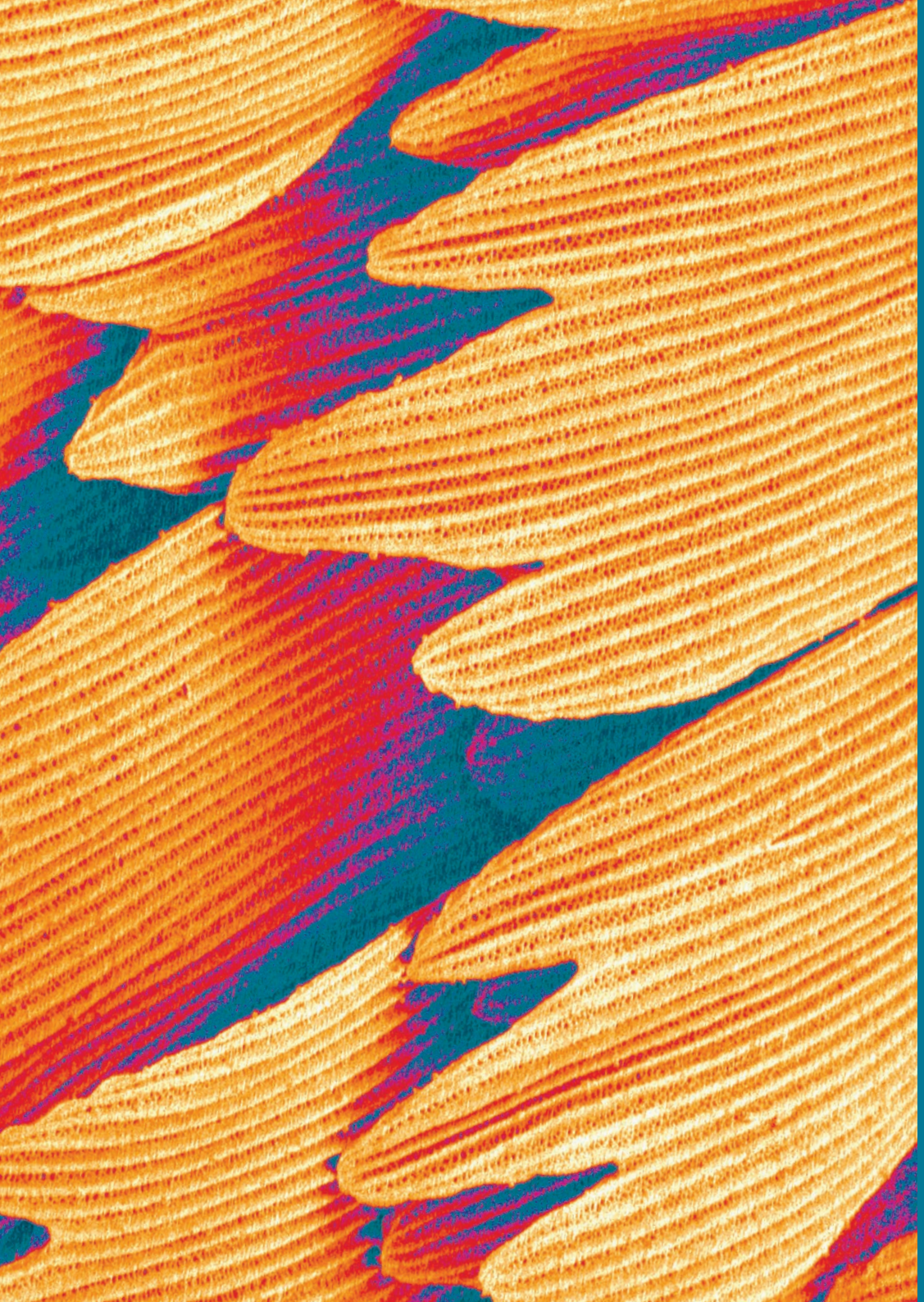
SHAPING SCI—ED

Science Education Report 2023

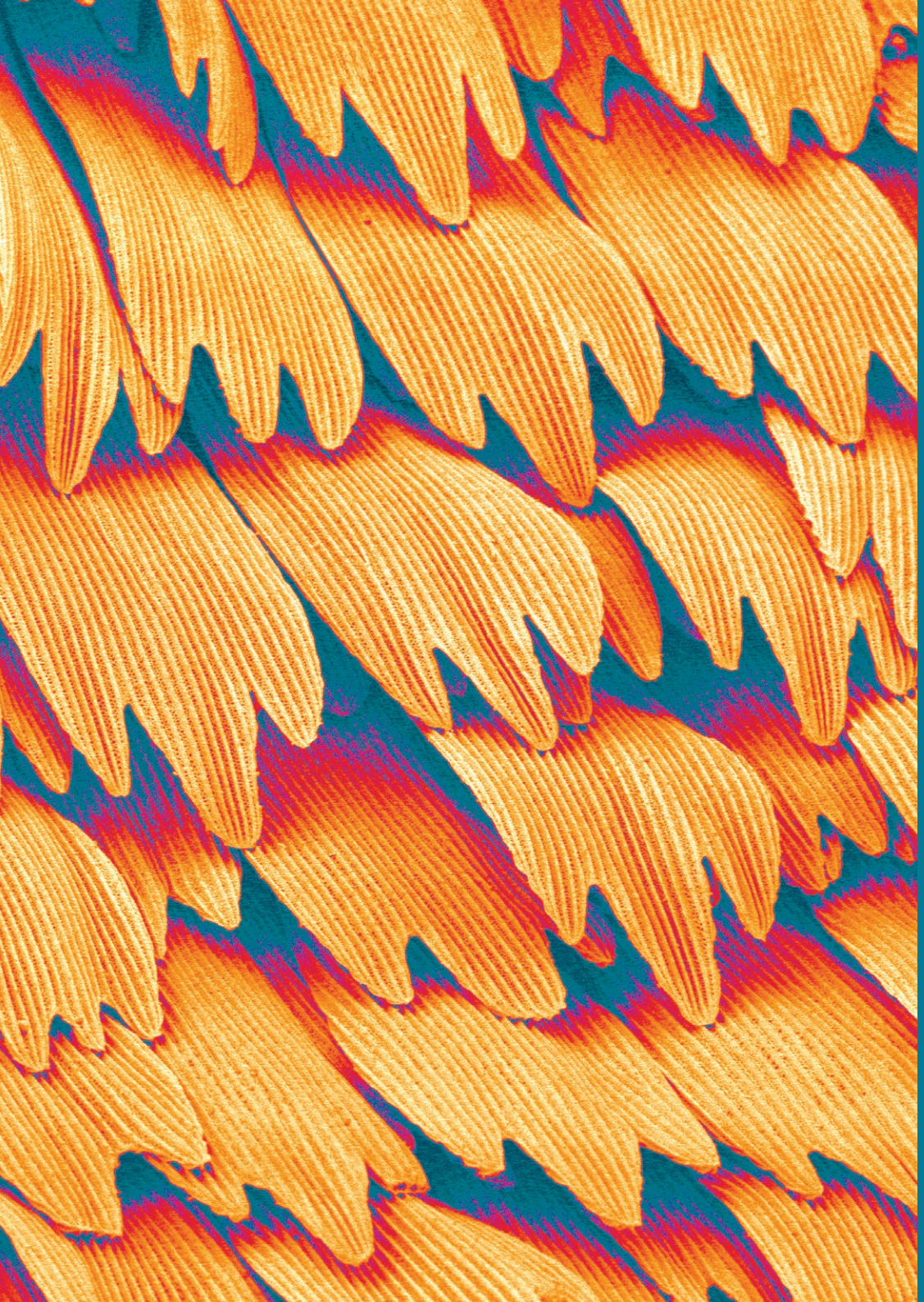
an initiative by Stile

AS A SCIENCE EDUCATION COMPANY, STILE RECOGNISES AND APPRECIATES THE IMMENSE KNOWLEDGE AND UNDERSTANDINGS OF BOTH SCIENCE AND EDUCATION THAT ARE HELD WITHIN THE ABORIGINAL AND TORRES STRAIT ISLANDER COMMUNITIES.

STILE HQ IS LOCATED IN NAARM (MELBOURNE), VICTORIA, ON THE TRADITIONAL LANDS OF THE BOON WURRUNG AND WOIWURRUNG (WURUNDJERI) PEOPLES OF THE KULIN NATION. WE ACKNOWLEDGE THAT SOVEREIGNTY WAS NEVER CEDED AND PAY OUR RESPECTS TO ELDERS PAST, PRESENT AND FUTURE.



WE'RE PUTTING SCIENCE EDUCATION (AND STILE) UNDER THE MICROSCOPE.



WE WANT OUR YOUNG CITIZENS TO GRADUATE FROM SCHOOL SCIENTIFICALLY LITERATE AND READY TO TACKLE TOMORROW'S PROBLEMS

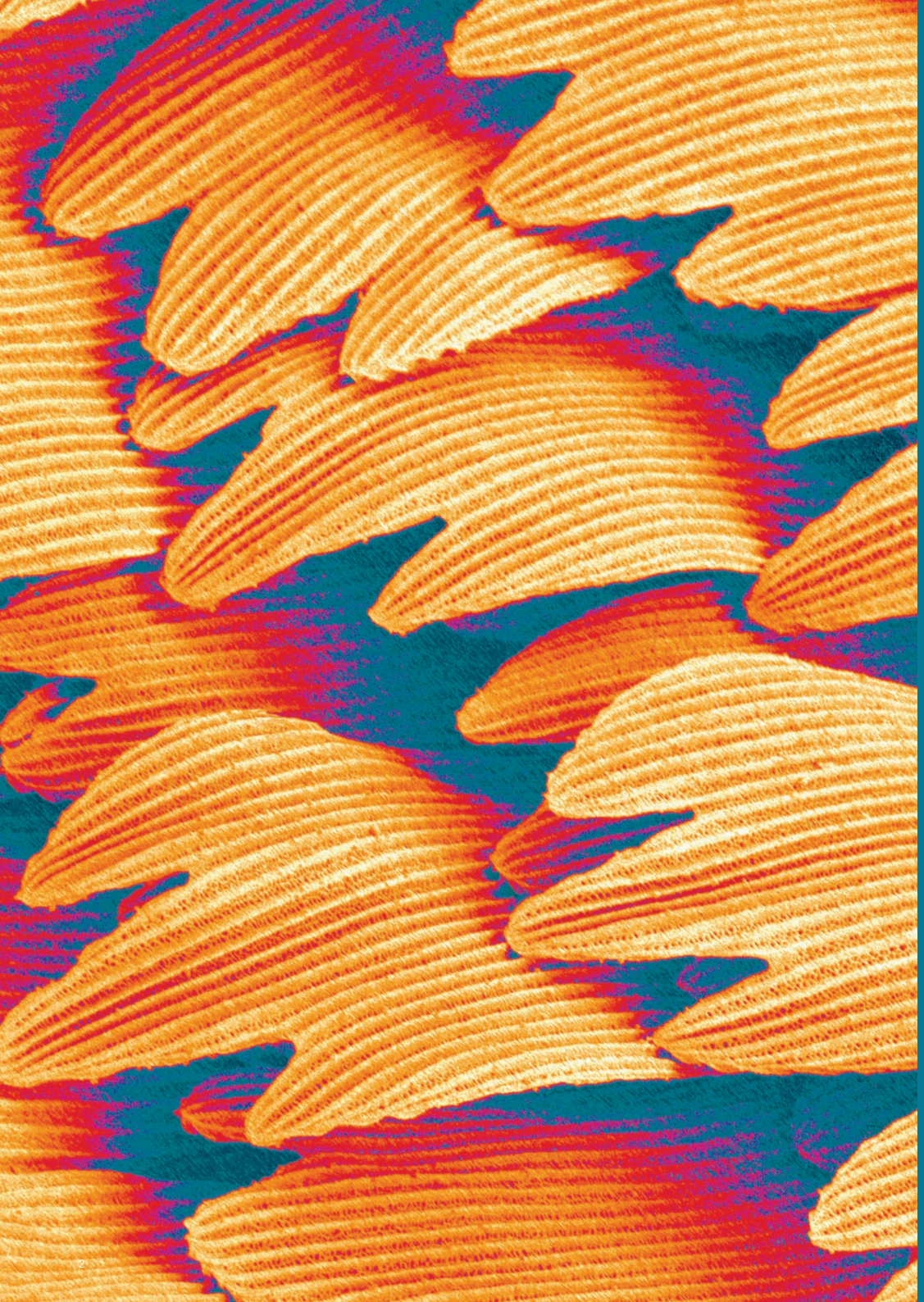
To ensure they do, we **empower teachers** with the highest quality resources, tools and training.

Today, more than one in three Australian secondary schools use Stile as part of their science or STEM program, making it the country's #1 science curriculum.

The *Science Education Report* is part of our commitment to continuous improvement. We use the insights it generates to help us better understand where science teachers need and want the most help, guiding our future development. As scientists at heart, we've chosen to make the results public to increase transparency and to play our small part in adding to the education community's body of knowledge.

Together, we hope to advance the state of the art.
Together, we'll ensure a world-class science education for *every* student.

— Alan Finkel, Danny Pikler and Byron Scaf
Co-founders, Stile Education



LITERACY AND NUMERACY CONTINUE TO HOLD STUDENTS BACK IN SCIENCE

57% of teachers agree that their students' literacy levels are limiting their ability to understand science

50% of teachers agree that their students' numeracy capabilities are limiting their ability to understand science

STUDENTS' CRITICAL THINKING AND ICT SKILLS CONTINUE TO CAUSE DIFFICULTIES

51% of teachers don't think that their students can use basic spreadsheet tools to manipulate or visualise data

40% of teachers disagree that their students understand the difference between a good and a bad source of information on the internet

STILE IS HAVING A POSITIVE IMPACT IN THE SCIENCE CLASSROOM

66% of teachers agree that Stile has played an important role in improving students' scientific literacy

76% of teachers agree that Stile helps them more effectively engage students in the science classroom

KEY FINDING 1

LITERACY AND NUMERACY CONTINUE TO HOLD STUDENTS BACK IN SCIENCE

Literacy and numeracy underpin the high-order thinking we expect in our science classrooms. Students in science should be applying their knowledge from Maths and English classes to reinforce their learning and access scientific concepts.

CONCLUSION

These results are consistent with the data collated annually since 2019. Year after year, the teachers surveyed convey that their students' capabilities in literacy and numeracy hold them back in science. Outside of this study, everything from global assessments like the OECD's Programme for International Student Assessment (PISA) to anecdotal discussions with school leaders further support these findings. It indicates the need to provide teachers with more resources that support literacy and numeracy in the science classroom.

RESULTS

57% THINK THAT THEIR STUDENTS' LITERACY LEVELS LIMIT THEIR ABILITY TO UNDERSTAND SCIENCE

Strongly agree	18.05%
Agree	39.32%
Neutral	25.47%
Disagree	14.12%
Strongly disagree	3.04%

50% THINK THAT THEIR STUDENTS' NUMERACY CAPABILITIES LIMIT THEIR ABILITY TO UNDERSTAND SCIENCE

Strongly agree	13.40%
Agree	36.28%
Neutral	29.85%
Disagree	17.78%
Strongly disagree	2.69%

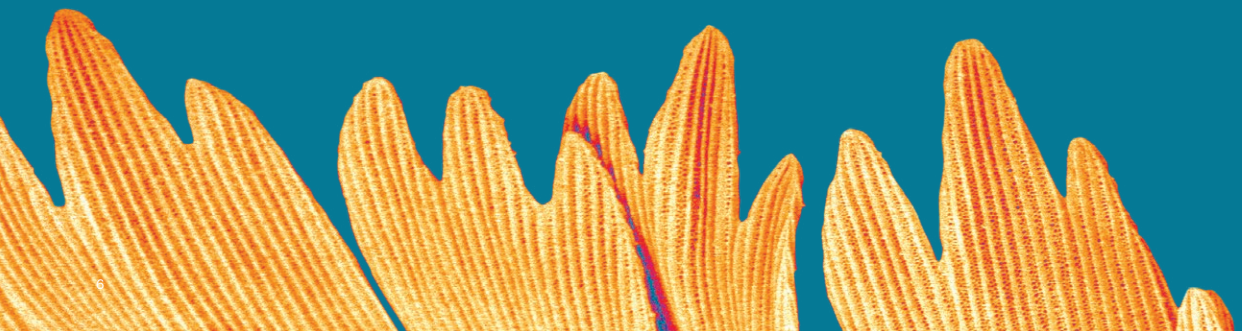
KEY FINDING 2

STUDENTS' CRITICAL THINKING AND ICT SKILLS CONTINUE TO CAUSE DIFFICULTIES

Strong information and communication technology (ICT) skills are already critical to success in the modern workforce. Technology capabilities are particularly important in science as it contributes to and relies on technology development. Critical and creative thinking is a core skill for students as they explore scientific concepts through active inquiry by evaluating ideas and applying their understanding in new and different ways. With technology making information (and misinformation) readily available, it's more important than ever that students use technology appropriately and critically analyse the sources of information they interact with.

CONCLUSION

It's widely acknowledged that creative and critical thinking and ICT skills will become more important in the coming years. Yet our findings indicate that teachers do not think their students are proficient in what many would consider basic skills. Anecdotally, we've observed a decrease in the explicit teaching of basic ICT skills at schools, for example, touch-typing, over the past decade. This is partly due to the idea that students are "digital natives" who already possess these skills. These results suggest that these foundational skills, amongst others, are not being picked up by students elsewhere in their education and continue to require explicit teaching in the classroom.



RESULTS

40% DON'T THINK THAT THEIR STUDENTS ARE PROFICIENT TOUCH TYPISTS

Strongly agree	3.84%
Agree	16.00%
Neutral	40.21%
Disagree	24.31%
Strongly disagree	15.64%

51% DON'T THINK THAT THEIR STUDENTS CAN MANIPULATE OR CORRECTLY GRAPH DATA IN EXCEL OR GOOGLE SHEETS

Strongly agree	2.68%
Agree	17.16%
Neutral	28.78%
Disagree	37.35%
Strongly disagree	14.03%

53% THINK THAT THEIR STUDENTS TAKE WHAT THEY HEAR IN THE NEWS ON FACE VALUE

Strongly agree	12.60%
Agree	40.66%
Neutral	35.84%
Disagree	10.19%
Strongly disagree	0.71%

40% DON'T THINK THAT THEIR STUDENTS UNDERSTAND THE DIFFERENCE BETWEEN A GOOD AND A BAD SOURCE OF INFORMATION ON THE INTERNET

Strongly agree	2.23%
Agree	22.52%
Neutral	34.76%
Disagree	30.93%
Strongly disagree	9.56%

KEY FINDING 3

STILE IS HAVING A POSITIVE IMPACT IN THE SCIENCE CLASSROOM

Stile has been uniquely crafted to connect real-world global and social issues with core scientific curriculum concepts, challenging students to evaluate and critique those issues with a scientific lens. Students explore the science behind the issues they see in the media; the issues they need and want to know about. As science evolves, so do we. We're continuously updating to help teachers create a classroom environment that feels modern and relevant for their students. Importantly, every student is challenged at their level, so they build the self-efficacy to feel confident in their learning.

CONCLUSION

The results on Stile's impact in the science classroom across scientific literacy, engagement and meeting students at their level have remained consistently high since 2019. We're steadfast in our commitment to continuous improvement, and the results presented here suggest that teachers believe we're on the right track.

RESULTS

66% BELIEVE THAT STILE HAS PLAYED AN IMPORTANT ROLE IN IMPROVING MY STUDENTS' SCIENTIFIC LITERACY

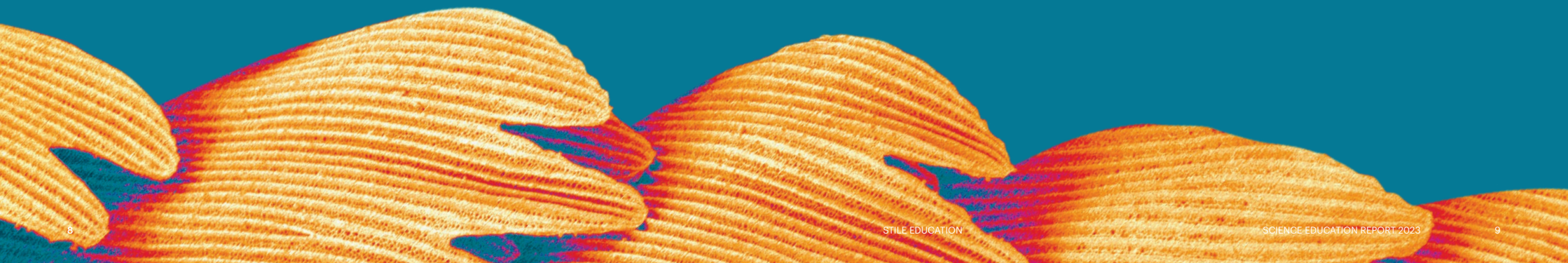
Strongly agree	21.09%
Agree	45.31%
Neutral	28.24%
Disagree	4.20%
Strongly disagree	1.16%

76% THINK THAT STILE HELPS THEM MORE EFFECTIVELY ENGAGE THEIR STUDENTS IN THE SCIENCE CLASSROOM

Strongly agree	30.56%
Agree	45.31%
Neutral	18.50%
Disagree	4.65%
Strongly disagree	0.98%

77% THINK THAT THEIR STUDENTS ARE APPROPRIATELY CHALLENGED BY STILE'S LESSONS

Strongly agree	31.81%
Agree	45.31%
Neutral	18.24%
Disagree	3.57%
Strongly disagree	1.07%



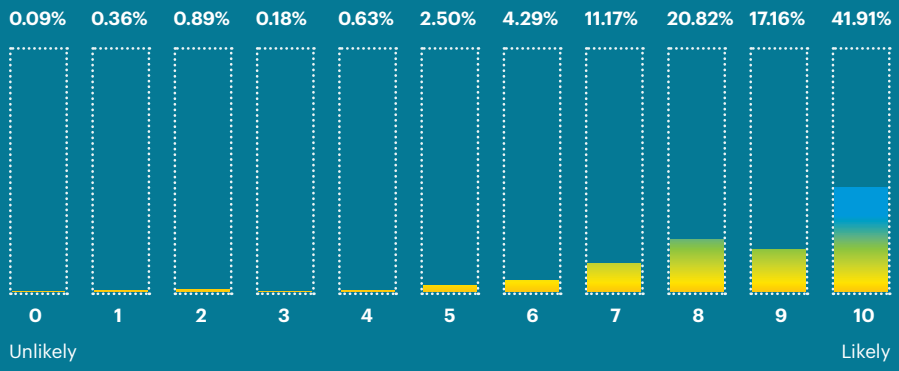
TEACHERS WANT YOU TO TAKE A CLOSER LOOK

The technology landscape in schools continues to mature, with teachers moving away from set-and-forget digital resources — where students are in class but independently interacting with a computer — and towards resources that augment and enhance their existing instruction and collaborative teaching practice.

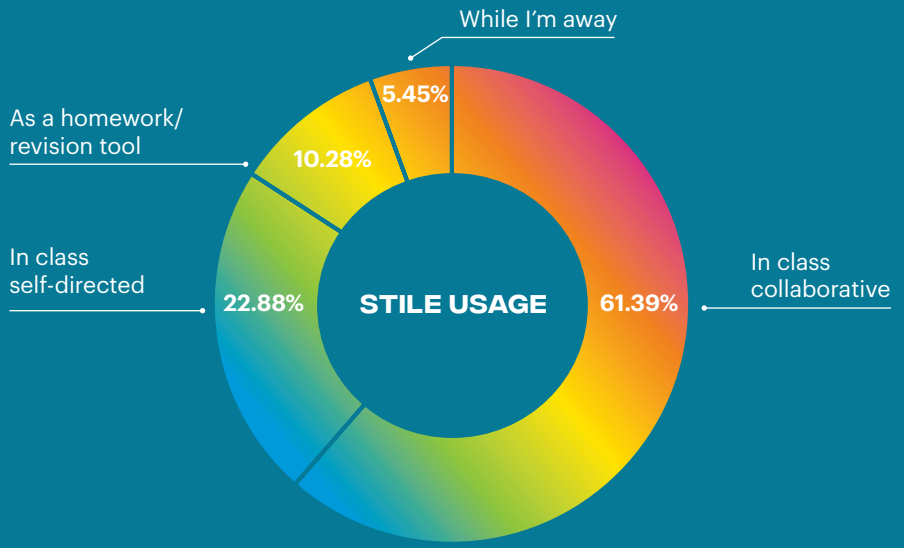
Of the teachers surveyed, 61% reported that they primarily used Stile in class collaboratively. This represents a significant change over the past four years where, in 2019, only 31% of teachers reported using Stile collaboratively. This is exactly what we want to see: Stile being brought to life by educators in the classroom, putting them in the driver's seat and empowering them to create vibrant, collaborative classrooms.

The positive results around high-quality resources and saving teachers time are consistent with previous Science Education Reports. Everything we do is in the service of teachers. We do whatever we can to free teachers up to do what matters most: getting to know their students, providing effective feedback and challenging them at their level. We provide teachers with everything they need in one place: digital, print, practical activities and planning materials to deliver an engaging science curriculum.

ON A SCALE FROM 0 TO 10, HOW LIKELY ARE YOU TO RECOMMEND STILE TO OTHER SCIENCE TEACHERS?



61% REPORT THAT THEY PRIMARILY USE STILE IN CLASS COLLABORATIVELY WITH THEIR STUDENTS



92% CONSIDER STILE'S RESOURCES TO BE OF HIGH QUALITY

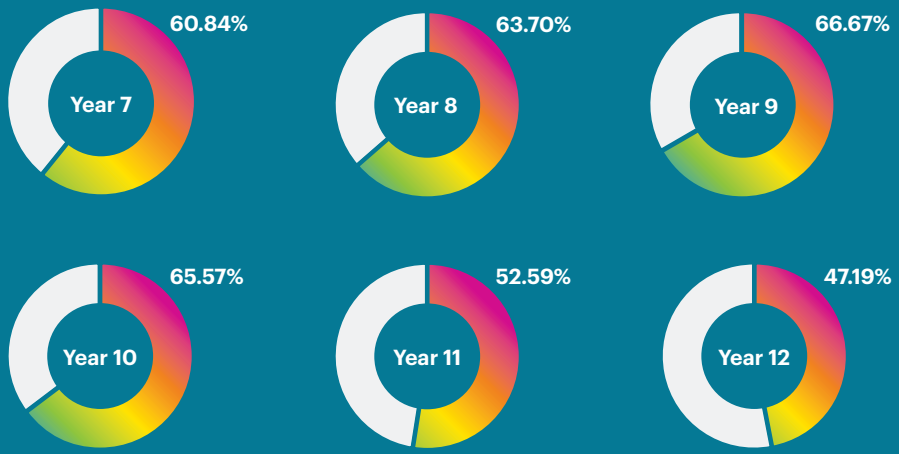
89% THINK THAT STILE SAVES THEM TIME

Strongly disagree | Disagree | Neutral | Agree | Strongly agree

DEMOGRAPHICS

This year, 1119 secondary school science teachers participated in the *Science Education Report*, a 23% increase from last year.

YEAR LEVELS TAUGHT

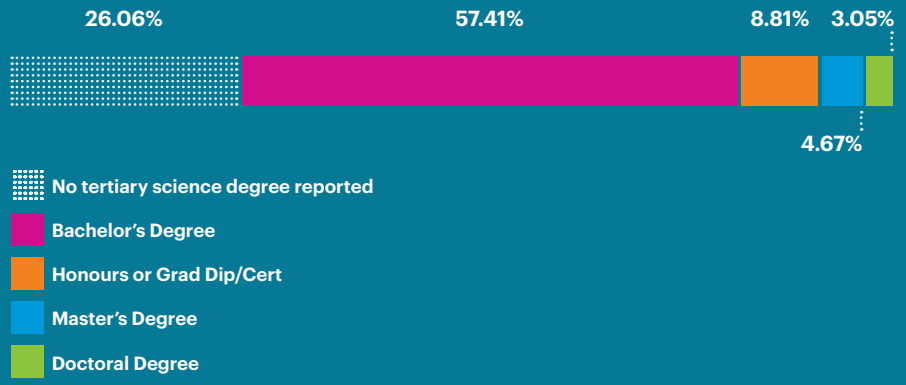


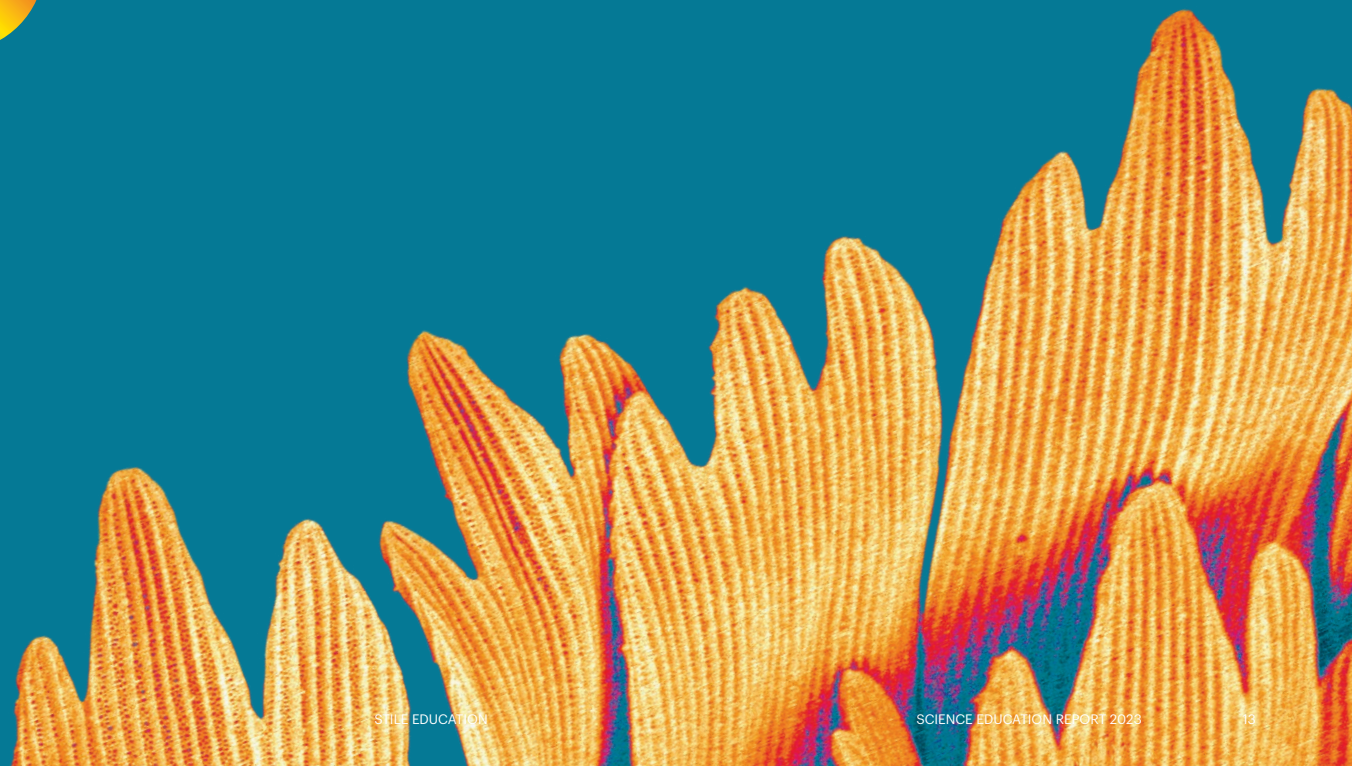
SUBJECTS TAUGHT

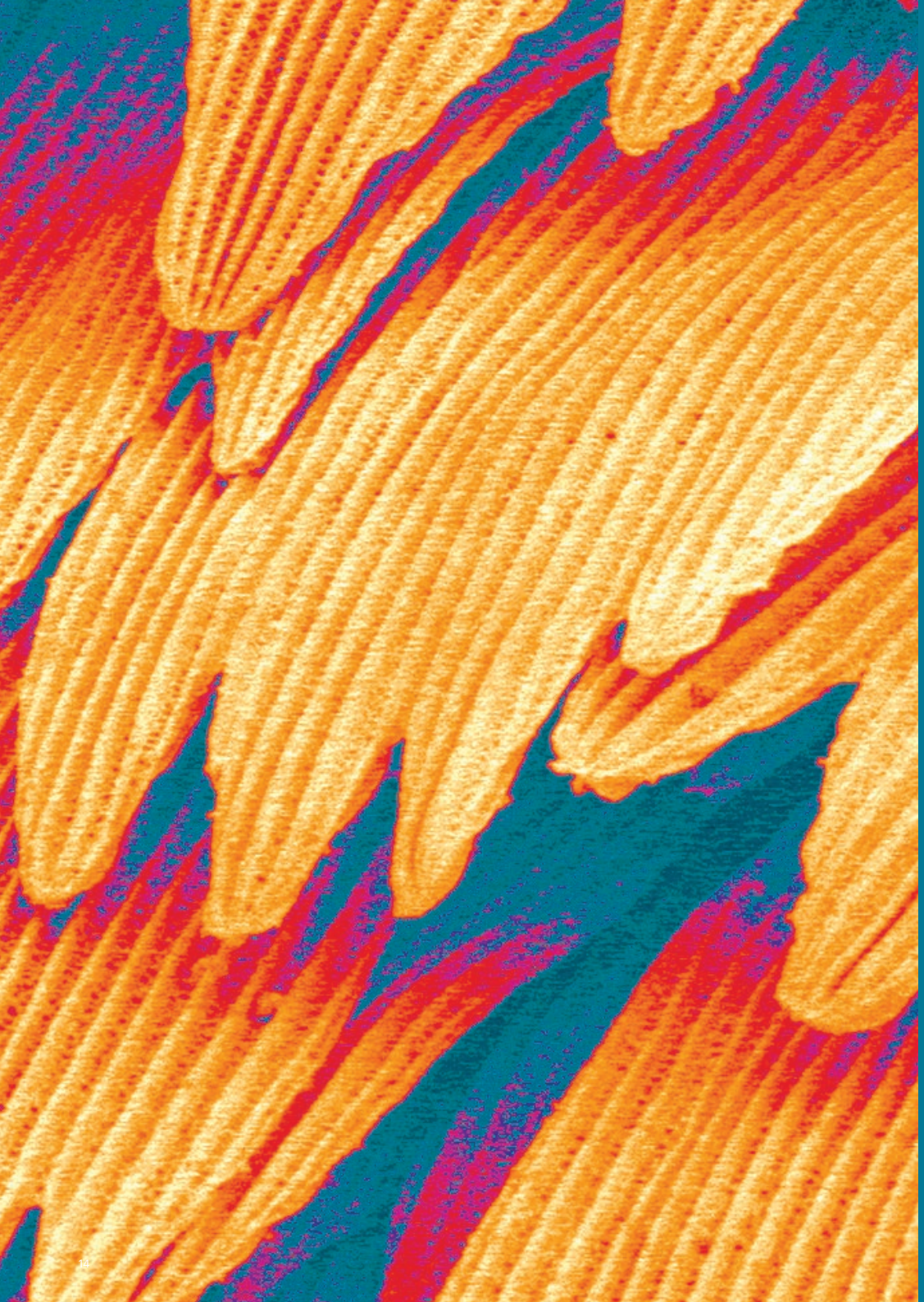
General science	87.30%
Biology	46.20%
Chemistry	39.10%
Mathematics	27.80%
Physics	27.30%
Earth science	16.80%
Other	15.70%
Psychology	7.10%
Health	7.00%
Agricultural science	6.80%
Physical education	5.50%

HIGHEST STEM QUALIFICATION

74% of teachers report having a bachelor's degree or higher in science or engineering.







BACKGROUND

At Stile, we're a group of teachers, engineers, artists and scientists aligned around a single mission: a world-class science education for every student. We want our young citizens to graduate from school scientifically literate and ready to tackle tomorrow's problems.

By supporting thousands of teachers to deliver a world-class science education to their students, we're in the privileged position to examine the education landscape and provide insights into key trends in science education. While this research is interesting in its own right, we conduct it as part of our steadfast commitment to help push the state of education forward.

SCIENCE EDUCATION REPORT 2023

This report examines three areas of education:

- Literacy and numeracy
- Critical and creative thinking and ICT skills
- Impact of Stile in the classroom

STILE TEACHER SURVEY

In late 2022, 1119 secondary school science teachers from Australia, the United States and New Zealand took part in the second annual *Science Education Report*. These teachers completed a 32-question survey designed to explore their views on science education and the impact of Stile in the classroom. In this survey, teachers were asked to rate their agreement to statements on a five-point Likert scale from strongly disagree to strongly agree. Likert scales are commonly used in surveys to ascertain people's perceptions and allow data to be analysed quantitatively (Maurer & Pierce, 1998).

We also included general demographic questions and a few multiple-choice questions. The results were analysed anonymously to create this aggregated, non-identifiable report for the benefit of the wider teaching community. The graphs included in this report are frequency distributions of the teachers' responses to the statements.

TEACHERS RESPONDED TO THE FOLLOWING STATEMENTS

PAGE 4–5

- My students' literacy levels limit their ability to understand science
- My students' numeracy capabilities limit their ability to understand science

PAGE 6–7

- My students are proficient touch typists
- My students can manipulate data in Microsoft Excel or Google Sheets, and are able to correctly graph data
- My students take what they hear in the news on face value
- My students understand the difference between a good and a bad source of information on the internet

PAGE 8–9

- I believe that Stile has played an important role in improving my students' scientific literacy
- Stile helps me more effectively engage my students in the science classroom
- My students are appropriately challenged by Stile's lessons

PAGE 10–11

- I consider Stile's resources to be of high quality
- Stile saves me time
- I use Stile primarily:
  - in-class collaboratively with my students
  - in-class as a self-directed resource for my students
  - as a homework/revision tool
  - while I'm away

IMAGE CREDIT

The microscopic image used throughout this report is “Scales of a Swallowtail Butterfly” by Micro Discovery.

REFERENCES

Maurer, T. J., & Pierce, H. R. (1998). A comparison of Likert scale and traditional measures of self-efficacy. *Journal of Applied Psychology*, 83(2), 324–29. https://doi.org/10.1037/0021-9010.83.2.324

Stile

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Stile HQ is located on the traditional lands of the Boon Wurrung and Woiwurrung (Wurundjeri) peoples of the Kulin Nation. We acknowledge that sovereignty was never ceded and pay our respects to Elders past, present and future.