young Australians to pursue courses and careers with science, technology, engineering or maths. We believe everyone should have access to and representation within STEM careers.

Careers with STEM explores surprising and unexpected STEM career pathways and insights into the future of work. It includes hundreds of diverse, real-life STEM role models and challenges stereotypes around what STEM jobs look like and who works in STEM.

Careers with STEM's catalogue of STEM influencers, expert writers and data-driven insights is a proven way to engage and inspire students, teachers and parents alike. Produced by experts in STEM and supported by today's biggest employers, CareerswithSTEM.com reaches 1 million readers annually in print and online. Careers with STEM is industry-supported and distributed to every Australian secondary school.

Why STEM?

Australia faces a massive challenge in building the technology workforce needed for the future. 1.3 million tech workers will be required by 2030. Employment in STEM occupations in Australia will grow by 12.9% by 2025¹.

However, women made up less than a quarter of students studying STEM in 2019². Research indicates this is due to a lack of awareness, outdated perceptions of the jobs or that they don't 'see' themselves in these careers due to lack of diverse role models.

Careers with STEM aims to show that STEM is relevant to everybody, regardless of gender, ethnicity, disability, family background, neurodiversity or any other factor.

There are still many false assumptions about STEM subjects and skills. For example, the incorrect notion that girls aren't good at maths, or that you only need to pursue science if you're planning to be a scientist. We know these stereotypes are formed when students are very young. In fact, research shows that many of children's ideas about careers are already in place by the time they finish primary school³.



CAREERS WITH STEM'S GOALS:

- Increase educator/ career counsellors understanding of career and study options available in STEM
- Increase students understanding of the career and study options available in STEM
- Increase parents/ careers understanding of the career and study options available in STEM
- Strengthen interest in STEM careers
- Strengthen interest in STEM study

¹ National Skills Commission. State of Australia Skills 2021: now and into the future. <https://www.nationalskillscommission.gov.au/reports/state-australias-skills-2021-now-and-future/chapter-6-labour-market-skills-needs/five-year-employment-projections>

² Australian Government Department of Industry, Science and Resources. Second national data report on girls and women in STEM. <https://www.industry.gov.au/news/second-national-data-report-girls-and-women-stem>

³ Hooley, T. (2021). Career education in Primary School. myfuture Insights series. Melbourne, Education Services Australia

WHAT MAKES CAREERS WITH STEM DIFFERENT?

Our unique narrative, commitment to inclusivity and representation in STEM and a collaborative approach are the success factors behind Careers with STEM.

STEM + X

Careers with STEM's secret formula is STEM + X – where 'X' is your passion, an interest, another subject, a big opportunity or life-changing goal.

Think science + business = new space rockets. Technology + food and agriculture = smarter farming. Engineering + health = new medicines. And maths + fashion and beauty = happier customers and less retail waste. On the Careers with STEM website, students can search for role models and stories by STEM, or their 'X': such as animals, business, creativity, crime and justice, cyber security, defence, design and construction, economics, education, environment, fashion and beauty, food and agriculture and more.

By applying the STEM + X approach, Careers with STEM reaches students who don't traditionally see themselves in STEM.



"I am a big fan of Careers with STEM and often share it with my students via links on MS Teams. We also place hard copies of the magazine in our library. I think that the best part is linking STEM to sometimes obscure or emerging occupations so that it encourages students to think beyond particular industries."

– Educator, Careers with STEM reader survey, 2022

CAREERS WITH STEM PARTNERS

Careers with STEM works with more than 200 partners to varying levels. Through our industry and tertiary partnerships, we are delivering the very latest in up and coming study pathways, and emerging careers in quantum, AI, data and technology. These jobs are changing all the time, and by keeping our finger on the pulse we enable careers advisors and educators to build awareness and capability in talking about and sharing STEM careers with students.

PARTNERS



PROGRAM EVALUATION

Careers with STEM works with more than 200 partners to varying levels. These partners share our vision, to inspire a smarter future. We believe that by combining our efforts we will increase the impact. Careers with STEM has a national reach and is the only STEM initiative deployed across all Australian high schools. Through our industry, government and tertiary partnerships, we are delivering the very latest in up and coming study pathways, and emerging careers.

These jobs are changing all the time, and by keeping our finger on the pulse we enable careers advisors and educators to build awareness and capability in talking about and sharing STEM careers with students. We work with a core team of permanent staff and a pool of contactors to develop fresh content. Communications strategies such as SEO and content marketing require a continuous up-to-date, data-driven content.

Approach

What is delivered?

Events, print magazines, website visits, views, educator engagement, resources, participants/attendees

Evaluation priorities

- Increase awareness of STEM careers
- Strengthen students' interests in STEM careers
- Increase in confidence of careers advisors about STEM study and career options

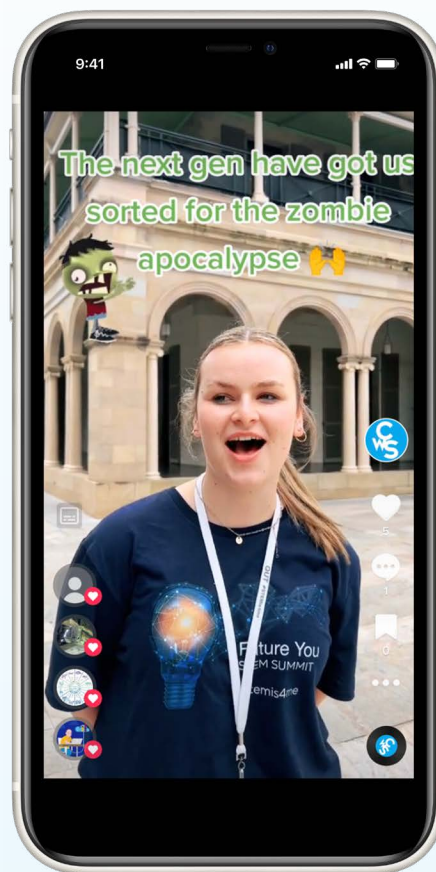
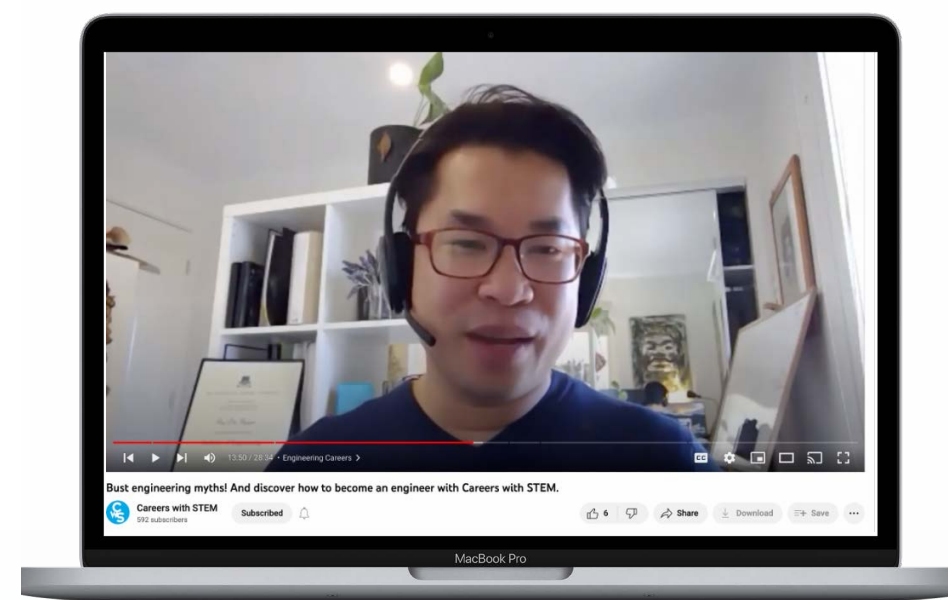
Key questions

1. What is the reach of Careers with STEM and what is the audience?
2. How do career advisors /educators use Careers with STEM resources?
3. How does using/reading Careers with STEM strengthen students' interest in STEM career and study options?
4. How does using Careers with STEM impact career counsellors'/ educators' knowledge about and confidence in communicating to students about STEM?



CAREERS WITH STEM REACH

- Magazines
- Webinars
- Job kits
- Posters
- Website
- YouTube Channel
- Socials



100,000
magazines every year

DISTRIBUTED TO EVERY
AUSTRALIAN SECONDARY SCHOOL
(3000)
4 x per year

REACHING
10,000
students through
annual events

CAREERS WITH STEM.COM

REACHERS 1 MILLION +
students each year

80,000
monthly website users +
180,000
monthly page views

24,100
e-newsletter subscribers

12,000
social media followers

300,000
students readers annually (3 per copy)

AUDIENCE BREAKDOWN

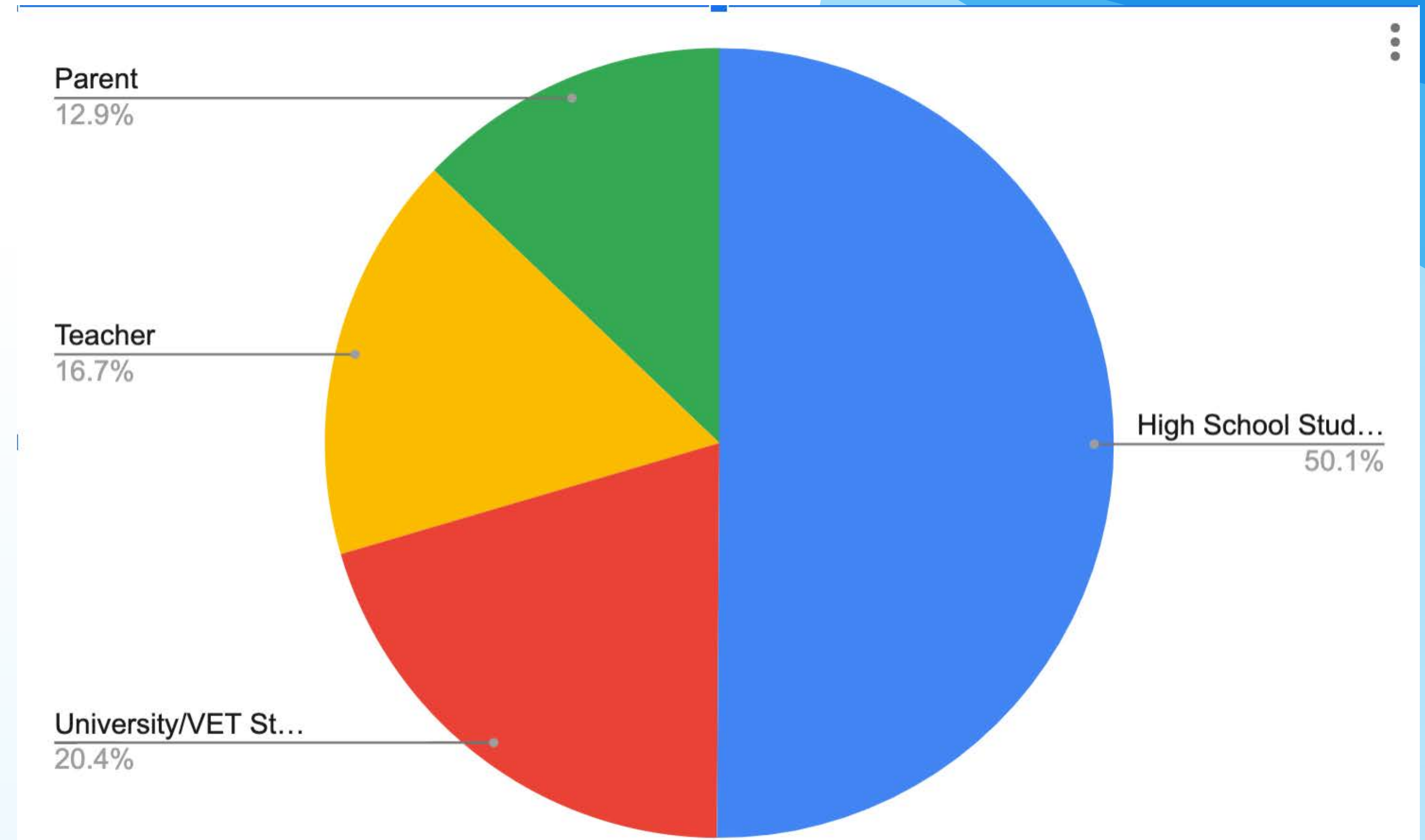
Careers with STEM reaches students, teachers and parents.

READERS (DIGITAL)

Students 70.5% (50.1% high school students, 20.4% uni/VET students)

Teachers 16.7%

Parents 12.9%



⁴ Source: Careers with STEM Reader Survey 2022

AUDIENCE BREAKDOWN

Careers with STEM increases awareness of technology careers in early secondary schools.

STUDENTS

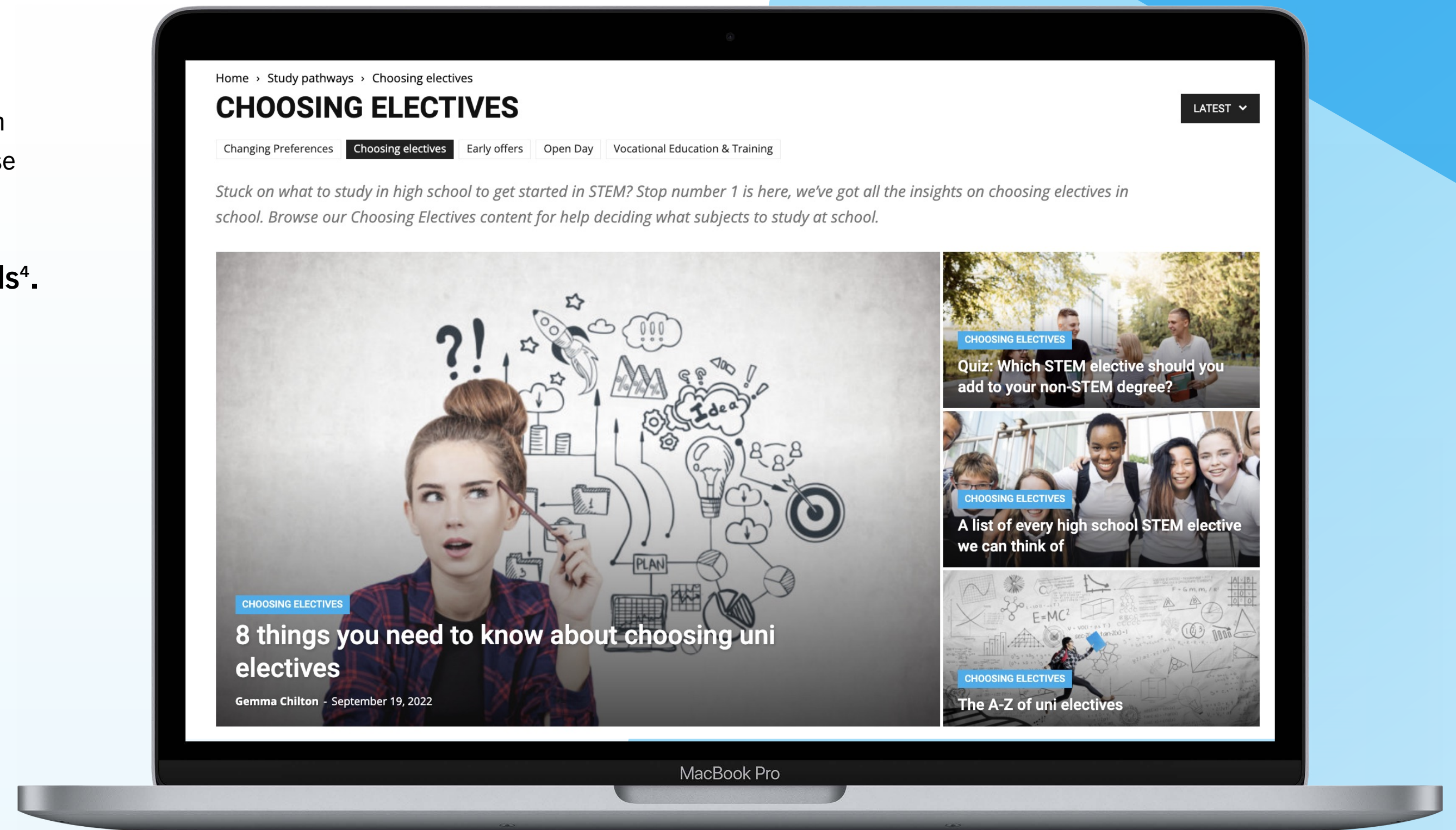
1. Lower secondary school students 7-10

Careers with STEM specifically targets lower secondary school students to make electives choices to encourage them to continue STEM and technology education, and Year 10 students to encourage them to continue to study maths. By hitting strategic influence points of a students journey we aim to increase interest in and enrolments into further study in STEM.

On average 20 students read each issue of Careers with STEM magazines in schools⁴.

There are approximately 3000 secondary schools in Australia so this equates to an annual student readership of 240,000. We also target students through digital campaigns such as [‘Choosing electives’](#) on the website, to provide key information to influence study choices.

⁴ Source: Careers with STEM Reader Survey 2022



2. Upper secondary 11-12

From Years 10–12 students make choices that directly influence their career. Careers with STEM provides more than 500 role models with breakdowns of their study journey to provide examples of diverse paths into STEM. Careers with STEM targets upper secondary students through digital campaigns such as Going to Uni, VET, Open Days, Early Offers and Changing Preferences digital activations timed to specific points of the year.

CAREERS WITH STEM REACHES STUDENTS THROUGH:

- Magazines in school libraries
- Classroom activities using the magazine in class
- Digital activations and digital marketing campaigns
- YouTube *Short & Sharp STEM*
- Instagram reels
- TikTok
- Quizzes to help students find their STEM + X
- Weekly e-news

“I like how it covers different areas and has heaps of options and as much information as possible.”

– Cessnock High School student

“I like how it gives advice and gives experience that others have had.”

– Cessnock High School student

“I’d like to thank you for creating that amazing learning workspace for girls into IT. I found each and everyone’s story inspiring because, in the end, they all pursued their chosen career. It was also inspiring that we were all women because growing up it has always been a men’s thing and now that women are able to come together like that is simply amazing.”

– Sacred Heart College student

3. STEM Undergraduates

Careers with STEM: Graduate Options is designed to help students and career-changers reach their full potential. It offers insights into career trends and forecasts, employer tips and opportunities, and further study pathways.

CAREERS WITH STEM REACHES UNDERGRADUATES THROUGH:

- *Graduate Options* web portal
- Monthly e-newsletter
- Targeted digital marketing
- Postgraduate course guides

Graduates with STEM qualifications are more successful at getting full-time work.

- 80% of STEM graduates were in full time employment in 2020, more than any other area
- 56% of employers have difficulty recruiting for STEM occupations, compared to 41% for all other jobs, because STEM skills are in high demand
- STEM jobs are growing 1.9 times the rate of other occupations

Careers with STEM: Graduate Options

- Connects undergraduates to employer internships and graduate programs
- Promotes graduate upskilling through further education
- Provides critical insights into top skills and strategies to help graduates and career changers attain employment faster
- Helps career changers find new pathways based on our proven ‘STEM + X’ strategy
- Fosters an outlook of life-long learning, upskilling and adaptability

CAREERS ADVISORS & EDUCATORS

In a recent article “You Can’t Be What You Can’t See”, Dev Mukherjee from the National Youth Commission Australia argues that “we have a problem with careers advice and education in Australia. In short, it isn’t working in most schools.”

The 2020 Australian review of senior secondary pathways into work, further education and training by the Education Council states that “career advice nationally is inadequate”. Specifically, concerns have been raised about career education’s quality, equitable provision and policy.

In some schools, the central resource in the traditional provision of career education, the career advisor, is often a part-time staff member with additional classroom teaching responsibilities⁵. Research undertaken by Refraction Media with the University of Adelaide in 2018 found there can be as few as one careers advisor for every 1500 students⁶.

95% of survey respondents⁷ agree or strongly agree that Careers with STEM increases their confidence in discussing STEM careers and that “more specifically it provides some great inspiration for career conversations.”

⁵ Groves, O., Austin, K., O’Shea, S. et al. ‘One student might get one opportunity and then the next student won’t get anything like that’: Inequities in Australian career education and recommendations for a fairer future. Aust. Educ. Res. (2021). <https://doi.org/10.1007/s13384-021-00468-2>

⁶ Ng, D., Vivian, R. & Falkner, K. (2018). Advising Students on Careers of the Future: A Report on the Careers Development Landscape in Australia. Computer Science Education Research Group, The University of Adelaide, Adelaide. Available at: goo.gl/KwQMUA

⁷ Careers with STEM Reader Survey 2022

“Careers with STEM is presented in a format that is easy-to-read and eye-catching. It also presents information in a concise way.”

– Educator, Careers with STEM readers survey 2022

“Our students love the (Careers with STEM) magazines as there are not too many printed materials left that they can actually take home and share with family. They can show mum and dad and we can share with former school parents who really appreciate it.”

– Careers Advisor, Suirius College, Vic

“Thank you for these booklets. I have them on display in my office and find the students love them. Being all girls, I find the magazines are well liked by girls and offer a lot of great material.”

– Career Advisor, Somerville House, Qld

CAREERS WITH STEM REACHES CAREERS ADVISORS THROUGH:

- Free magazines direct mailed to every Australian secondary school
- Careers with STEM: Teachers monthly e-newsletter targeted to educators
- Classroom resources for careers spaces such as posters
- Careers with STEM Job Kits on emerging or booming job areas such as machine learning engineer, renewable energy engineer, information security analyst
- In-depth webinars connecting classrooms to industry professionals

PARENTS

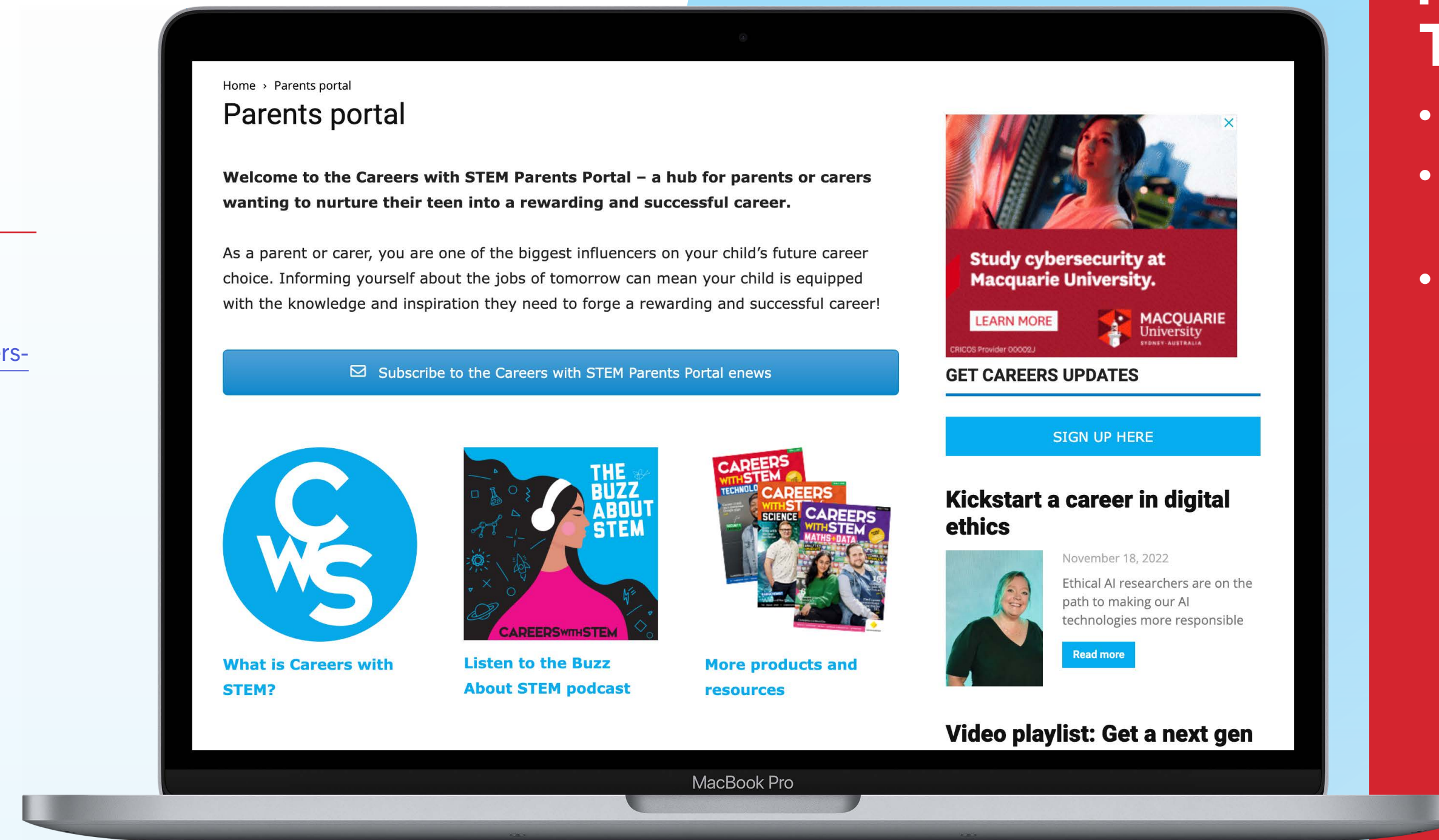
The Department of Industry STEM Influencer Report 2020-2021 shows that parents remain the no. 1 influence on student study and career choices⁸.

A survey by the website Joblist found 52% of those just hitting the job market are working in careers their parents wanted for them.

Careers with STEM resources parents through quizzes, including the STEM + X Study and Personality quiz. We also have information on choosing electives, choosing preferences at uni, making the most of uni open days, and VET paths to help parents navigate study choices throughout early high school through to graduate or VET study options.

The Buzz About STEM is free podcast for parents who want first-hand advice on inspiring their teen and supporting them on their path to a rewarding, successful STEM career. It introduces parents to monthly conversations with STEM professionals at different levels of their careers telling their own study and career stories, with loads of practical advice and inspiring words of wisdom.

⁸ Department of Industry STEM Influencer Report 2020-2021, <https://www.industry.gov.au/sites/default/files/2021-04/stem-influencer-report-teachers-and-career-advisors-2021-20.pdf>



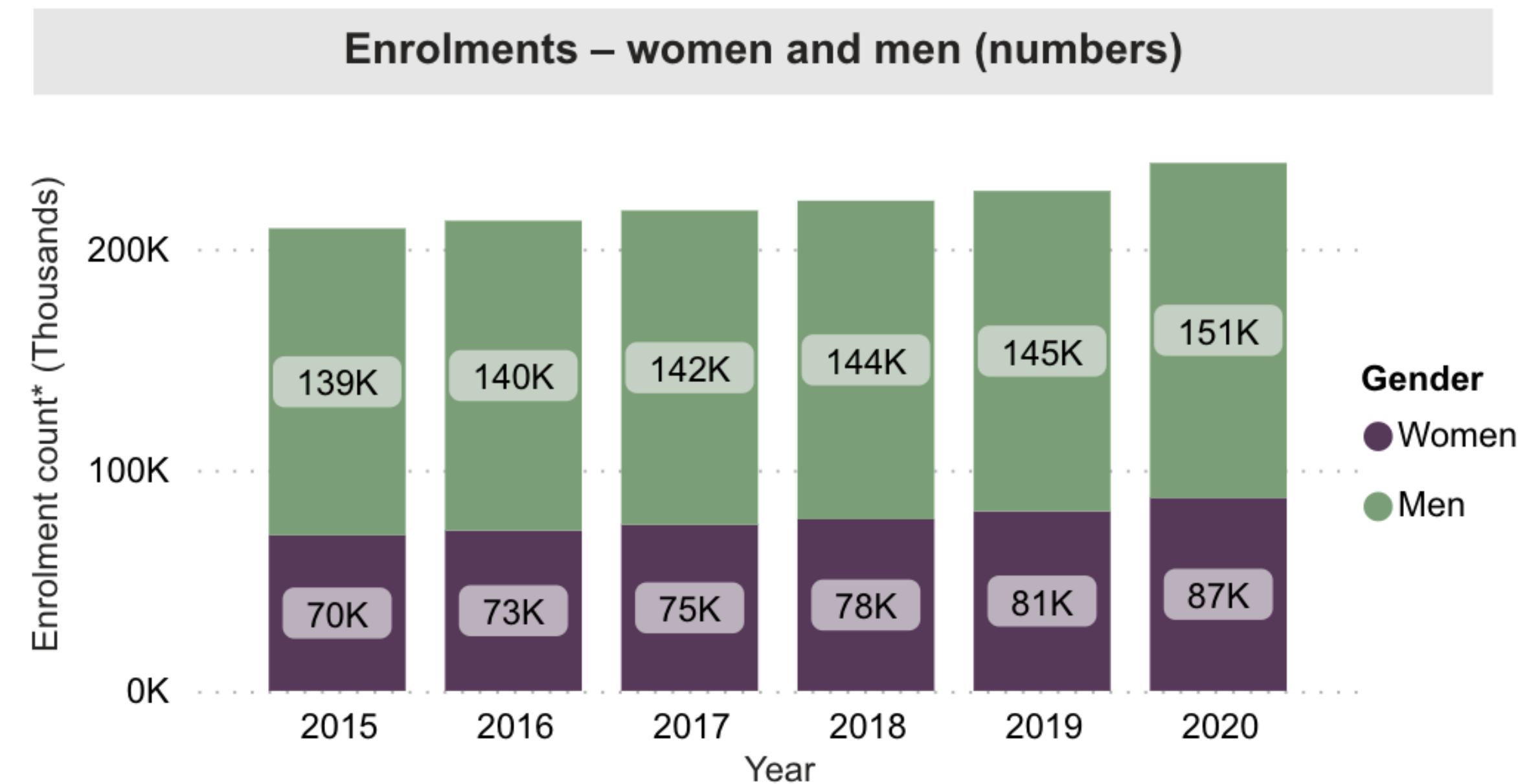
CAREERS WITH STEM REACHES PARENTS THROUGH:

- Parent's web portal
- Careers with STEM: Parents monthly e-newslette
- The Buzz about STEM podcast

MEASURING IMPACT

Careers with STEM has been an effective tool as part of a major shift in STEM enrolments over the last five years. We measure impact by an increase in enrolments in STEM degrees at Australian universities, increase in web traffic and engagement, through educators ordering additional copies and through reader surveys and focus groups.

INCREASE IN ENROLLMENTS IN STEM DEGREES



Enrollments for women in STEM and STEM undergrads as a whole have risen consistently since Careers with STEM's inception in 2014, following a period of decline in the early 2000s.

DIRECT EDUCATOR FEEDBACK

We conduct regular one-on-one interviews with educators and careers advisors to develop a deeper understanding of the challenges they face and the opportunities to support them. We hold focus groups in class with students from years 7-10 to understand their conceptions of STEM careers and to check in on the content that best resonates with them.

We also conduct an annual reader survey. This reveals highlights of the year, uncovers gaps in career education and affirms product retention or new development.

The Careers with STEM reader survey (over 200 respondents, 2022) shows that the main barriers to career education in schools are:

- Lack of knowledge about what careers there are;
- Attitudes and stereotypes;
- Access to real STEM professionals.

“We put copies of the magazine into our gift bags to give to our scholars at their awards celebrations.”

“I pre-ordered additional free copies of Careers with STEM: Technology/Cybersecurity for our Careers library at school.”

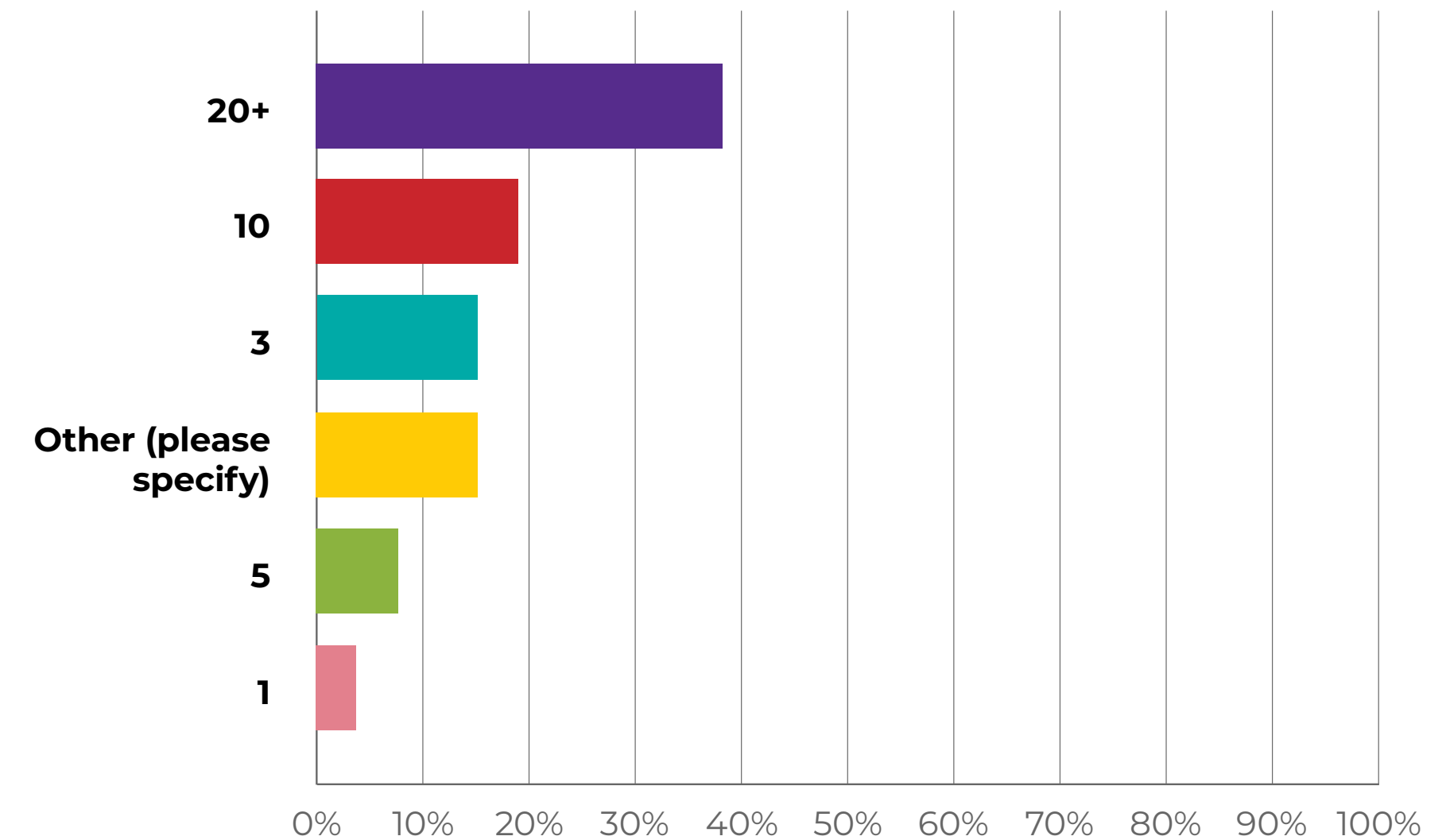
“My favourite issue is Engineering. I have a lot of students studying this as a subject and it is also used to drum up interest in the subject before subject selection time. I also put some of the great pages on display around the school.”

“Careers with STEM allows rural students to see opportunities outside a small town.”

– Educator comments, Careers with STEM readers survey 2022



On average, how many people/students do you think see each copy of Careers with STEM?



On average, each copy of Careers with STEM magazine is shared with 20 students. That equates to 240,000 students per year in classrooms alone.

Source: Careers with STEM Reader Survey 2022

INCREASED UNDERSTANDING OF STEM CAREERS

Over 200 readers surveyed in 2022 indicated that teachers rate Careers with STEM highly in terms of increasing their awareness of and confidence in discussing STEM careers with students. Specifically, Careers with STEM is useful in helping teachers see the pathways and experiences of STEM role models and to use these pathway points to help teachers provide advice to younger people. It also acts as a conversation starter: "It provides some great inspiration for career conversations."

By including role models and stories from regional and remote Australia it allows rural students to see opportunities outside a small town.

95%+ of respondents agree that:

- ★ Careers with STEM helps showcase diversity in STEM careers.
- ★ Careers with STEM keeps me to date with STEM careers and employers.
- ★ Careers with STEM is easy to read.
- ★ I think Careers with STEM is an important part of encouraging young people to pursue courses and careers in STEM.

Source: Careers with STEM Reader Survey 2022

"The Careers with STEM magazines are engaging, inspiring and relevant. In my opinion, they are unique. I have used them and will continue to use them with my senior students and with my junior careers classes. I like to hand copies to students, as well as to use them as a class set on multiple occasions."

– Careers Advisor, Corowa High School, NSW

"Excellent resource with up to date info. Students need to be exposed to current and emerging careers."

"The mags explain the variety of different jobs that are new and I am not yet aware of."

There are different streams of STEM which are not always obvious, and the magazine is a great way of sharing these streams with students. It is also so bright and easy on the eye, that it attracts attention and opens up conversations especially when I see students looking at the magazine."

"We use it as a careers tool resource when advising students."

"Careers with STEM is presented in a format that is easily to read and eye-catching. It also presents information in a concise way."

"It gives me insight to how tech is used in careers, plus how other careers incorporate Computer Science."

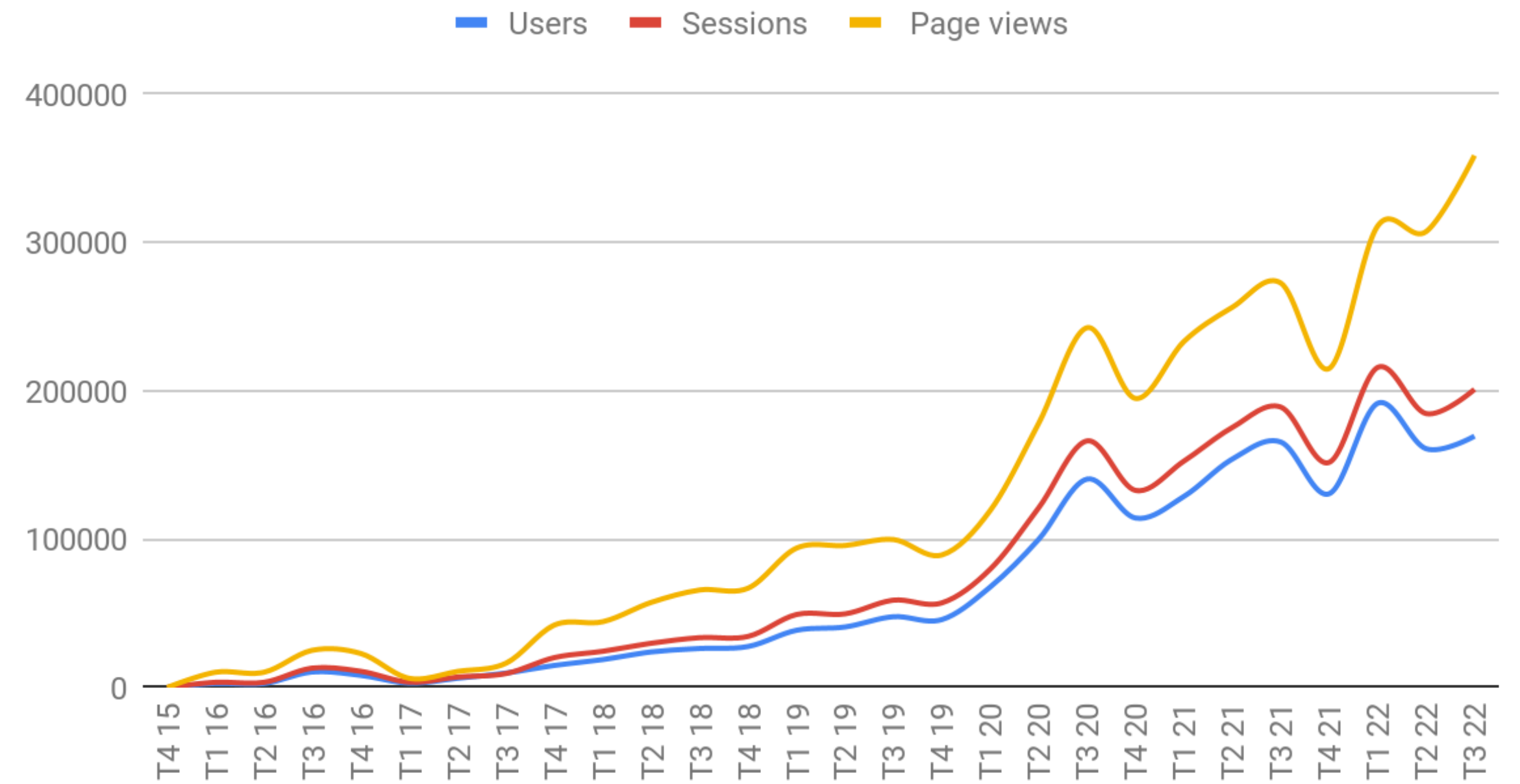
– Careers with STEM reader survey comments, 2022

DIGITAL GROWTH

Through keyword planning, SEO, and targeted digital campaigns, we focus on growing, retaining and converting audiences. We measure this through:

- Consistent increase in website traffic and engagement (clicking through to multiple pages, time spent on page)
- E-newsletter sign ups
- Social media engagement across various platforms

Users, Sessions and Page views



Increase of 24% YOY. 350k+ Page Views per quarter. 3.4 million pageviews since launch

INSIGHTS AND IMPACT

2022 BY THE NUMBERS

HIGH SCHOOL STUDENTS

- 120,000 print magazines distributed nationally
- 1,344,242 website pageviews Dec 2021-Dec 2022
- 1:17 average time on page
- 12,000 social followers
- 252 web articles published on CareerswithSTEM.com
- 110 profiles published
- 23 videos created
- 56 hours of YouTube videos watched

GRADUATES AND CAREER CHANGERS

- 4079 email subscribers
- 48,948 individual emails sent
- 22,580 pageviews of Graduate Options hub
- 6 sponsorship partners

CAREERS ADVISORS & EDUCATORS

- 10,576 additional print magazines ordered
- 526,801 individual emails sent
- 10,657 Careers with STEM weekly email subscribers
- 5519 Careers with STEM Teachers email subscribers
- 1573 Job Kits downloaded
- 786 posters downloaded
- 10 new Job kits for renewable energy engineer, information security analyst, medical physicist, game designer & developer & more

PARENTS

- 3 hours podcast episodes produced
- 10 parents article created
- 1567 new email subscribers

EVENTS & WEBINARS

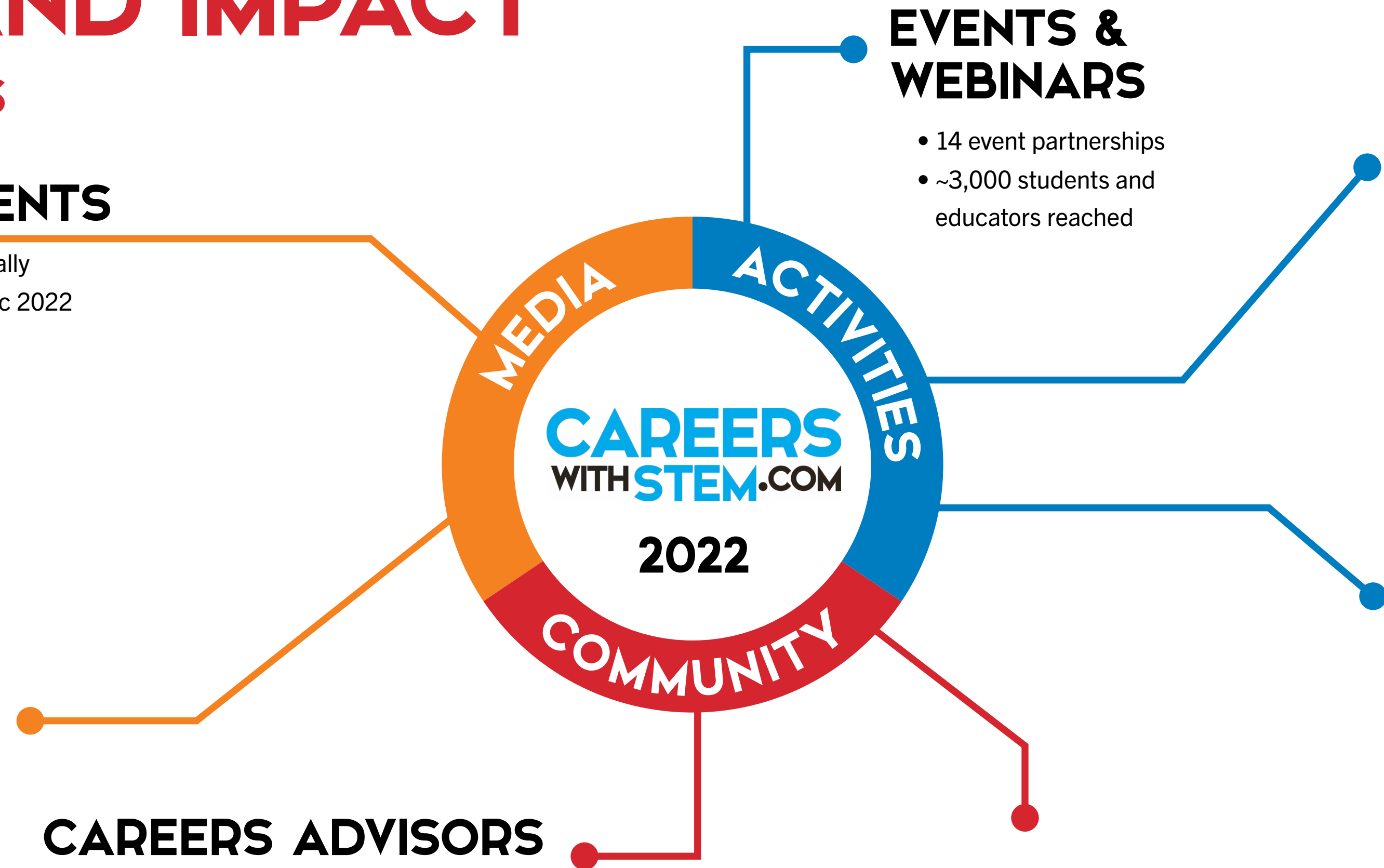
- 14 event partnerships
- ~3,000 students and educators reached

LIVE EVENTS

- CBA Girls in Tech Day
- QLD Dept of Education STEM TEacher Symposium
- NSW Dept of Education STEM 2022
- Women in STEM Leadership
- STEM Education Conference
- Quantum Careers Fair
- AWS' Girls Tech Day, Blacktown

VIRTUAL EVENTS

- Young Space Explorers
- Australian Manufacturing Week
- Q&A with Dr Karl webinars
- QUT Smashing the Glass Ceiling
- AccellIQ North West Sydney webinar
- University of Sydney Connecting with STEM communities in schools



INSIGHTS AND IMPACT

OUR AUDIENCE

E-NEWSLETTERS

MailChimp audience top locations:

- 1 Sydney
- 2 Melbourne
- 3 Queensland

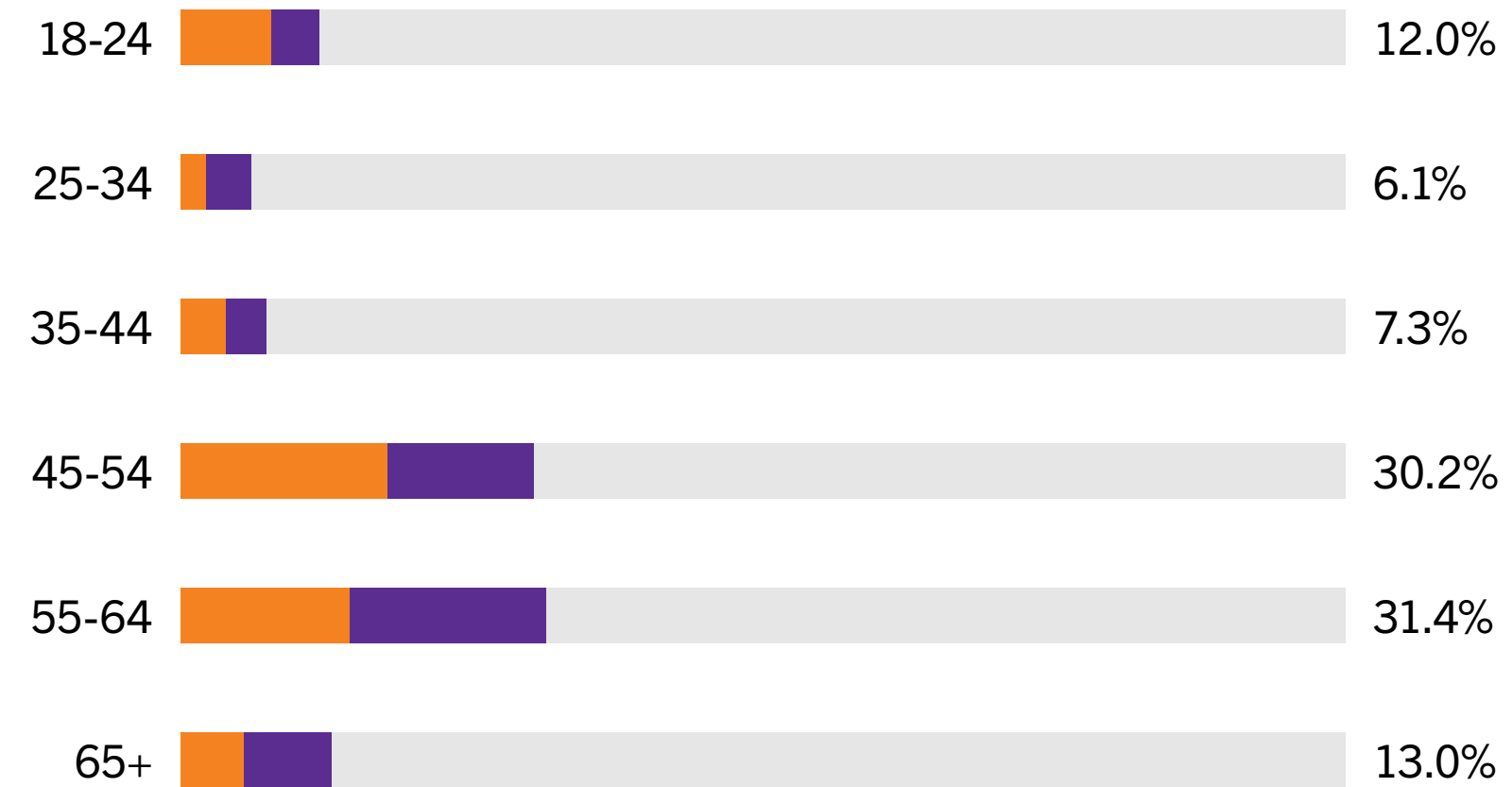
Newsletter open rates 23%

Gender



51.7% Female
48.3% Male

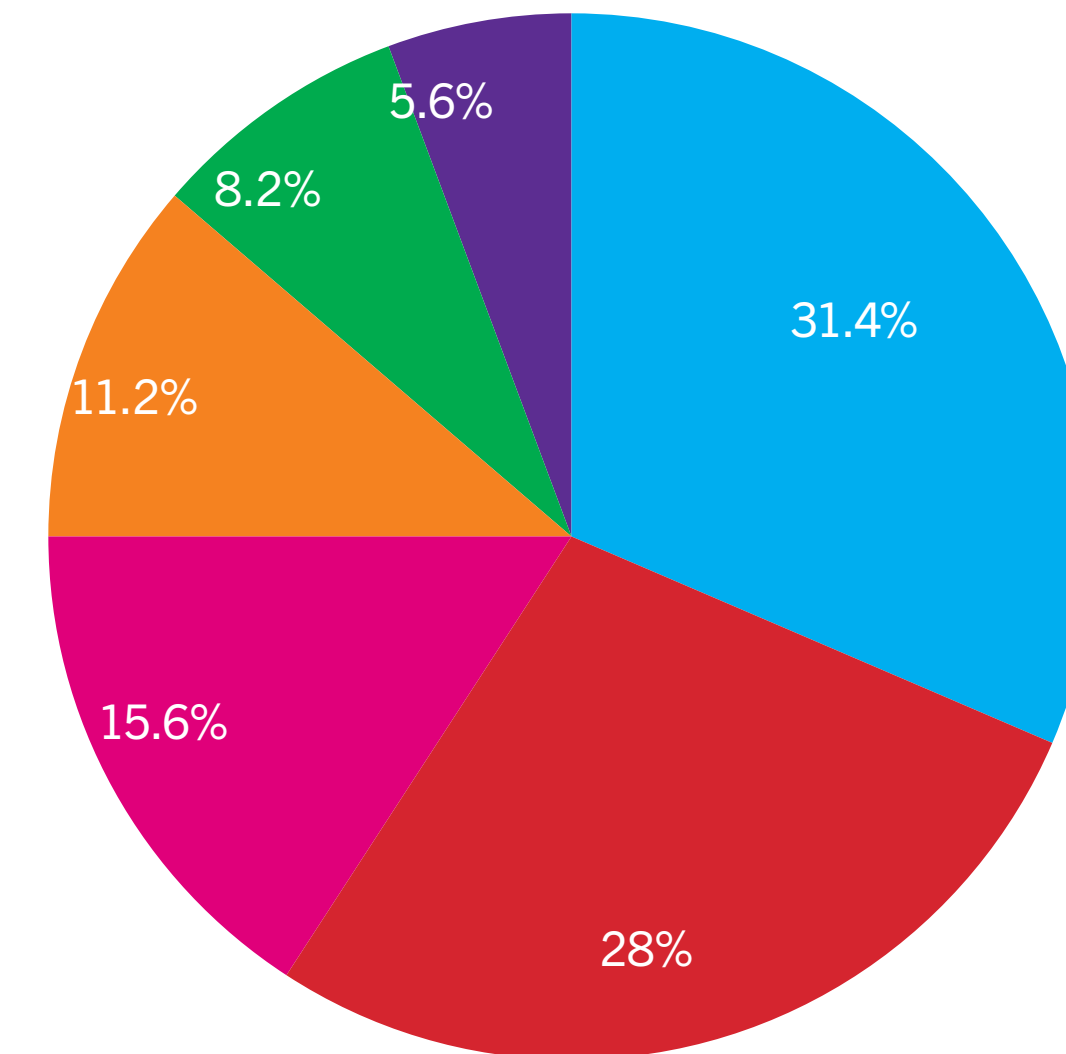
Age Range



WEBSITE: AGE

Age

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

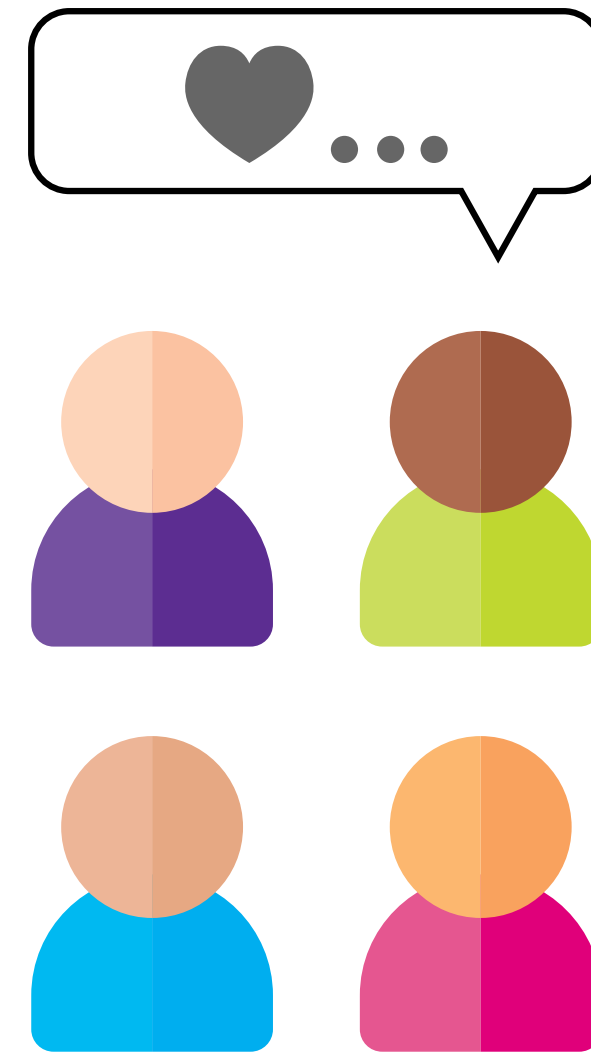


INSIGHTS AND IMPACT

OUR AUDIENCE

WEBSITE: AUDIENCE INTERESTS

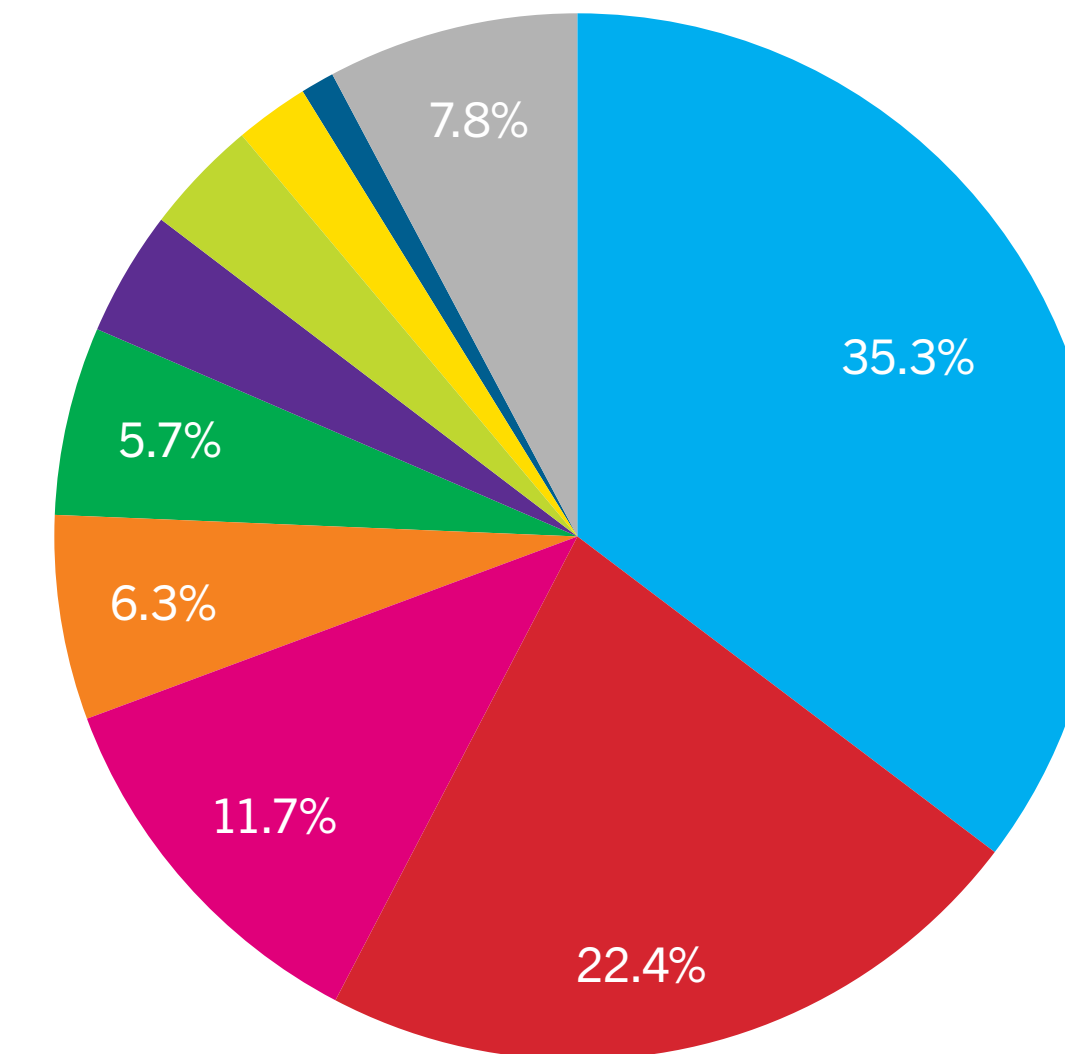
- 1 Employment
- 2 Education/Post secondary education
- 3 Employment / Career consulting services
- 4 Employment / Government & Public Sector Jobs
- 5 Financial Services / Investment services
- 6 Business services
- 7 Software / Business & Productivity software
- 8 Education / Test preparation & Tutoring
- 9 Financial services / Banking services
- 10 Education / Study abroad programs



WEBSITE: LOCATION

Age

- Sydney
- Melbourne
- Brisbane
- Perth
- Adelaide
- (Not set)
- Canberra
- Cairns
- Newcastle
- Others



WEBSITE: MOST-VIEWED PAGES

	PAGE TITLE	PAGE VIEWS	AVG. TIME ON PAGE
1	Careers with STEM > STEM Careers Guides for Students	574,884	00:00:59
2	(not set)	59,573	00:02:28
3	What is Artificial Intelligence? What is AI? Careers with STEM	27,743	00:05:09
4	Careers with STEM newsletter sign up - Careers with STEM	25,686	00:01:52
5	The A-Z STEM Careers List Careers with STEM	23,241	00:05:51
6	Graduate Options - Careers with STEM	22,048	00:00:27
7	Changing Preferences - Careers with STEM	14,833	00:00:27
8	Open Day - Careers iwth STEM	12,738	00:00:36
9	This is Every Science Career We Can Think of Science Career...	9,346	00:02:46
10	Careers with STEM shop - Careers with STEM	8,908	00:00:53

MOST-VIEWED PROFILES

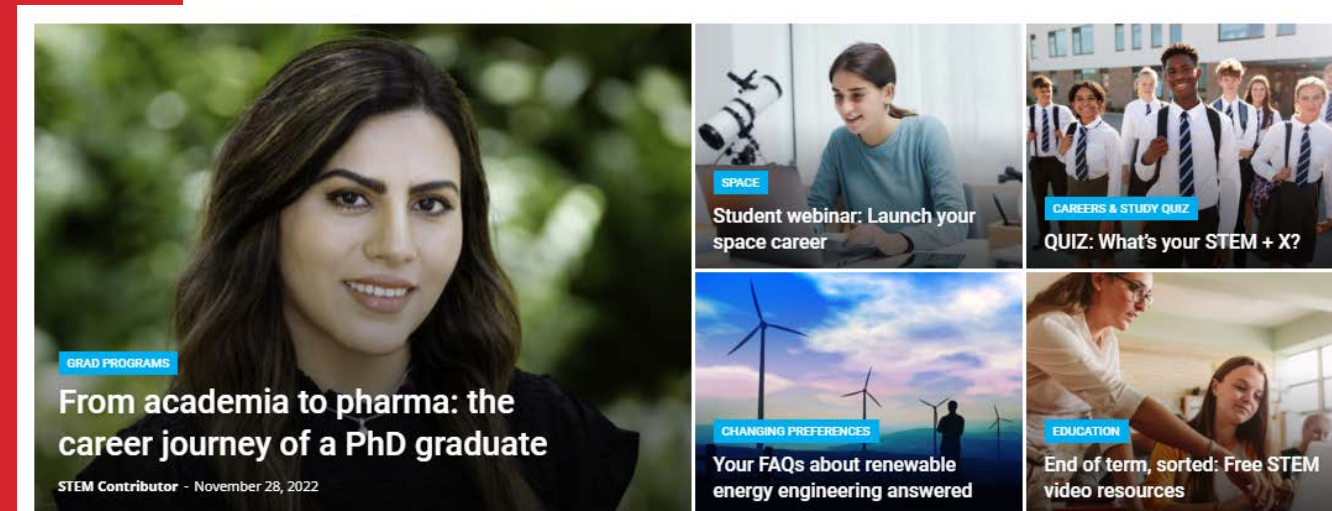
	LANDING PAGE	PAGEVIEWS
1	/profiles/	7,274
2	/profiles/extreme-weather-expert/	1,436
3	/profiles/thomas-bienasz-mqu/	475
4	/profiles/jennifer-myers-nci/	469
5	/profiles/delvin-varghese-monash/	424
6	/profiles/vanessa-zepeda-qut/	420
7	/sydney-quantum-academy-profiles/	404
8	/profiles/elise-mccarthy-macquarie-university/	402
9	/profiles/helen-ramsay-macquarie-university/	391
10	/profiles/dr-santosh-panjekar-ansto/	373

Sessions
819,494

Engagement
54.69%

Avg. Time on Page
00:01:19

Pageviews
1,346,609



STEM ROLE MODELS



Emily Harmon
Cyber security administrator



Morgan Windsor
PhD researcher



Kavika Singhal
Cyber security consultant

INSIGHTS AND IMPACT

SUMMARY OF INSIGHTS

Careers with STEM reaches a youth-skewed audience. We are unable to directly track under-18 data from Google analytics, but use a pop up survey form on the website to gauge that we are connecting directly with high school students using a multi-media approach. Over 50% of the digital audience are high school students, another 20% are university or VET students.

Students are also exposed to Careers with STEM through one-on-one interviews with careers advisors, in-class activities with educators and through live events and webinars held during school hours. The magazines are made available via the careers office and the library, as well as through Digital Technologies classes. Career advisors link to the digital products in careers newsletters to parents.

Through our analytics, direct engagement, email conversions and user feedback we are able to ascertain we are also reaching our secondary target audience of educators in schools and classrooms. 16.7% of the digital audience are educators. Many print materials have a long life in schools, and while events and webinars are a transitory experience, through weekly emails, daily socials and articles, we have an ongoing and continued reach into schools. This is a critical communication approach where staff numbers can be low, teacher turnover high, and new students are entering the school system.

Careers with STEM is a staple in the education setting and continues to receive positive feedback from schools and students. Direct educator feedback shows that over 95% agree that Careers with STEM helps showcase diversity in STEM careers, keeps educators up-to-date with STEM careers and employers, is easy to read and is an important part of encouraging young people to pursue courses and careers in STEM.

“Thanks so much for the magazines. I had a Year 12 student come in today, very lost and disengaged. He only knows that he likes computers and being creative. You should have seen his eyes light up when I gave him one of the magazines!! It was the best.”

– Careers Advisor, St Monica’s College, Epping, Victoria

“Looking back at when I started university, I had no idea what engineering was really about or whether I’d chosen the right path for me. Even though my career path turned out great, I had no idea what types of opportunities lay ahead of me when I started studying - what do engineers even do? That’s why I love seeing spaces like Careers with STEM who are helping young people to understand the reality of what a STEM career looks like - to help them make better informed choices about their futures.”

– Yuneska Harris, Renewable energy engineer & Careers with STEM:
Engineering role model, 2022

FURTHER EVALUATION

Continuous evaluation is a key component of Careers with STEM's ongoing strategy. As a print and digital platform, continuous audience evaluation allows us to most effectively target and reach key audiences.

Through website analytics, surveys and interviews, Careers with STEM program can adapt to society's changing information landscape and reach our target goals to strengthen the interest of diverse groups in STEM careers and study and increase students, teachers, parents and careers understanding of the career and study options available in STEM.

Detailed quantitative analysis on STEM career and study interest and understanding/awareness of STEM careers will be conducted in the 2023 annual survey using the STEM Attitude Scale for Secondary Students.

We welcome collaboration and partnerships. For further information or to connect with Careers with STEM, please email info@refractionmedia.com.au

