Leading suppliers for tomorrow's scientists

VITTA

SUMMER TERM 2024

SUMMER ROCKS!

Get sporty this summer or back to nature with great lesson ideas | p30

STRETCH YOUR SCIENCE BUDGET

Shop with VITTA and boost your budget by £££'s this year | p4

AIN'T NO PARTY LIKE A SCIENCE SHARE PARTY

Join in the fun with the Great Science Share for Schools 2024 | p46

SOLVING YOUR STORAGE STRESS

Murray Hudson walks you through chemical storage solutions | p26

ALSO INSIDE...

Primrose Kitten, ASE, Advice, Downloads, Competitions and more!

ADD £££'s TO YOUR SCIENCE BUDGET...

VITTA EDUCATION

Read the latest industry news, competitions, deals & digest from VITTA Education...

WELCOME TO THE SUMMER TERM EDITION OF VITTA MAGAZINE

Inside this issue:

WHAT'S ON AND WHERE THIS SUMMER TERM & BEYOND

The Summer Term is warming up nicely and brings with it a suitcase full of exciting events and tech-meets up and down the country. The VITTA team will be out and about too, so stop by to say hello.

SciTechConf '24
28 June, University of Birmingham School

ASE Summer Conference
5 July

CCCG STEM Technicians Conference
11 July

Keep up to date... why not sign-up to our monthly newsletter to stay ahead, or see what's on at **vittaeducation.com/events**

Image: PASCO Wireless Light & Color Sensor (PS-3248).

SOAK UP MORE SUN AND SCIENCE THIS SUMMER

As we enjoy the warmth of the Summer Term, I extend a heartfelt welcome to our first-anniversary edition of VITTA Magazine. It's been an incredible journey over the past year, seeing our magazine grow into a vibrant hub of knowledge and insights.

In this edition, we're excited to introduce an abundance of new content and contributors, with continued support from esteemed organisations such as the Association for Science Education and the Gatsby Charitable Foundation. Collaborations with the British Esports Federation, the British Science Association and others promise fresh perspectives and inspire innovation.

We're especially pleased to welcome Primrose Kitten, offering expert insights in a termly column. Her friendly expertise will undoubtedly spark curiosity and ignite learning.

We are also honoured to showcase voices from technicians and educators nationwide, sharing their innovative practices, insights and experiences.

As we navigate the joys of open days, the trials of exams, and the excitement of outdoor adventures, let us create transformative learning experiences for tomorrow's scientists.

Thank you for being part of our journey and enjoy reading through this term's edition!

Please let us know your feedback and thoughts on this term's magazine, or if you have an idea for content, please email us at **hello@vittaeducation.com**

Wendy & Team

Editor & Brand Manager

BOOST YOUR SCIENCE BUDGET WITH VITTA!

With science budgets generally getting smaller each year, VITTA Education is on a mission to get more science supplies and equipment into the hands of teachers, technicians and budding scientists by giving you the chance to BOOST your yearly allowance by up to 20%![†]

We can help to stretch any budget to make it go further, or towards that piece of equipment your department desperately needs or desires.

See page 5 for more details.

PLUS, SAVE EVEN MORE ACROSS THE TERM WITH OUR NEW SCIENCE SAVERS...

Take a look at our SUMMER TERM Science Savers and exclusive magazine deals on a great selection of everyday science essentials.

See pages 49 and 52 for further details.

[†]Terms apply. See website for details.

SPENDING WISELY:

SQUEEZING MORE OUT OF YOUR SCIENCE BUDGET

Boost your budget with help from VITTA

As a new financial year begins many science departments will soon be learning how much or how little their new budget needs to stretch over the coming year. No matter how much it has been squeezed, reading through the following tips and ideas may just help save you a few quid.

KEEP UP-TO-DATE

Get to hear about any discounts, offers or incentives first by signing up to newsletters, regularly visiting websites and checking out social posts. Why not begin by following **@VITTAEducation** on X (Twitter).

PLAN YOUR SPENDING IN ADVANCE

Reactive spending is not ideal when keeping to a budget and can easily chip away at what little you may have without realising. Last-minute lesson requests need to be managed carefully so planning as a department for the whole term in advance and identifying the equipment/items required to teach the schemes of work will allow you to order more effectively and typically meet free-delivery thresholds that can easily save you over £100 across a year.

Alternatively look back at your past year's orders in your account dashboard. What did you buy the most of and what was a regular purchase? Topping up an order to gain free delivery with items you were going to buy eventually all helps maximise the budget. In a recent review School A placed multiple small orders across a term incurring delivery charges of over £30. Combining these orders would have allowed for FREE DELIVERY and £30+ still to spend in their budget on equipment or supplies.

BULK BUY

Not only could bulk buying of a product save on postage, but it could also save you £££'s too. Whether you need 50 glass beakers or 15 microscopes, let our team know for further savings on your order*.

SEEK OUT & SHARE PROMO CODES

Who doesn't find joy in discovering a promo code? Forums such as Preproom.org or LaBLiFe are a great place to find and share promotional discount codes (or even look in this magazine on page 52) but you also need to share these codes with whoever in your school/department places the order!

Don't miss out on a potential discount, free gift or product accessory by not adding or referencing the promotional code. Over the past 12 months schools have missed out on free products, free delivery and discounts all by not including promotional codes to their qualifying basket.

Don't forget... you can usually gain promotional codes by doing something easy, like completing a survey or signing up to a newsletter mailing list. Just like the 5% discount code you receive by signing up to the monthly VITTA newsletter. Have you signed up and used yours yet?

APPLY FOR GRANT FUNDING

Add to your existing budget by applying for capital funding and grants for additional financial resources. These funds can be used for infrastructure improvements, purchasing equipment, or implementing new programs, ultimately enhancing the educational experience and opportunities for students without burdening the existing budget.

Find out more on page 16.

LOOK OUT FOR OBVIOUS DEALS

Black Friday, end-of-year, New Year, Easter... there are plenty of periods throughout a year that lend itself to a promotion. **VITTA SCIENCE SAVERS** launch every term with a hat-full of deals for the science curriculum, along with the everyday essentials for the prep-room cupboards.

Take a look at a few of this term's deals on page 49 or visit **vittaeducation.com/science-savers**

VITTA REWARDS

Shopping online can not only make ordering easier, with past history available at the click of a button, but it also includes the added incentive of earning reward points. It's simple, every qualifying transaction automatically builds up your VITTA Reward balance. These points can then be exchanged for VITTA Treats (useful stuff for the department) or in exchange for discount vouchers off your next order.

Find our more on page 22.

SPREAD THE COST

If you need to spend above £5000 on capital equipment a fixed-term finance agreement could be the answer. Our specialist team can help advise on the best options for your situation or even look into the alternatives without obligation.

NEW VITTA BUDGET BOOSTER!

With science budgets generally getting smaller each year, VITTA Education is on a mission to get more science supplies and equipment into the hands of teachers, technicians and budding scientists by giving you the chance to boost your budget by up to 20%![†]

We can help to stretch any size of budget to make it go further, or towards that piece of equipment your department desperately needs or desires.

Talk to our team to find out more about this exciting new initiative or head to **vittaeducation.com/boost**

BE A SAVVY SAVER!

By combining some or all of these saving ideas will hopefully stretch your science budget that little bit further and maybe help towards buying that new piece of equipment you always wanted or just keep enough safety goggles in stock after they started disappearing for the latest TikTok craze.

Whatever your need, whatever the budget, you can talk to our team at VITTA to help plan and stretch it as far as possible. We'll always do our best to help supply tomorrow's scientists!

Contact our team today...

Call **0333 996 1611** for a spending review and advice to help you stretch your budget further.

*Terms apply. Contact our team with your specific bulk order requirement. †Terms and conditions apply. See website for details.

HELPING THE TECHNICIAN COMMUNITY TO SURVIVE AND THRIVE

Supporting technicians and empowering success with the ASE

We all know that the science education community faces challenges - across teaching and technical work - in staff recruitment and retention. As with any profession, individuals thrive when they have the support and training they need to keep their skills up to date and ensure they feel valued in the workforce.

A recent article by a member of ASE's Technician's Committee in ASE's SSR Journal highlighted some of the issues that face technicians in accessing CPD:

"...In addition to funding barriers, factors such as a lack of support from employers and the changing role/workload since the COVID-19 pandemic are impacting the ability of technicians to access PL/CPD..."

Caroline Butler, Lead Science Technician for Scottish Borders Council, SSR in Practice, November 2023.

How can the ASE Support the Technician Community?

Whilst we cannot solve the recruitment and retention crisis, the ASE will continue to support the technician community with a range of free and discounted CPD, guidance, resources and opportunities to meet and network with colleagues.

CPD and Networking Events

By participating in CPD activities, technicians have opportunities to network with peers, share experiences, and learn from each other's expertise. Collaborative sessions facilitate knowledge exchange and peer support, enabling technicians to tap into a collective pool of wisdom and resources.

Each of the ASE regional groups in the UK offer regular meet-ups for teachers and technicians, free for members. These are a mixture of online and face-to-face meetings. In addition, we run a range of conferences and events with content for technicians, including our summer technician's conference and the ASE's Annual Conference in January each year.

Our current range of online courses includes:

1. Online Technician's Leadership Programme

A series of three courses to support leadership skills development including working with and training others, organising your technical service and leading yourself and your team.

2. Focused courses on supporting biology, physics, chemistry and working with students

These programmes share hints and tips to help cut down on preparation time. Learn from live demonstrations, videos and chats about good practice as well as strategies for working with students.

3. Guidance for new technicians

Help develop skills and knowledge to feel more confident in delivering practical work to students and teachers.

Professional Recognition

As a licensed body of the Science Council, we are empowered to administer the Registered Science Technician Award (RSciTech). It is a registered mark recognising excellence for technicians working in science education and other workplaces. We run termly online workshops to introduce professional registration which can be found online through our events listing at **ase.org.uk/events**

"...It gives professional recognition to the skills used as a school/college science technician, putting this role on a par with technicians in other scientific fields."

Laura Smith, RSciTech and Science Council CPD Award 2022 winner.

"...I did it because I wanted to show how professional and committed I was to my role. The bonus was that having my Principal as a supporter meant they became more aware of my skills and abilities and the nature of my job and it therefore raised my profile with them. It has also boosted my confidence."

Jane Oldham, RSciTech and Chair of ASE's Technician's Committee.

Good Practice Resources

When there isn't time or budget to attend a CPD training session, we often look online for support with areas of our work where we need some best practice advice or when looking for inspiration. ASE has a number of online resources for members to explore. These include:

Prep Room Organiser:
An important resource and guide for technicians working in education. This organiser brings together much of the information normally acquired by technicians over a period of time in the job into one convenient reference.

Health and safety guidance:
How to stay safe in the prep room and classroom. These resources offer a detailed look at a wide range of topics covering everything from working with DNA to the use of chemicals in the classroom.

Technician-focused articles:
Collated from our journals (there is a dedicated section in Education in Science and Technician-focused features in our SSR journal).

Science Technicians SOS:
Resources to help keep technicians in the profession.

If you are interested in finding out more about ASE membership or just want to explore more of the resources, visit **ase.org.uk**

ASSOCIATION FOR SCIENCE EDUCATION

JOIN THE ASE FOR **ONLY £25*** PER YEAR

ASE TECHNICIANS SUMMER CONFERENCE 2024

05 July 2024 |
Cambridge Regional College,
CB4 2QT, UK

Book online at **ase.org.uk/techsconf24**

Delegates can attend for as little as £55†.

Sessions can be pre-selected at the point of booking so view the timetable now on Sched before heading to the booking page to secure your place on what will be an inspirational day of engaging and valuable CPD.

For queries please email **conferences@ase.org.uk**

*£25 per year for technician membership. †ASE Members price. See website for full details.

THINGS TO DO WITH PASCO

#4: PASCO Wireless Temperature Sensor

A modern marvel that transforms the way students engage with temperature measurements, the Wireless Temperature Sensor from PASCO Scientific enables students to continuously monitor, log, and plot temperature measurements on nearly any device.

Measuring small, but significant temperature changes produced by chemical reactions, convection currents, and even skin temperatures, this sensor suits a wide array of experiments. Let's explore some of the hands-on activities that make learning about temperature a breeze and seamlessly integrate into your curriculum.

1. Explore Freezing and Melting Points

Students can use the temperature sensor to measure the temperature of water in various states – solid, liquid, and gas. To investigate the freezing and melting points of different substances, they can observe and record the temperature changes as they freeze and melt water. Students will learn that water can exist in different forms and can be changed from one form to another by heating or cooling.

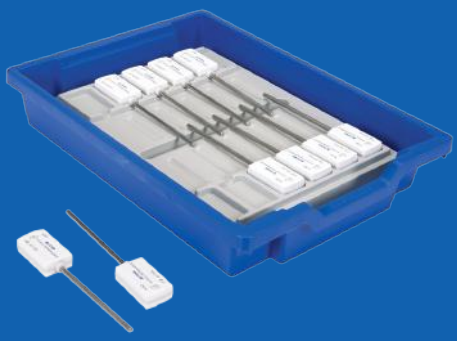
Want to go further? This activity can be extended to explore the freezing and melting points of other substances, such as different salts or oils. By doing so, students gain a deeper understanding of how substances undergo phase changes under different temperature conditions.

...a versatile and adaptable educational tool with cross-curricular learning appeal...

2. Study Endothermic and Exothermic Reactions

Introduce students to the captivating realm of chemical reactions by observing temperature changes during chemical reactions. Whether it's dissolving salts, engaging in acid-base interactions, or witnessing combustion, use the Wireless Temperature Sensor and SPARKvue software to monitor temperature changes and identify whether the reactions are endothermic or exothermic.

An ideal activity to help students connect theoretical concepts of energy changes in reactions to practical, observable applications.



Product shown: PASCO Wireless Temperature Sensor (PS-3585), Classroom 8-Pack Set (PS-3330).

3. Measure the Energy Content of Food

Bring the kitchen into the laboratory as students explore the energy content of different foods. When burning food warms a known quantity of water, the amount of thermal energy given off by the food is theoretically equal to the amount of thermal energy gained by the water. Use the Wireless Temperature Sensor to measure temperature changes in water heated by burning food samples and compare the energy content of those samples.

Connect the dots between caloric content and real-world measurements, providing students with a hands-on approach to understanding energy quantification. This activity not only engages taste buds but also sparks a deeper appreciation for the principles of calorimetry.

4. Inter-molecular Forces and Evaporative Cooling

Take a molecular dive into intermolecular forces with the Wireless Temperature Sensor as visualising the molecules helps students understand the data. Explore the effect of intermolecular forces by measuring the temperature changes during evaporation. Compare the cooling effect of different liquids as they enhance students' understanding of how molecular interactions influence physical properties.

5. Heat Transfer Investigations

Ignite curiosity as students become heat detectives with the Wireless Temperature Sensor. Investigate heat transfer mechanisms – conduction, convection, and radiation – by placing the sensor in different materials and environments to study how temperature changes over time. This activity allows students to directly observe and measure how temperature changes over time in different scenarios, reinforcing their understanding of heat transfer mechanisms in different materials and situations.

The Wireless Temperature Sensor is a versatile educational tool that appeals to those looking for a cross-curricular learning experience. Its adaptability enables students to explore temperature-related concepts in real-world applications, making it an invaluable resource for interdisciplinary projects and a unifying force in any education setting.

TOP TIP

Avoid extremes! While warm water is your friend, steer clear of boiling water, dishwashers with hot cycles, or autoclaves. These extreme conditions can lead to plastic deformation, compromising the sensor's effectiveness.

Remember...

you can view and record data easily and for FREE using the SPARKvue App on iOS or Android.

GET IT ON Google Play

Download on the App Store

PLAY TO WIN

It's game-on for British Esports, with qualifications and tournaments offering students a range of benefits

Video games are more than just a hobby or activity to pass the time - they're part of a $200bn global industry worth more than the music and film industries combined.

While there are already many jobs in the production and sale of games, there's an exciting emerging subset of the sector that has generated a real buzz in recent years... Esports (or electronic sports) is the act of playing video games competitively to spectators, either online or in-person.

The biggest tournaments can have millions of dollars in prize pools and millions of viewers watching live. Think physical sports like football or tennis, but top gamers competing against one another using PCs or games consoles instead.

The British Esports Federation is the UK's national body set up in 2016 to promote esports, improve standards and inspire future talent.

Housed in its National Esports Performance Campus in Sunderland, British Esports provides qualifications, tournaments, spaces for training and events. It also liaises with the Government and selects national teams for the likes of the Global Esports Games.

British Esports has partnerships with Dell, Alienware, Intel, Pearson and College of Esports to name a few.

Esports skills and qualifications

Like sports, the esports industry requires professionals including commentators, marketers, broadcast producers, coaches, reporters, video creators and social media managers to name a few. And there are now a suite of qualifications, like the Esports BTEC, to give students the digital skills to thrive within these roles.

This specialist BTEC first launched in 2020 as the result of a partnership between national body the British Esports Federation and learning company Pearson.

Today, there are some 9,000 young people that have studied the various Esports BTECs, which include Level 1 to Level 3 variants, Higher Nationals and more. British Esports has also just partnered with the Leadership Skills Foundation to deliver esports leadership qualifications for those aged 11+, allowing younger people to take their initial steps onto the esports career pathway from September 2024.

These various qualifications help build digital literacy and cognitive skills, as well as decision making, dexterity, creativity, concentration, leadership and communication, strategic thinking and STEM skills.

Not only that, but esports can also lead to improved wellbeing and attendance in students, as found in British Esports' work in Alternative Provision Schools.

Beyond this, British Esports hosts an annual Education Summit, has a large presence at the Bett Show each year and has a partnership with Sunderland College to help deliver the BTEC in Esports programme from its National Esports Performance Campus. It's also partnered with College of Esports at a degree level.

PLAY TO WIN...

The student champions making history

There is also a flourishing grassroots level of esports, with up and coming talent making a name for themselves in second-tier leagues and collegiate tournaments, such as the national British Esports Student Champs. This is the largest amateur grassroots esports tournament for students aged 12+ and is open to all secondary schools, further education colleges and alternative provision schools across the UK.

The Student Champs feature some of the biggest games, including League of Legends, Rocket League, Valorant and Overwatch 2, plus multiple tiers for students of all abilities, as well as inclusive tournaments for women and marginalised genders.

Aside from the thrill of competing and representing their local school or college, students also gain personal development and transferable skills from the tournaments, such as leadership, teamwork and communication skills. This also counts towards the Skill section of the Duke of Edinburgh's Award, and some say it helped them meet friends.

Almost 200 institutions compete in the Student Champs, with more than 1,250 teams and 6,000 students taking part overall each year. In 2023, champions at the live finals event at Confetti X in Nottingham included student teams from The Sixth Form College Farnborough, Gower College Swansea and Belfast Met College to name a few.

Peak Performance

The British Esports Federation recently opened its National Esports Performance Campus (NEPC) in Sunderland.

It's a 45,000 sq.ft multi-site venue, featuring state-of-the-art offices, classrooms, esports player accommodation, bootcamp spaces and performance rooms. A 5G esports arena with seating for 250 spectators is also planned.

The esports and gaming accommodation consists of three Grade II listed town-houses, with sleeping for up to 27 guests.

"...These qualifications foster digital literacy, cognitive skills, decision-making, creativity, leadership, and STEM skills...."

To find out more about esports, our qualifications or the Student Champs, scan the QR code. You can also contact us directly to answer any questions or set up a meeting: **education@britishesports.org**

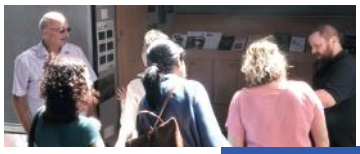
Scitechconf
Technicians making the difference

SUMMER CONFERENCE 2024

FRIDAY 28 JUNE

BOOK YOUR TICKET
Scitechconf.co.uk





The **Scitechconf** is possibly the largest event specifically organised for science technicians and aimed at celebrating the huge impact technicians make on the successful work of science departments.

Home to practical workshops from experienced technicians, an exhibition zone showcasing the latest products and industry insight, and unprecedented networking opportunities amongst the 300+ attendees, experts and suppliers, sharing new and old ideas with others, alongside a great free lunch with plenty to discuss has never been easier...

See you there in June! John Booth

TIMES
Exhibition: 09:45 – 15:30
Registration/arrival: from 09:00

VENUE
The University of Birmingham School, Weoley Park Road, Selly Oak, Birmingham, B29 6QU

BOOKING
Ticket: £48.50
Book online at **scitechconf.co.uk**

FOOD & DRINK
Refreshments available on arrival
Buffet lunch is provided

CONTACT & INFO
Further information, workshop details and exhibitor lists can be found online. Contact the organiser, John Booth (not the school) for any other queries.

e: **contact@thescienceteam.co.uk**
t: **07766 922 789**

www.scitechconf.co.uk

a La B Li Fe event. Sign up at **lablife.co.uk**

EAT SLEEP SCIENCE REPEAT

SPARK CONVERSATION AT LaBLiFe.CO.UK | La B Li Fe

PAPER POWER:

UN-FOLD NEW WAYS OF LEARNING

In our roles in the education sector, it is really important to find alternative ways to teach and to share these banks of knowledge with fellow educators. All students learn differently, which is why it is so important to find innovative ways of teaching, especially those methods that are fun and engaging.

DISCOVERING ORIGAMI ORGANELLES

I stumbled upon Origami Organelles by chance, and I am so happy I did. There will always be students who do not like to do dissection activities, and students who learn better with hands-on lessons, and you couldn't ask for more with these activities.

ACCESSIBLE AND ADAPTABLE

They have easy-to-follow instructions and come with a PowerPoint lesson to help you teach and effortlessly integrate these models into the curriculum. They work best printed on normal paper, however additionally, they even have monochrome versions, meaning you can print in black and white to save money on ink. All you need? Scissors and tape!

COST-EFFECTIVE CONVENIENCE

Furthermore, you pay once and can print as many times as you like. Don't worry if you lose the file; you can email customer support for help, and they can resend it if you lose the file in the future.

*Single use per customer. Expires 31/07/24. See website for details.

DIVERSE TOPICS, ENGAGING ACTIVITIES

Covering a diverse range of topics, from cell structures to molecular biology, as well as easy to make, Origami Organelles caters to all, offering engaging activities that spark curiosity and foster deeper understanding. Whether you're introducing basic concepts or exploring complex biological processes, these models provide a tangible and interactive learning experience that resonates with students of all ages.

TAKE THE ORIGAMI CHALLENGE

Recognising the diverse learning styles among students and incorporating resources like Origami Organelles can transform classroom dynamics, infusing science education with excitement and understanding among students. Ready to add some origami magic to your teaching arsenal?

Shop the range and discover more at **origamiorganelles.com**

Plus **SAVE 15%*** on your next order with code **G0N1MZMZ4G5M**

Written by Stacey Wheeler

Senior Science Technician and LaBLiFe ambassador.

NAVIGATING THE MAZE:

TIPS TO SECURE CAPITAL FUNDING FOR YOUR SCHOOL

Securing capital funding is vital for schools to uphold and enhance facilities, enrich educational programs, and foster an optimal learning environment for students. Yet, navigating the intricate world of funding opportunities demands strategic planning, clear communication, and proactive involvement. In this guide, we present some top tips for schools to effectively secure capital funding, accompanied by explanations of their significance and practical examples.

Understanding Funding Streams: Get acquainted with various funding streams provided by government bodies and external organisations. Knowing eligibility criteria and application processes is key to seizing funding opportunities optimally. For instance, thorough research might unveil tailored grants for specific needs, such as eco-friendly initiatives or arts education programs.

Building Strong Partnerships: Collaborate with local businesses, community groups, and educational partners to demonstrate community backing and strengthen funding applications. Solid partnerships not only bolster grant proposals but also offer opportunities for shared resources and expertise. For example, partnering with a local environmental group can enhance a funding application for establishing a community garden or wildlife habitat.

Aligning Projects with Funding Priorities: Tailor project proposals to align with the priorities and goals of funding organisations. Emphasising how your project addresses crucial issues or contributes to broader initiatives heightens the chance of securing funding. For instance, if a funding source prioritises STEM education, focus on developing a project for a state-of-the-art science laboratory.

Demonstrating Impact and Sustainability: Clearly outline the intended impact of your project and plans for long-term sustainability. Grant providers are more inclined to fund projects with measurable outcomes and a commitment to ongoing success. For instance, installing solar panels not only cuts energy costs but also provides an educational opportunity for students to learn about renewable energy.

Utilising Data and Evidence: Support funding applications with data, research, and evidence-based practices. Quantifiable data and compelling statistics enhance the credibility of your proposal and highlight the necessity for funding. Presenting data on student achievement or facility utilisation rates, for instance, underscores the importance of capital investments in improving educational outcomes.

Engaging Stakeholders: Involve all stakeholders—students, parents, teachers, and community members—in the planning and decision-making process. Engaging stakeholders instils a sense of ownership and support for funded projects, thereby increasing their chances of success. Hosting town hall meetings, surveys, or focus groups can gather valuable input and feedback from the school community.

For help with capital funding or other budget-stretching solutions visit **vittaeducation.com/funding**

Keep Informed and Network: Stay updated on funding opportunities, policy changes, and best practices in grant writing through professional development sessions, conferences, and networking events. Networking with peers and other experts offers valuable insights and connections to potential funding sources. Joining organisations like The Trust Network can also provide access to resources and support for successful grant applications.

Being Proactive and Persistent: Adopt a proactive stance in seeking funding opportunities and remain persistent in pursuing them. Grant writing demands time and effort, and success may not be immediate. By consistently seeking funding opportunities, refining proposals, and following up on applications, schools enhance their chances of securing capital funding in the long run.

Tailoring Proposals for Different Audiences: Customise funding proposals to resonate with the priorities and preferences of various funding sources. What appeals to one organisation may not necessarily appeal to another. Tailoring proposals ensures they are relevant, compelling, and aligned with the values of the funding organisation.

Celebrate Success: Upon receiving funding, publicly acknowledge and celebrate the support of funding organisations and partners. Recognising their contributions strengthens relationships and fosters goodwill for future collaborations. Sharing success stories and outcomes with stakeholders demonstrates the impact of capital funding on the school community.

In conclusion, securing capital funding for schools requires a multifaceted approach involving strategic planning, clear communication, and collaboration with stakeholders. By following these tips, schools can confidently navigate the funding landscape, maximise opportunities, and realise their goals for their school.

STEM FUNDING TO CONSIDER

The Royal Society Partnership Grants scheme funds schools and colleges up to £3,000 to work in partnership with STEM professionals from academia or industry to run a STEM project.

The Outreach Fund from the Royal Society of Chemistry, provides financial support to members, individuals and organisations to enable them to run chemistry-based activities.

The Royal Institution's **'Science in Schools'** grants offer schools the chance to host free visits from professional presenters to engage children in science education, meet CPD requirements for teachers, engage families, and raise funds for your school.

Engage Grants (formerly known as CREST for Under-represented Audiences grants) are available twice a year to help support UK schools to run CREST Awards. Schools that have high numbers of pupils who are often under-represented in STEM are encouraged to apply for funding of up to £600 (£300 plus voucher codes to cover CREST Award registration fees) in the Autumn and Spring terms.

Disclaimer: Please be advised that reading this article and following our tips does not guarantee funding or grant acceptance.

INCLUSIVE SCIENCE IN THE CLASSROOM

You don't have to look back very far into the past to realise that the majority of scientific fields have not been particularly inclusive. The stereotype of a scientist being a white, middle-aged, often bearded, man has pervaded for generations, mostly unchallenged – those who hold the power get to write the history!

Recent research by the APSIRES[1] team led by Professor Louise Archer confirms that young people are still very influenced by these stereotypes when it comes to engaging with science and choosing science as a potential career. So, it comes down to schools and those of us in the privileged position to be able to influence children to constantly challenge the stereotypes and ensure that science is a fully inclusive experience for all pupils.

The Science Capital Teaching Approach

Inclusion and equality is at the heart of the Science Capital Teaching Approach[2], a research based approach to engaging all young people in science and making it relevant to them. The approach focuses on what the pupils bring to the science they are learning, the relevant real life experiences they have that can make the science personalised for them. It also talks about focusing on the least engaged pupils in the class and finding 'hooks' to engage them and help them to understand the relevance of science to their lives.

Both the 'Science Capital Teaching Approach' handbook and its primary equivalent the 'Primary Science Capital Teaching Approach' handbook[3] are very readable documents with insightful case studies and practical ideas to implement in the classroom.

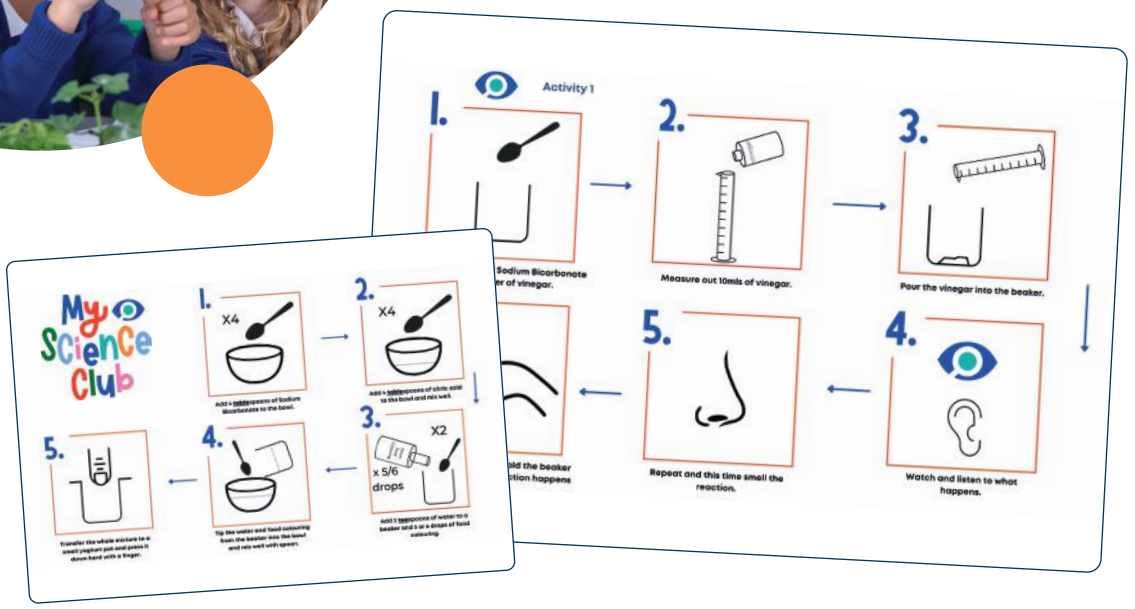
The Classroom Environment

The environment that you create in your classroom is very important to fostering genuine inclusivity. Pupils need to feel comfortable asking and answering questions, expressing views and opinions and engaging in debate. Something as simple as having a question wall, physical or digital, where questions can be added without pupils having to draw attention to themselves can make a big difference.

Role Models

Think carefully about the role models and examples you use in your teaching. If you're inviting visitors in to speak to pupils go out of your way to ensure there is a variety of role models – even better if you are able to invite ex-pupils back as they have a direct link to the school and community.

Build diversity into the scientists you talk about in different aspects of science. Try and use contemporary scientists from diverse backgrounds where possible. Think about the pupils in front of you and who they are likely to be engaged and inspired by.



Supporting SEND Pupils in the classroom

A key part of developing an inclusive classroom is finding ways to develop all pupils' independence when carrying out practical activities. This can be done for pupils of all ages using tools such as Wonder Cupboards, Frames[4] and Integrated Instructions.

Wonder Cupboards contain different objects designed to stimulate interest and curiosity.

Frames are simple graphic organisers with prompts to support pupils knowing what to do next. They are easily adaptable for all situations.

The concept of integrated instructions is based on reducing cognitive load by using simple diagrams, less text and numbers and arrows to create flow[5].

"...constantly challenge the stereotypes and ensure that science is a fully inclusive experience for all pupils..."

Examples (above) of the simplicity of Integrated Instructions from My Science Club. The clear, simple diagrams and limited text reduce cognitive load and encourage more independence.

Creating and using integrated instructions in the classroom allows all pupils to access a simple step by step guide to what to do. Integrated instructions for a core part of the resource packs from My Science Club[6] and are ideal for developing independence and inspiring pupils through extra-curricular science activities.

Explorify

Explorify is a brilliant resource to promote inclusion in the science classroom. The mix of activities is perfect for generating discussion and letting pupils bring their prior experience into lessons. There is an inclusion hub[7] which details different ways in which the activities can be used to improve the quality of thinking, questioning and talking in science. **Find out more about Explorify on page 20.**

1. ASPIRES Report: Pupils's science and career aspirations, age 10 –14. **2.** The Science Capital Teaching Approach: engaging students with science, promoting social justice. **3.** The Primary Science Capital Teaching Approach: teacher handbook. **4.** Inclusive Approaches for Primary Science. **5.** https://edu.rsc.org/feature/improving-practical-work-with-integrated-instructions/3009798.article **6.** https://www.mysciencecluB.com/free-resources/sample-sessions **7.** https://explorify.uk/teacher-support/science-teaching-support/explorify-for-inclusion-hub

Authors: Bryony Turford and Paul Tyler. Co-founders of My Science Club (pictured).

EXPLORIFY:

PRIMARY SCIENCE FOR ALL AGES

Explorify is a Bett award winning free digital resource created to support UK primary teachers to teach science confidently and to spark pupils' curiosity.

Currently 73% of UK primary schools and 17% of UK secondary schools use the website, and these numbers are growing.

So why is Explorify popular with teachers?

Explorify won a Bett Award in January 2024, with the judges describing Explorify as a "well thought out and fun multi-media product for teaching" that "raises interest and aspirations in STEM subjects for pupils" and is "a great support for teachers".

Explorify offers over 800 activities, which are directly mapped to the primary science curricula of all four UK nations. These activities are low prep, and generally take around 15 minutes, making them easy to slot into a lesson and perfect for busy teachers. They have been shown to have a positive impact in the classroom for both pupils and teachers.

The activities are designed to get pupils talking about science, relating science to their own experience and justifying their thinking. The activities also provide teacher guidance which includes how to deliver the activity, background science and suggested further activities.

So how exactly is Explorify used in secondary schools?

Each Explorify activity is designed to promote curiosity and get pupils talking, which is an ideal starting point for learning at both secondary and primary levels.

Getting students to talk about science and justify their thinking is just as relevant to secondary education as it is to primary.

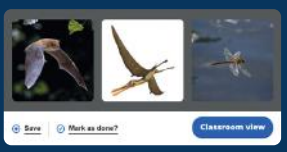
Many students will come into secondary school already familiar with Explorify activities. This makes them perfect for supporting transition into year seven.

Although the platform is designed for the primary curriculum, the simple to use search and filters enable secondary teachers to easily find suitable content. There's a teacher support area which provides blogs around teaching science, as well as more specific science teaching support to help with the 'tricky bits', plus an inclusion section detailing specific strategies and techniques for teaching science to children with SEND.

Explorify

Explorify's most popular activity types

Explorify has 13 different activity types which require pupils to use different skills such as observation, listening and problem solving. They also encourage scientific talk amongst students, improve oracy skills and confidence, and increase enjoyment of science.

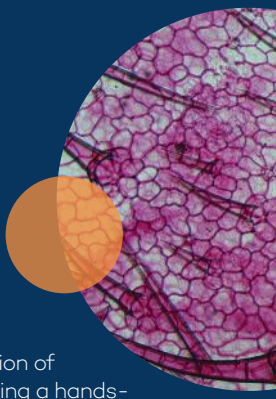


Odd One Out

Zoom In, Zoom Out

Spark curiosity for pupils of any age and help support inclusive science learning. For more information or to sign up now for FREE, head online to **explorify.uk**

YOU'RE A SCIENCE WIZARD (HARRY)



International Harry Potter Day, 2nd May 2024

With International Harry Potter Day just around the corner, it's the perfect time to channel your inner Professor Sprout and explore the world of plants and botany. With a biology practical centred on plants, students can delve into concepts like plant growth, adaptations, and photosynthesis. – **Check out the required practical on page 36.**

Take your students on an exploration of stomata using a microscope, offering a hands-on approach to understanding plant biology, cell biology, and ecology. By examining and analysing stomata, students not only gain valuable scientific skills but also feel like true wizards with the names of some of these commonly used leaves: Tradescantia zebrina, Brassica oleracea (cabbage), Hedera helix (ivy), Pelargonium x hortorum (geranium) and Ficus elastica (rubber plant).

You will need:

- A compound microscope
- Microscope slides
- Thin clear coverslips
- Scalpel or razor blade
- Forceps or tweezers
- Staining solution (optional)

METHOD

1. Take a leaf from the plant and cut a small section (about 1 cm x 1 cm) from it. Make sure the leaf section is fresh and hydrated.
2. Place the leaf section on a microscope slide with the lower (abaxial) surface facing up. You can add a drop of water to the slide to prevent the leaf from drying out.
3. Add a coverslip over the leaf section, making sure there are no air bubbles.
4. Use a compound microscope to view the slide under low magnification (e.g., 10x or 20x) to locate the stomata.
5. Once the stomata are located, switch to higher magnification (e.g., 40x or 100x) to observe them in more detail.
6. Adjust the focus and lighting as needed to get a clear image of the stomata. You can also use staining methods to enhance the visibility of the stomata.
7. Count the number of stomata in a given area to determine the stomatal density.

PRECAUTIONS: When preparing solutions always wear appropriate PPE including eye protection and gloves. Always add acid to water (never water to acid). Use a fume cupboard. You should always carry out a risk assessment when using any chemicals. Follow all recommended safety procedures and adhere to the label instructions, hazard warnings and local legislations.

VITTA Education can not be held responsible for any undesired outcome of this, or any other practical experiment you try. For our full disclaimer visit vittaeducation.com

Product shown: BMS 037 LED (VTT12300650).

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Earning points is easy! Log in or request an account and points will automatically be gained with every qualifying transaction made through the VITTA Education website.

Once your points begin to build up, you can redeem them as full or part payment towards your next order, or in exchange for special VITTA Treats. You can even pool your reward coupons with other colleagues for larger product savings!

We love giving out points, so keep an eye out in our monthly newsletter and socials for more ways to build up your balance faster.

You can view your points balance at any time, as well as view all your previous order history and account details in your customer portal.

Need an account? Scan the QR code on your mobile or visit **vittaeducation.com/register** and fill in the form.

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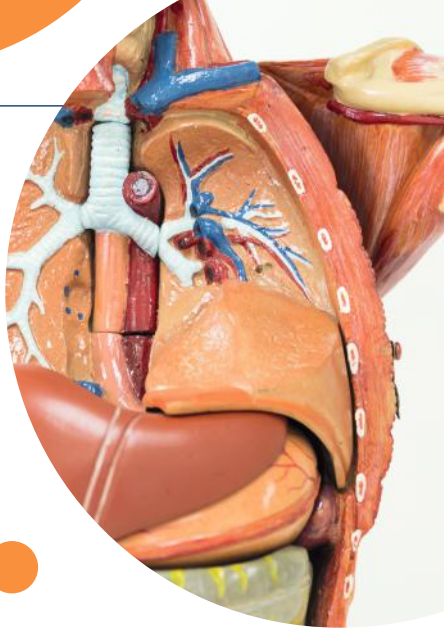
Find out more and start saving today at vittaeducation.com/rewards

Rewards

VITTA Treats subject to availability. Selection may vary. See website for current details. Delivery charges may apply.



NEW TEACHING RESOURCES AND RESEARCH TO SUPPORT HEALTH AND SCIENCE T-LEVELS

Technical Education Networks

A suite of new teaching resources and practical guidance on macro-sequencing to support the delivery of Health and Science T-levels has been launched by Gatsby's Technical Education Networks (TEN) programme.

These free resources, designed to bring industry and the classroom closer together and developed by a network of specialist teachers, employers and industry professionals are available to download from **technicaleducationnetworks.org.uk**

The suite of teaching materials includes animations, video content, slide decks, and worksheets and also includes guidance on macro-sequencing in collaboration with the Association of Colleges (AoC).

Further resources are currently being developed and are due to be released later this year.

The programme also provides curriculum resources for the following routes:

- Agriculture
- Construction and the Built Environment
- Engineering & Manufacturing
- Digital

"...free resources, designed to bring industry and the classroom closer together and developed by a network of specialist teachers, employers and industry professionals are available... "

For more details about the TEN programme or how to get involved with T-Levels, please contact **TEN@gatsby.org.uk**

THE TECH FILES

DENISE RALPH

In the bustling halls of Woolmer Hill School in Surrey, there's a silent yet vital force at work behind the scenes – Denise Ralph, Senior Science Technician extraordinaire.

With over a decade of experience in education, Denise's journey from Teaching Assistant (TA) to seasoned Science Technician is a testament to the transformative power of seizing opportunities and embracing change.

Before transitioning into this role, Denise spent over a decade as a Teaching Assistant (TA), initially in Primary and then in Secondary education. After serving as a Science and Maths TA for ten years in a Secondary school, Denise found herself at a crossroads craving a new challenge. Despite having no prior experience as a science technician, she embraced the opportunity and learned the ropes on the job. Diving head-first into the world of labs, experiments, and meticulous preparations, Denise has been in this role for eleven years.

Standing tall as a beacon of expertise and dedication, Denise is proudly a Registered Science Technician (RSciTech), a STEM Ambassador, a LaBLiFe Ambassador, and the Coordinator for Health & Safety within the science department. She's also a CAP assessor, contributing to the continuous improvement of science education standards.

Within her school and department, Denise's impact reverberates through various initiatives and innovations she has undertaken. From reorganising the chemical store and prep rooms to preparing practical demonstrations and eagerly trialling new experiments, she ensures that the science department operates like a well-oiled machine. With six labs, seven teachers, one trainee teacher, and one Assistant Technician (originally from Ukraine, whom she is training in all aspects of science), Denise's multitasking prowess shines as she oversees three prep rooms dedicated to Biology, Physics, and Chemistry, and handles all three subjects.

Passionate about Biology, Denise particularly enjoys a Moss Safari, which has become a staple in her Ecology lessons. Students eagerly anticipate practical sessions and often inquire about them while waiting to enter the labs.

However, Denise's influence extends beyond the confines of the classroom. To further support learning, Denise creates instructional videos for various practicals and equipment usage. Taking enjoyment in showcasing and disseminating engaging demos online, these videos are typically shared on social media platforms like X (Twitter) and Instagram. Her dedication to sharing knowledge and engaging online audiences has earned her recognition, including a feature on the #TECHOGNITION poster in 2023.

For Denise, every day as a technician is a learning experience filled with variety...

"...The most enjoyable part of my job is that every day is different. It can change lives – shows that girls can have a career in STEM..."

Yet, amidst the daily hustle, Denise reminds us that technicians are the unsung heroes of the science department. Technicians often go unrecognised despite playing a crucial role; technicians are not just individuals in white coats carrying trays of equipment. Technicians consistently go above and beyond, serving as the backbone of the science department.

With this in mind, Denise stands as a shining example of passion, perseverance, and the transformative power of embracing change.

She urges technicians to become part of the community of Registered Science Technicians (RSciTech). By becoming RSciTech you will receive professional validation of your highly developed technical competence, be entitled to use the designatory letters RSciTech after your name as well as elevate your credibility and confidence as a skilled technician.

Read the full report on Denise by visiting our blog pages, and why not share your story to feature in next term's Tech Files. Email **hello@vittaeducation.com**

GOOD CHEMISTRY:

THE SCIENCE DEPARTMENT CHEMICAL STORE

Chemical storage is a serious issue and recent official guidelines stress the importance of doing it properly. Murray Hudson, Gratnells Chairman and visionary behind Planning Learning Spaces explains...

Getting it right is not an option: it's a must. The new guidance* for science department chemical stores now goes further than the expected advice on leaks and fires: schools noticing 'chemicals of security concern' have gone missing, or 'suspicious behaviour relating to such chemicals' must report it to the local police or even an anti-terrorism hotline.

But what does good chemical storage look like in a school? While schools may not house the vast quantities of chemicals typical of industrial settings, careful management is still needed to ensure complete safety.

What should go in the chemicals store?

It should be possible to store all chemicals in the same store, including toxic, corrosive and flammable ones. There is no need for separate cupboards; when amounts are small, they are all kept on shelves in the secure space.

There are only two exceptions – radioactive substances and gas cylinders need to be kept separately to the chemicals store and away from each other.

Position and Design

The chemical store needs to be a separate room opening directly into the prep room, close to the dispensing area and the prep room fume cupboard.

If possible, the store should have an outside wall for easier ventilation which will help with cooling, providing the wall is not exposed to the sun.

Size matters too. The floor area should be more than $6m^2$ for a small 11-16 secondary school and more than $10m^2$ for a school of around 1000 pupils. It will be even larger for bigger schools and those teaching post-16 students.

Walls, floors, ceilings and doors will need to be fire resistant for a minimum of 30 minutes.

Also beware of false ceilings where the space above is shared with neighbouring rooms – rooms need to be fully fire-stopped to prevent the spread of fumes, smoke and flames. Voids under the floor can also pose a problem and floors need to be sealed to prevent leaks of liquids, fumes or smoke travelling throughout the building.

There should also be a viewing window into the room so anyone working in the store can be seen. Schools need to keep careful track of keys to the storage room and who has access to them. Only the technician(s), head of science and site staff should have direct access to the chemical store room. Teachers should not have routine direct access to the chemical store.

*SYC - Secure Your Chemicals, Education, Home Office, 2012.

The Floor

The surface of the floor should be sealed at the edges, waterproof, resistant to chemicals and non-slip. To contain spills, the floor should slope slightly to the back or centre of the store so they don't trickle outside.

Don't install drains, you don't want hazardous chemicals entering the drainage system.

Because schools store relatively small amounts of chemicals, there is no need for a sill across the doorway to contain spills. In fact, it is more likely to be a trip hazard than anything else.

Fittings and Furniture

Wood is your friend for shelving, or for a more modern aesthetic with easy maintenance and protection against humidity and chemical spills, consider powder-coated metal shelving.

Keep shelf depths shallow, around 150mm, to ensure that packets and bottles are not stacked more than two deep. Bulk containers, such as Winchester bottles, should be stored on the floor in deep Gratnells trays.

Where trays containing bottles of stock solutions are in use, and the store is big enough, there should be racks for these trays provided.

A limited amount of flammable substances (up to 50 litres per cabinet†), can be stored in a metal cabinet inside the chemicals store; it has to be able to withstand fire for at least 30 minutes.

Electrics

The light switch should ideally be situated outside of the room. There should be no other electrical equipment in the storage room, including power sockets. There is no requirement for any electrical items to be ATEX (or spark proof) rated.

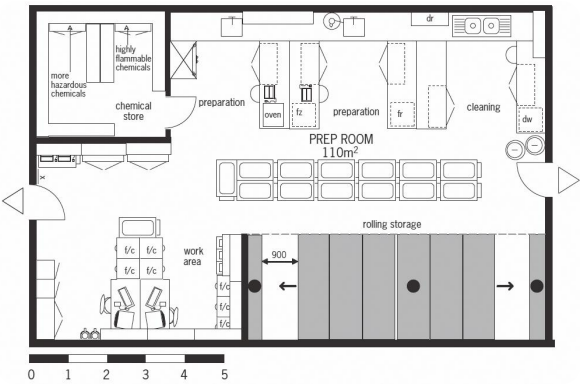
Temperature and Ventilation

The ideal temperature for the store is between 10°C and 25°C. There should be no heating pipes or heaters within the store itself.

The ventilation rate for storage should be more than two air changes per hour rising to five air changes an hour if someone is working in there for an extended period of time making the store a working place rather than a store.

Place extractors at both low and high levels, as the majority of fumes involved are heavier than air. These should operate 24/7 all year round.

Ducting routes must be as direct as possible and fans should be positioned outside the main building, taking into account any down-drafts.



A lot to think about

In conclusion, there is a lot to think about in setting up your school chemical store, but there is plenty of advice and guidance out there to help you get it right. Take a look at the references below for more detail. Good luck!

More information and links can be found via this article on our blog at **vittaeducation.com**

Alternatively, you can seek further advice direct from CLEAPSS (UK), **cleapss.org.uk** or SSERC (Scotland), **sserc.org.uk**

Murray Hudson is the co-author of www.planninglearningspaces.co.uk, a practical guide for school architects, designers and school leaders. Murray would like to thank Matt Endean, Deputy Director of CLEAPSS for additional help.

†in a school. **Images:** ©Westlab.

WHY IS GRATNELLS **THE NUMBER ONE** CHOICE FOR SCIENCE TECHNICIANS?

Gratnells

"There's only one choice of tray for science technicians and that's Gratnells"

Paul Cook
RsciTech Hon.FinstP

- **No need to worry about spills with chemically resistant, recyclable polypropylene**
- **Anti-static additive prevents dust contamination and protects users**
- **A burn rate of 0.22mm/min ensures extra safety in the lab**
- **Can be easily moved and stored in multiple locations for flexibility**

It's no wonder that the Gratnells tray has become a staple item in so many laboratories and prep rooms over the past 50 years.

For more information on Gratnells products visit **www.gratnells.com**

SPACE: A GUIDE TO LABORATORY SET-UP

Are you being tasked with setting up a new laboratory or relocating an existing one to a new facility? It presents an exciting opportunity, but whether you're starting afresh or transitioning to a new space, the process can feel overwhelming. Therefore, adopting a methodical approach to determine what's essential for the smooth operation of the lab is crucial. Here, we outline 3 key steps to guide you:

1. Explore Design & Layout

Before getting into the physical setup, it is key to meticulously plan and ensure adherence to regulations like COSHH and HASAWA. Acquire necessary permits and licenses for equipment and chemicals while understanding any building requirements and usage restrictions.

Prioritise optimal ventilation, and carefully assess the need for biosafety cabinets or fume hoods, along with adequate lighting and utility access. Tailor the layout to enhance efficiency, space utilisation, and storage, catering to both general and chemical use.

Additionally, streamline work-flow and, above all, uphold safety standards by allocating specific zones for various disciplines such as chemistry, biology, and physics, and accommodating large equipment such as fridges, freezers, and dishwashers.

2. Equipment and Supplies

Begin by compiling a comprehensive list of essential laboratory equipment and supplies, including microscopes, balances, Bunsen burners, glassware, chemicals, and safety gear like goggles and lab coats. Leverage resources and lab lists provided by trusted suppliers such as VITTA Education to aid in compiling your inventory.

Evaluate existing equipment functionality, considering potential upgrades, while deciding whether to dispose of or retain unneeded items.

Research equipment options, establish budgets, obtain quotes, and procure from reputable suppliers to ensure adherence to quality and safety standards. This is an ideal chance to initiate documentation processes for equipment inventory, chemical usage, safety checks, and incident reports, ensuring regular review and updates for accuracy and compliance.

3. Reviewing Safety & Emergency Preparedness

Safety always takes precedence in any laboratory. Therefore, alongside regulatory compliance, conduct comprehensive risk assessments for all lab activities, implementing requisite safety measures. Provide thorough training for staff and students on equipment handling, protocols, and emergency procedures.

Establish secure storage facilities, and clearly labelling areas to prevent accidents or unauthorised access. Implement robust waste management practices, adhering to regulations for chemical and biological waste disposal. Install essential safety equipment such as fire extinguishers, smoke detectors, and emergency showers.

Develop and communicate emergency response protocols to all personnel, outlining evacuation procedures, first aid measures, and contact details for emergency services.

In conclusion, establishing or relocating a school science laboratory is a complex yet rewarding endeavour.

At VITTA Education, we stand ready to support you at every stage of this journey. Please feel free to reach out to our team at **hello@vittaeducation.com** for assistance.

Get started on your new space with our project walk-through guide... Visit our website to download your copy.

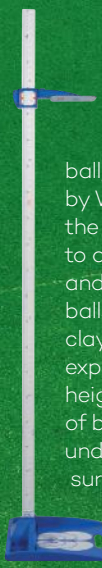
GRAND SLAM SCIENCE

Integrating major sporting events like the **London Marathon** (21st April), **Wimbledon** (1st July – 14th July), and the **Summer Olympics** (26th July – 11th August) into lessons can spark excitement and enhanced learning.

Offering rich opportunities to explore science in action, from materials science to nutrition, weaving hands-on activities inspired by these events into the curriculum not only makes science more engaging but significantly enhances real-world context. Here are some fun activities to try.

Sports Drinks Decoded: Highlight the role of nutrition in performance by using a multimeter to compare the electrolyte levels present in water, orange juice, and various sports drinks. By measuring conductivity, determine which beverage optimally sustains hydration - a vital aspect for events like Wimbledon, the Olympics, and the London Marathon.

- Furthermore, students can analyse the composition of sports drinks and their role in hydration and performance. Drawing upon principles from chemistry, physics, and biology, this activity is ideally complemented by the PASCO Wireless Conductivity Sensor (PS-3210).



Why are Tennis Balls Fuzzy?: The fuzzy felt on the surface of a tennis ball creates more drag as it moves through the air, slowing the ball down - the fuzzier the ball, the more deceleration this causes. Inspired by Wimbledon, investigate the physics behind the bounce of tennis balls on various surfaces to demonstrate principles of elasticity, friction, and energy transfer. Students can drop tennis balls onto different surfaces like grass and clay and measure the height of the bounce to explore how surface materials affect rebound height. New balls please... using different types of balls can provide students with a broader understanding of how various materials and surface textures interact with friction and affect movement.

Projectile Motion: Ever wondered about the physics behind Olympic sports like archery, discus or javelin throwing? Calculate the projectile motion, launch angles, and optimal release velocities for different Olympic sports.

Rhythms of Athletic Hearts: Providing practical insights into cardiovascular fitness and the body's response to physical exertion, this heart rate experiment will aid understanding of heart rate regulation, oxygen transport, and the relationship between physical activity and heart health, enhancing knowledge of human physiology. Measure the resting heart rate, perform various physical activities for a minute each, and monitor post-exercise heart rates to assess recovery. By plotting the results, students will see first-hand the impact of physical activity on heart health. This activity can be done manually or using a Fingertip Pulse Oximeter (VTN12301800) or using the PASCO Wireless Exercise Heart Rate Sensor (PS-3207).

Human Anatomy: Investigate the anatomy of athletes in sports (ZHM680020) like gymnastics or swimming and discuss how factors like muscle strength, flexibility, and body composition contribute to success in specific events. A fascinating journey into the human body.

By incorporating these sporting-inspired hands-on activities, makes science come alive while fostering critical thinking and problem-solving skills. Let's inspire the next generation of scientists and innovators!

Get active in the classroom... Download a set of these sporty lesson plans and more online for physics, chemistry and biology.

Get a head-start at **vittaeducation.com/lesson-plans**

See page 54 for a list of all the products featured.

BRIDGING THE GAP:

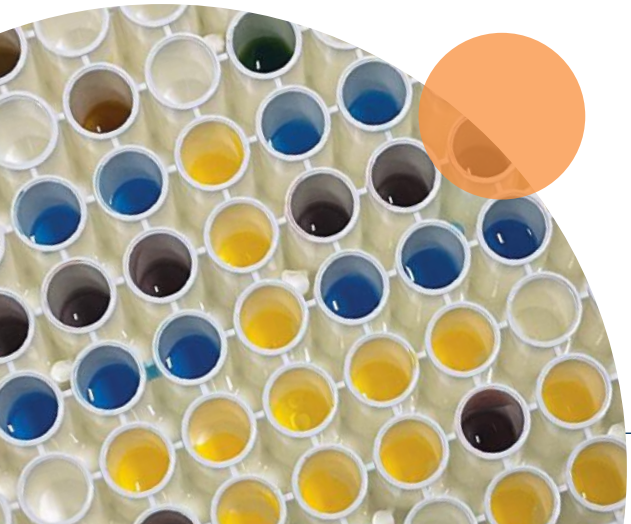
EDUCATION MEETS INDUSTRY WITHIN SCIENCE T-LEVELS

In technical education, recontextualisation serves as a crucial bridge, connecting the theoretical realms of the classroom with the practical demands of the workplace.

The Improving Technical Education suite of resources from Gatsby define this concept:

"...the context of an education or training programme is different from the context of the workplace (for example, a laboratory) - while a workshop is related to the real-life context, they are not the same. For effective vocational learning, the teacher must help the learner to move between these contexts".

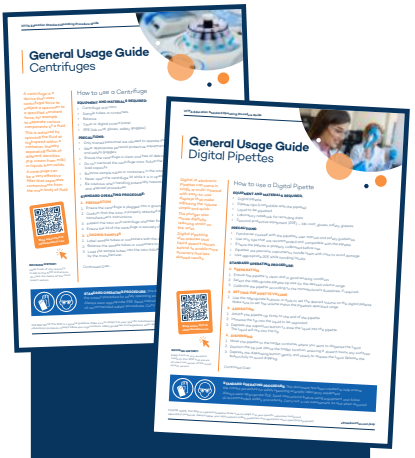
Science T-Levels, with their emphasis on integrating classroom learning with real-world experiences, epitomise this approach, aiming for a seamless transition for students between these two environments. Understanding and implementing the principles of recontextualisation not only enhances the effectiveness of Science T-Level programs but also ensures that students are well-prepared for the challenges and opportunities they will encounter in their chosen scientific fields. This is often referred to as maintaining a direct line of sight to work for learners.



At the heart of recontextualisation lies the recognition that learning does not occur in isolation but is deeply influenced by the contexts in which it takes place. In the classroom, pre-placement, students are relating course content to the workplace and post-placement students are linking their experiences to their studies.

Integrating real-world experiences into the Science T-Level program extends beyond technical knowledge to encompass the development of essential skills and behaviours that are vital for maximising success on their work placement and beyond. Cultivation of critical thinking, problem-solving, and communication skills are essential for future career paths. For instance, classroom activities may involve analysing data sets, interpreting research findings, and presenting scientific posters to peers, mirroring the processes undertaken by researchers in academic and industrial settings.

By partnering with industry, educators can provide students with access to innovative technologies, expert mentors, and real-world data that enrich their learning experiences. One illustration from the Wellcome Sanger Institute offers students opportunities for career exploration and professional development, enabling them to gain insights into the diverse applications of genomics in fields such as personalised medicine, agriculture, and the environment. The new virtual work experience program on Springpod: Genomics, Science and Data Careers leads students through the latest advancements and opportunities in careers in genomics; promoting a deeper appreciation for the relevance and impact of their studies. A simple walkthrough on the entry routine to a lab or carrying out a technique, captured video or in an online meeting,



Help yourself... download one of many SOP guides at vittaeducation.com/sop

can also help students understand the behaviours necessary for good laboratory practice.

In the case of Science T-Levels, students' understanding of scientific concepts and skills is enriched in the workplace's practical settings. By arranging placements and fostering strong industry connections, educators can provide students with invaluable opportunities to apply their knowledge in real-world scenarios. One such example is the MidKent College partnership with the Medway NHS Trust. Their pharmacy team are developing placements to model the entry courses of pharmacy technicians.

Industry placements offer students the chance to immerse themselves in their chosen fields, gaining first-hand experience of the challenges and dynamics of scientific research and application. Back in the classroom we can draw on their collective knowledge to apply to their learning. Following their autumn placement, our students prepare for the occupational specialism exams, which encompass a practical component. Central to this assessment phase is the meticulous process of designing, implementing, and evaluating standard operating procedures (SOPs).

Utilising SOPs sourced from VITTA Education, students engaged in peer evaluation, focusing on their proficiency in using micropipettes loaned from the AMGEN Biotech Experience. Tasked with a simple yet intricate project of creating pictures in a 96 well plate—a task akin to crafting a suncatcher—students assessed their skill levels. Students who had refined their technique during their placement were able to offer insightful critiques moving their peers on from basic competence levels in the evaluation process.

In conclusion, recontextualisation serves as a guiding principle in Science T-Level education. By embracing best practices such as arranging industry placements, building industry connections, and integrating real-world experiences, educators empower Science T-Level students to apply their theoretical knowledge in practical contexts and develop essential skills for success in scientific careers.

Written by Alison Ackroyd
Lecturer at MidKent College

T-LEVELS
THE NEXT LEVEL QUALIFICATION

Want to know more? Find out how VITTA Education can assist in finding placement opportunities and other course-related needs, visit **vittaeducation.com/T-Levels**

ECO-EXPLORERS: NATURE'S CLASSROOM

Dive into the world around us and celebrate the very best of nature with up-coming awareness days

During the summer months, depending on the weather, there's a wonderful opportunity for you and your students to not only appreciate the beauty and diversity of life on Earth but also to engage with the scientific principles that support it.

Integrating animals and nature into the curriculum can significantly improve students' comprehension of scientific concepts while fostering a deeper appreciation for the natural world. Additionally, we highlight some "turtle-y" awesome awareness days, as well as some "un-bee-lievably" good hands-on activities, all brought to life with products from the VITTA Education range.

Earth Day: 22 April 2024
World Bee Day: 20 May 2024
Outdoor Classroom Day: 23 May 2024
World Turtle Day: 23 May 2024
World Environment Day: 5 June 2024
World Ocean Day: 8 June 2024
World Rainforest Day: 22 June 2024
Insect Week: 24-30 June 2024

Insect Identification Walk

Take your students on a guided walk around the school grounds or a nearby nature reserve during Insect Week (Monday 24th June to Sunday 30th June). Equipped with insect and habitat identification guides, magnifying glasses, and observation sheets, encourage them to observe, identify, and record different insect species they encounter. This interactive activity not only deepens understanding of insect anatomy, life cycles, and classification but also sheds light on their vital role within ecosystems.

Ocean Currents

PASCO Scientific offers an excellent activity to explore the fundamental mechanisms driving ocean currents. It focuses on the role of density differences in ocean water, as well as the impact of temperature and salinity on water density. This demonstrates how these factors influence the movement of water masses within the ocean. Understanding ocean currents helps students grasp the interconnectedness of climate and ecosystems, making it particularly relevant for World Ocean Day. Using a Wireless Conductivity Sensor, a Wireless Temperature Sensor, and SPARKvue, you can delve into the driving forces behind ocean currents.

Download these lesson plans and more at **vittaeducation.com/lesson-plans**

See page 54 for a list of the products shown.

Local Biodiversity

Engage your students in measuring biodiversity through this participatory activity. Head to a nearby outdoor location such as a school garden, park, or natural area. By identifying plant species and their abundance within quadrats, students gather data to analyse the habitat's biodiversity. Through this exploration, they discuss the significance of biodiversity and the factors impacting it. This reinforces ecological understanding, scientific skills, and environmental stewardship. Post-activity reflection allows students to propose conservation actions, making it an ideal fit for World Environment Day and deepening their engagement with real-world environmental issues and conservation ethics.

Sunshine Science

Illustrate electromagnetic spectrum principles and energy transfer by utilising UV-detecting beads in petri dishes. Explore the broader implications of UV radiation on ecosystems and biodiversity. Apply different SPF levels of suncream to the beads, expose them to sunlight, and observe the resulting colour changes as a visible indicator of suncream effectiveness. Conduct this experiment at various times of the day to unveil further insights into its efficacy.

Mossy Adventure

Embark on a mossy adventure by collecting moss samples from different locations and analysing them for microbial diversity. A Moss Safari can be as simple as squeezing soaked moss onto a microscope slide. For a richer experience, use the filtered moss squeeze approach to increase your chances of observing the 'Big Five' multicellular organisms and beyond. This activity promotes the accessibility and versatility of microscopes while encouraging students to engage with nature and appreciate the intricate ecosystems found in everyday environments.

In summary, blending animals, nature, and hands-on activities enhances scientific learning and environmental appreciation. By fostering a deeper connection with the natural world right at their doorstep, these activities go beyond textbooks, nurturing stewardship, and empowering future scientists to understand and protect our planet.

Log on to VITTA for our series of Required Practicals for GCSE and A-level.

Find all the in-depth information and advice you need, plus video links and one-click equipment list ordering.

Practical extract shown. VITTA Education can not be held responsible for any undesired outcome of this, or any other practical experiment you try. For our full disclaimer visit vittaeducation.com

Download A VITTA TIME-SAVER

REQUIRED PRACTICALS

Biology: Photosynthesis

Investigate the effect of light intensity on the rate of photosynthesis.

EQUIPMENT LIST:

The full equipment list can be found at **vittaeducation.com/practicals**

METHOD:

1. Measure 3x spatulas full of bicarbonate of soda. Dissolve in 50ml of water and stir until it's well mixed.
2. Take fresh pondweed and cut it to a length of about 10cm.
3. Set up the retort stand with a clamp on a stable surface. Place the cut end of the pondweed in the test tube, making sure the cut part is facing upward.
4. Pour the prepared bicarbonate of soda solution into the test tube until the pondweed is fully submerged. This bicarbonate solution provides the carbon dioxide necessary for photosynthesis.
5. Firmly fix the test tube into the clamp on the retort stand. Ensure that the pondweed is fully immersed in the bicarbonate solution.
6. Position the lamp in such a way that it shines directly on the pondweed in the test tube. The high-intensity light source is essential for the process of photosynthesis.
7. Switch on the lamp to initiate the photosynthesis process.
8. Watch for the appearance of a steady stream of bubbles coming from the cut end of the pondweed. These bubbles are oxygen produced during photosynthesis.
9. Place the lamp 10cm away and start the stopwatch.
10. Count the bubbles for 1 minute and record the results. Repeat twice more and calculate the mean bubbles per minute.
11. Repeat steps 9 and 10 at distances of 20cm, 30cm and 40cm.

LEARNING OUTCOMES:

AT1, AT3, AT4 and AT5. See website for full descriptions.

Like what you see? Download the full explanation of this practical and more online at **vittaeducation.com/practicals**

TEST, TRAIN AND TRIUMPH...

Get up-to-speed on science equipment with VITTA

As the vibrant summer term begins, there's no better time to seize the opportunity and immerse yourself in one of Discovery Days, Workshops and Training Sessions.

Guided by our product expert Silas, our sessions are designed to empower technicians, teachers and the whole department with a profound understanding of the equipment, from setup to maintenance and its potential uses.

This ensures informed recommendations and prevents redundant equipment purchases. For teachers, we emphasise practical applications of the equipment and explore ways to integrate science, coding, and STEM learning.

Choose from our most requested days or discuss your specific needs with our team for a tailored solution:

Next-Gen Data-Logging with PASCO

Discover the power of PASCO Scientific, exclusively available from VITTA Education in the UK. PASCO designs and manufactures industry-level lab equipment to offer curriculum solutions for schools, colleges, and universities in physics, chemistry, biology, and environmental science. Choose from a range of award-winning wireless data-logging sensors, advanced structure sets, and software solutions that connect students directly to science and STEM concepts.

Finding a Balance with Adam Equipment

Invest in the future of STEM education with Adam Equipment's precision weighing scales. Tailored for students from primary school to university, these affordable and durable scales ensure accurate results in demanding classrooms. Choose from Analytical Balances, Precision Balances, and Compact Balances. Equip the next generation with the tools they need to excel in science, technology, engineering, and mathematics.

Book a Discovery Call

An initial free and no-obligatory conversation to understand your needs, explore solutions, and determine a potential fit for collaboration.

Attend a Workshop

Using your current kit, we run through various experiments, equipment maintenance, safety procedures, technical assistance, and troubleshooting.

Request a Training Session with Silas

Get to know your current and/or new kit from VITTA better as we explore a product's features, benefits, and usage techniques.

Book now... Scan the QR Code or visit **vittaeducation.com/discovery**

SPEND THE SUMMER WITH SCIENCE...

HELP STUDENTS GAIN A CREST AWARD

While for many of us, the summer holiday offers a chance to take a well-earned break following a busy academic year, for older students with one eye on their next steps after school, summer is also a great opportunity to work on projects that could boost UCAS or job/apprenticeship applications and employability.

CREST Awards

CREST Awards, the British Science Association's (BSA) flagship education programme, offers investigative, open-ended STEM activities and projects for ages 3-19. The most advanced projects for older students – Gold Awards – are the perfect long-term projects for young people to work on over the summer break. They boost employability skills and are recognised by universities and employers alike.

Gold CREST Awards are usually completed by students aged 16+ and take around 70 hours to complete – they're no mean feat! Earning a Gold Award truly demonstrates a student's interest in a subject, their aptitude and drive, and determination to complete a STEM project.

On the CREST Awards website you'll find the resource library, which offers a host of project ideas for all levels, including Gold. However, students are in no way limited to the project ideas offered in the library.

Following their passion

One of the brilliant things about the secondary CREST Awards (Bronze, Silver, and Gold levels) is that students can just choose an area of STEM they're most interested in, or a scientific question they've always wanted to know the answer to, and turn that passion into a project of their own.

Last year, the BSA spoke to three Gold CREST Awardees about their projects and how their Awards helped them as they graduated from school into the world of work and higher education.

While Gold CREST Awards can be done independently, all three of the Awardees did their project as part of a summer programme or competition – a great way to stay productive over the long summer break!

Richard and his mental health-nutrition app

Richard Turay, now an audit apprentice at KPMG UK, earned a Gold CREST Award in 2022 for his project 'Creating an app to deal with depression'. Richard developed the idea for his project during his work experience placement at Sainsbury Wellcome Centre, facilitated by In2Science.

Richard's hosts were neuroscientists, which inspired him to work on projects related to how our brains work. His interest in health and nutrition, as well as his experiences of watching loved ones struggle with their mental health, led him to design an app that would help people track the impact their diet had on their mood.

Having this project under his belt proved to be an asset during interviews for apprenticeships, Richard told the BSA:

"Interviewers probably hear generic answers, 'I did this, I did that'...because of me doing the CREST Awards project, it was a unique thing and they were very interested in knowing why I did that and what I learned."

CREST AWARDS

Mara and her investigation into underrepresentation

During the summer after she finished her GCSEs – Mara, currently a sixth form student at Rickmansworth School in Hertfordshire, was keen to use her time productively.

Thinking ahead to her UCAS application form, Mara entered the Techfest STEM Next essay competition. She researched and wrote a comprehensive piece entitled 'Why are women underrepresented in STEM?'

On the recommendation from the Techfest team, Mara submitted her essay for a Gold CREST Award, for which she also had to write a project report. Mara told the BSA:

"Producing my project report for the Award gave me an opportunity to reflect on the skills I had developed, including researching, writing and referencing for my essay. I was able to improve my essay and identify strategies to implement in future academic writing... This Award is highly regarded by universities, so will form a valuable aspect of my UCAS personal statement."

Read more about our three Gold awardees online at **britishscienceassociation.org/blogs**

Toby Hill and his traffic control system

In the summer between Years 12 and 13, Toby Hill, now a trainee patent attorney at Mewburn Ellis, undertook a Nuffield Research Placement, during which he worked on his Gold CREST Award project.

With a burgeoning interest in engineering (which he went on to study at the University of Cambridge), Toby was based in the smart laboratory alongside PhD students, and designed and built a mini electronic traffic control system. Toby told the BSA:

"I think completing a CREST Award demonstrates to universities that you're committed to your subject because whenever you say something, you want to try and back it up with evidence. 'I enjoy engineering' is OK. But why do you enjoy it? Why do you want to study it? So, I've gone and spent four weeks of my summer in a lab working on an engineering-related project."

A step in the right direction

Recommending to your students that they make the most of their summer and get a CREST Award under their belt could make all the difference when it comes to UCAS/apprenticeship application forms.

If you're interested in learning more about CREST Awards and being part of a network of teachers who run CREST, why not join the Engage community, run by the BSA.

Sign up and attend the annual Engage Teacher Conference, apply for the Engage Grants to help fund running CREST Awards, and much more. Visit **crestawards.org/engage**

Written by the British Science Association
Published April 2024

BRITISH SCIENCE ASSOCIATION

New FOR SUMMER '24

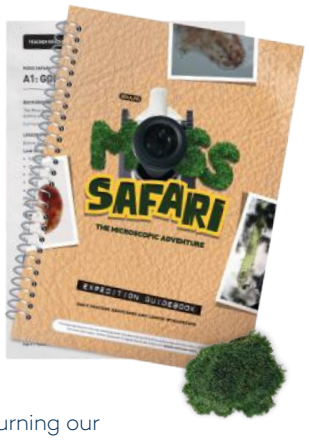
New budgets and a new term present an opportune moment to explore a range of new products and innovations.

SPARKvue, the award-winning data collection and analysis software from PASCO Scientific is now entirely free as a browser-based application. This update makes data logging more accessible, as the new version operates as a Progressive Web Application (PWA). This means you can access all the features of SPARKvue from Google Chrome and Microsoft Edge browsers without any costs, downloads, subscriptions, or update fees - even for Windows® and Mac®. Moreover, the app automatically updates to the latest version, eliminating any concerns about staying current.

Don't forget... SPARKvue is also available for FREE on iOS and Android devices.

Recently featured at Bett UK, the new **PASCO Wireless Melting Point Apparatus** (PS-3239) is designed for chemistry students to determine substance melting points swiftly and accurately. It boasts a built-in 3x magnifying eyepiece for effortless observation. Additionally, you have the option to integrate a USB eyepiece camera for real-time viewing or replaying recorded processes. Variable ramp rates, temperature hold commands, and controlled image capture ensure precise results. Other features include quick ramping, readiness prompts for observation, and controlled image capture rates, all enhancing accuracy and confidence in determining melting points.

In the realm of biology labs, the **PASCO Photosynthesis Chamber** (PS-3251) streamlines aquatic photosynthesis experiments. It aids students in analysing rate changes and measuring oxygen, carbon dioxide, and pH levels. With its light, temperature, and nutrient control, along with three sensor ports and LED lights for testing, it aligns seamlessly with GCSE science curriculum objectives, fostering a deeper understanding of photosynthesis and ecosystems.



Turning our attention to ecosystems, the latest buzzword is 'Moss Safari'. Developed in collaboration with Dr. Andy Chandler-Grevatt, the EduLab kits equip you with all the essentials for a microscopic adventure (minus the moss). However, the centrepiece of the kit is the **Moss Safari Expedition Guidebook** (ELB0001). This educational resource brims with instructions for conducting a Moss Safari, along with six meticulously crafted lesson plans, teacher notes, and photocopiable student worksheets. Tailored for KS2-3, it serves as an invaluable resource for post-exam teaching, transition support, and science clubs alike.

Leaders in the field of biology, **NÜVE** is being added to the VITTA portfolio. Offering a diverse range of high-quality products, NÜVE demonstrates its commitment to technological innovation through numerous trademarked features recently incorporated into its range. Ideal for education, products will include water baths, centrifuges, safety cabinets, and incubators.

Last but not least, our most versatile and durable **Storage Trolleys** are undergoing a transformation. Set to launch later this term, the revamped range will now feature lockable compartments and hanging buckets with lid options. Designed for safe storage and effortless equipment movement, these trolleys excel in various applications.

TESTING, TESTING, 1-2-3...

DO YOU HAVE A PASSION FOR SCIENCE?

Would you like the exciting opportunity to be among the first to test our latest and greatest product releases?

Join us as a VITTA Group product reviewer, and you'll have the chance to experience our latest products first-hand.

HOW TO GET INVOLVED

1. Complete a straightforward form with your details and areas of interest. When we're gearing up to launch a new product, if we believe it's a good fit for you, we'll reach out with more details.
2. Share your honest feedback on the product, which will be featured on our website and marketing materials, helping us refine our offerings.
3. Receive the product(s) to test and keep, in return for your feedback via email, including suitable pictures of the product in use.
4. Stay connected as we regularly introduce new products, ensuring you're among the first to know about exciting opportunities for testing and reviewing.

Register your interest online at **vittaeducation.com/tester**

Competition Time... WIN this Laboratory Storage Trolley*

For your chance to win a 3-shelf storage trolley (VTT12302786) simply answer the following trolley-related question. Send in your answer along with your name and details to **win@vittaeducation.com**

Q: What is the weight capacity of this storage trolley?

a) **50kg** b) **100kg** c) **250kg**

Good luck!

*Enter by midnight on 31/07/24 for your chance to win. See website for full terms.

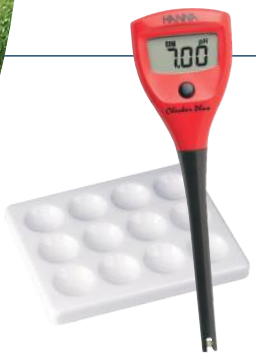
LOOKING AFTER OUR OCEANS

World Ocean Day, 8th June 2024

Water pollution is a global concern effecting our oceans, seas and rivers, a topic that is rarely out of the news. Rachael Bailey helps to outline the problem and shows how to model the effects of pollution on aquatic life.

Within the UK, water pollution is a pressing concern, a survey carried out by the Environment Agency (EA) has found that shockingly there are no rivers in England that are entirely free from pollution, with only 14% of rivers in the UK achieving a good ecological status.
This is due to the national waterways being exposed to a "chemical cocktail" of pollutants, including sewage, agricultural runoff, and road pollution. This toxic mix also includes microplastics, slurry, car tire particles, oils, and even wet wipes. Failure to limit the amount of raw sewage being discharged into our rivers and coastal waters has led the EA to issue large fines to several water companies over the last decade. The resultant effects of this rise in pollution is an increase in toxicity, a decrease in the amount of dissolved oxygen and drastic changes in pH of the water, which has led to 10% of freshwater and wetland species being at risk of extinction. Within the science curriculum, examining this type of pollution can be a dry topic, that includes very little practical work and usually includes the analysis of data. The simple method described here, examining the pH of "stream" samples from 5 different locations, allows the students to model the effects the changes of pH in natural water courses has on aquatic life. This also reinforces the theories of pH and acidity. The use of 3 different methods (universal indicator paper, universal indicator solution and a digital pH probe) to determine the pH of each stream sample allows for the discussion of the accuracy and precision of each method of analysis.

Image: Effects of pollution in river from nearby industry turning water red.



CLASS ACTIVITY:

Modelling the effects of pollution on aquatic life

Using buffer solutions to simulate pollution levels in water samples, allow the class to test pH levels using a variety of methods to determine the detrimental effects the samples have on aquatic life.

You will need:

- pH7 Buffer stock solution
- pH4 Buffer stock solution
- Hydrochloric Acid
- Sodium Hydroxide solution
- Digital pH probe
- 60cm^3 plastic sample vials
- Pasteur pipette
- Spotting tile
- Universal indicator paper
- Universal indicator solution

PREPARATION OF THE STREAM SAMPLES

1. Prepare stock solutions of pH7 and pH4 solutions, either by using buffer solution tablets or by following CLEAPSS method RB018.
2. Using the digital pH probe to measure accurately, adjust the pH of the stock solutions using either the hydrochloric acid or sodium hydroxide solution to produce solutions with the following pHs:
   - Stream Sample A = pH7
   - Stream Sample B = pH4
   - Stream Sample C = pH6.5
   - Stream Sample D = pH4.5
   - Stream Sample E = pH5.5
3. Transfer into the sample vials and label as illustrated above.

IN-CLASS PRACTICAL

1. Using a pasteur pipette, transfer a small amount of each sample to a separate well on the spotting tile.
2. Use universal indicator paper to test each of the samples.
3. Add 1 drop of universal indicator solution to each of the samples.
4. Test a further sample of each (sample) using a digital pH probe
5. Remember to record the results for each test as you go.
6. Using the table below state which animals would be affected in each of the streams.

Animal	Critical pH	Animal	Critical pH
Snails	6	Pike	5
Clams	6	Trout	5
Bass	5.5	Salamander	5
Crayfish	5.5	Perch	4.5
Mayfly	5.5	Frogs	4

You can view this activity in full at vittaeducation.com/pollution

PRECAUTIONS: When preparing solutions always wear appropriate PPE including eye protection and gloves. Always add acid to water (never water to acid). Use a fume cupboard. You should always carry out a risk assessment when using any chemicals. Follow all recommended safety procedures and adhere to the label instructions, hazard warnings and local legislations.

VITTA Education can not be held responsible for any undesired outcome of this, or any other practical experiment you try. For our full disclaimer visit vittaeducation.com

Rachael Bailey (pictured) is a Senior Science Technician at the Orme Academy part of the Shaw Education Trust.

VITTA A-Z Chemical Recipe Sheets are available to download on our website

Save yourself time in the prep room with more added each week, plus links to equipment and practical experiments.

vittaeducation.com/recipes

Download A VITTA TIME-SAVER

VITTA CHEMICAL RECIPE SHEETS

Iodine Solution
(100ml) 0.1M

DIRECTIONS:

1. Measure out 8g potassium iodide.
2. In a measuring cylinder, measure 20-30ml distilled water.
3. Use a 250ml beaker and add the potassium iodide and dissolve in the water.
4. Measure 2.54g of iodine and add this to the solution.
5. Gently heat and stir until all is dissolved.
6. Dilute the mixture with distilled water to 100ml volume and ensure the solution is mixed.
7. Store in a glass-stoppered bottle and label as necessary.

GUIDANCE:

- Use in a well-ventilated area.
- Stirring Iodine solutions will take time.
- Usually, a larger quantity will be required for class sets of test solution.

WARNINGS:

Like what you see? Download the full explanation of this recipe and find more online at **vittaeducation.com/recipes**

PRECAUTIONS: When preparing solutions always wear appropriate PPE including eye protection and gloves. Always add acid to water (never water to acid). Use a fume cupboard. You should always carry out a risk assessment when using any chemicals. Follow all recommended safety procedures and adhere to the label instructions, hazard warnings and local legislations.

Recipe extract shown. VITTA Education are not responsible for the outcome of this chemical recipe you try, or any website linked to from this recipe. For our full disclaimer visit vittaeducation.com

ASK PRIMROSE KITTEN:

REVISING FOR PRACTICALS

How to Help Students Revise for the Required Practicals

In GCSE and A-level science, practicals play a crucial role; they are the most fun part of teaching science and can capture students' imagination and attention. They also account for 15% of the grade. Yet, unlike their written counterparts, one common misconception among students is the belief that practicals can't be revised. This mindset often leaves a gap in their preparation, which can easily be avoided.

Breaking the Myth: Revising Practicals Is Possible

First and foremost, it's vital to address the myth head-on: students can and should revise for their practicals. This revision is not about recalling steps or outcomes; it's about understanding the underlying principles, the why and how behind each experiment. Practical revision is about critical thinking and application.

Understanding the Weight of Practicals

With practicals accounting for 15% of the overall grade, they represent a substantial portion of the marks, emphasising the need for thorough preparation. Highlighting this fact to students early on can help shift their perspective on the importance of practical revision.

Teaching Flexibility in Application

A challenge students face is the contextual shift of practicals in the exam setting. The practicals they've performed in class may be presented in a different context during the examination. This shift can be disorienting, leading to the annual outcry on social media (remember the carrots from 2018?), where students express their frustration at encountering familiar experiments in unfamiliar settings. AO2 is 40% of the marks for applying that knowledge in unfamiliar contexts; this can be within the practicals.

Strategies for Effective Practical Revision

Encourage Active Revision: Students should actively engage with the material instead of passively reading through their notes. This could involve creating detailed diagrams of the experiments, discussing the purpose and outcome with peers, or teaching the concept to someone else.

Utilise Available Resources: Many resources can simulate the hands-on experience of practicals, from online videos (such as mine or those from the exam boards) to interactive simulations. Sharing these resources can help them visualise the experiments and understand the steps and processes involved.

Practice Critical Thinking: Encourage students to think critically about each practical. Why was each step taken? What were the possible sources of error? How could the experiment be improved? This practice not only aids in revision but also prepares students for the type of thinking required in exams.

Mock Questions: Set a variety of practical-based mock exam questions to help students get used to applying their knowledge in different contexts. This exposure can demystify the experience and reduce anxiety around practical questions.

Feedback Loops: Provide constructive feedback on any practical work or mock exam questions students complete. Highlight what they did well and where they can improve, offering specific advice on tackling similar questions in the future.

There are many ways we can help our students navigate the complexities of revising for practicals, turning a potential source of anxiety into an opportunity for deeper learning and engagement.

Got a question to ask?

Send in your science queries for Primrose Kitten to answer each term. Email **hello@vittaeducation.com**

GET READY FOR ONE BIG SCIENCE SHINDIG

Join in the Great Science Share for Schools '24

Great Science Share for Schools (GSSfS) is an annual campaign to raise the profile and engagement of young people in primary and secondary school science.

With the status of school science lower than that of other core subjects, the campaign has been shown to lead to more time for science learning in school and at home, so that young people can ask, investigate and share their own scientific questions with new audiences. GSSfS stands apart by valuing children's scientific curiosity and communication – placing it front and centre of this campaign that in 2023 saw 524,415 registered pupils in over 30 countries.

GSSfS has recently been awarded patronage of the United Kingdom National Commission for UNESCO in 2024, solidifying its status as a beacon of excellence in science education.

GSSFS CORE VALUES

GSSfS is for everyone and has 3 core values which underpin all campaign activity:

- inclusive
- non-competitive
- collaborative

NEW FOR 2024

Great Guided Enquiries

Curriculum-linked enquiry resources covering themes including sustainable fashion, sports science, computer science and a new Jules Pottle book 'Izzy Jones's Quantum World' with accompanying resources.

Great Science Toolkit

Enhance your pupils' working scientifically skills with all of the GSSfS resources in one place – promote curiosity with the Question Makers, develop effective predictions with the Prediction Prompts and encourage pupils to question published data and reports with the Reliability Checkers... and many more!

Great Question Ponder

Designed to get pupils thinking and talking about big questions linked to the Global Sustainability Development Goals

Careers Chats

Videos and fact files showcasing a range of people who work as scientists and engineers.

Great Science Share for SCHOOLS

unesco
United Kingdom National Commission for UNESCO

THE GREAT SCIENCE SHARE FOR SCHOOLS GRANTED PATRONAGE OF THE UNITED KINGDOM NATIONAL COMMISSION FOR UNESCO IN 2024: A MILESTONE IN SCIENCE EDUCATION

Did you know... The Great Science Share for Schools (GSSfS) has officially been granted the prestigious patronage of the United Kingdom National Commission for UNESCO (UKNC) in 2024.

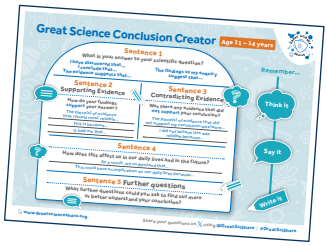
This recognition underscores the event's profound alignment with UNESCO's (United Nations Educational, Scientific and Cultural Organization) values, solidifying its status as a beacon of excellence in science education.

Patronage granted by the UK National Commission for UNESCO serves as a hallmark of quality, signifying an event's contribution in advancing UNESCO's mission in promoting education, scientific research, and cultural understanding. The GSSfS has been acknowledged by the UKNC for its exceptional contributions to these crucial areas, affirming its pivotal role in shaping the next generation of scientists, innovators, and global citizens.

GSSfS will continue its high standards of excellence, innovation, and inclusivity in science education throughout 2024 and beyond.

Read the full article online at **manchester.ac.uk**

TEACHER SUPPORT



Join the GSSfS team and receive CPD and support at the upcoming webinars, including a walk-through the new Great Quantum World enquiry and a bespoke webinar for secondary school teachers. To book your place, go to our Eventbrite listing at **greatscienceshare.org**

HOW TO TAKE PART

Great Science Share for Schools events can be as simple as one class taking part to whole-school events or events which bring together several schools and community groups. How you organise your science share is completely up to you but the common aim is that young people get to ask, investigate and share their science with new audiences.

Each year, there is an annual celebration day – a day where social media is alive with schools across the UK (and world!) sharing their science. This year, the celebration day is 11th June. However, when you take part is up to you – choose a date that suits your school!

JOIN THE GSSFS COMMUNITY AND TAKE PART!

Sign your class or school up by registering on the website where you can access the latest news, blogs and all resources. Don't forget to share on any social media: follow us on X **@GreatSciShare** and use **#GSSfS2024**

If you require further information or want any advice from the GSSfS team, feel free to email **greatscishare@manchester.ac.uk** or visit the website: **greatscienceshare.org**

BEAKER BUZZ: A VITTA UPDATE

Raise a glass as we head into the Summer Term

As we enter the summer term with the end of the school year on the horizon, we take a moment to reflect on the journey thus far and anticipate the exciting developments ahead for the remainder of 2024.

We kicked off the beginning of the year with a memorable presence at the Association for Science Education Annual Conference. Here we proudly introduced the **'I Lv Science' VITTA Beaker** which quickly captured the attention as a promotional item and a sought-after product in our VITTA Rewards programme. Always ready for a well-deserved cuppa, the widespread popularity of our mugs underscores our commitment to offering unique and desirable rewards that align with your passions and interests.

Driven by a desire to surpass your expectations, we remain dedicated to delivering cutting-edge science solutions. Your insights are pivotal in shaping the future of our products, services, and offerings. We're thrilled to roll out our **VITTA Product Review Program** reaffirming our unwavering commitment to listening to your needs first-hand. Educators with a passion for science are invited to experience our latest products first-hand in exchange for honest feedback and opinions.

Feedback serves as a cornerstone of our innovative product development and portfolio enrichment. Moss Safari has received a fantastic response from primary educators. As we stand on the brink of introducing several **new products and brands**, we aim to enhance our product line-up, offering an even broader array of choices tailored to your department's distinct preferences, budgets, and curriculum requirements.

Customer satisfaction remains at the heart of our mission. We're pleased to report an impressive recent customer satisfaction score of over 89%[+]. Your satisfaction is our priority, and we thank you for all feedback received, be it positive or constructive.

Engaging with you in person at events and workshops has been invaluable, and we're grateful for the opportunity. Additionally, we've had the privilege of conducting 65 face-to-face meetings with esteemed customers like yourself this quarter. These interactions are invaluable as they afford us a deeper understanding of your challenges, preferences, and aspirations, enabling us to serve you better.

In response to your feedback from the inaugural edition and the T-Level Thursday virtual laboratory tour and Q&A session, we're updating our comprehensive **T-Level Science Handbook**. The second edition of this dedicated resource crafted in response to the questions and concerns voiced by schools and colleges that are on their T-Level journey, will feature even more invaluable insights, case studies, essential equipment, and support. To get your copy, please visit **vittaeducation.com/T-Levels**.

Finally, we're excited to announce the recent launch of our **VITTA Science Savers**. Designed to help you maximise your budget and save money on everyday science essentials, these offers, from free products to bulk discounts, are available throughout the term. Should you have any queries or require assistance, please don't hesitate to contact our team via email or phone.

Thank you for your continued support and partnership. We look forward to continuing this journey together, making strides in supporting tomorrow's scientists.

Cheers & thank you!

KEEP ON TOP OF THE LATEST VITTA NEWS

Sign up to our monthly newsletter for all the latest product, sector and VITTA news – in your inbox and at your fingertips! Plus, if you haven't already, you'll get **5% OFF** your next purchase** as a thank you. Don't miss out, sign up today at **vittaeducation.com/newsletter**

DON'T MISS OUT!

We love giving you the best deal we can on your science supplies, so when there's an offer or promotion running do remember to let your finance department know about it before they order. From free delivery codes, free sweets and more, don't let a good deal go to waste!

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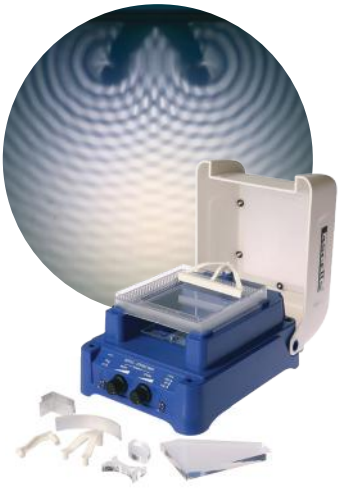
Don't miss out on a great deal... Shop our growing selection of Summer Term Science Savers at **vittaeducation.com/science-savers**

ENGAGING IDEAS FOR SCHOOL OPEN EVENINGS

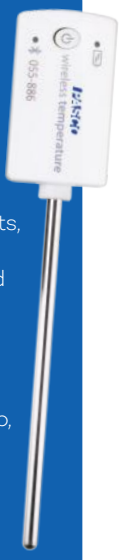
It's the season for open evenings, mornings and days - are you looking to make yours more engaging and memorable? Look no further as we explore some exciting experiments and hands-on activities that invite participation from attendees to ignite curiosity and foster a love for science among both prospective students and parents.

Simple but effective, set up some pre-prepared slides under a microscope or even conduct a **Moss Safari**. Considered the gateway instrument to science, microscopy is inherently fascinating and by observing microscopic specimens, visitors can actively explore and discover the intricate details of various biological samples, such as plant cells, microorganisms, or tissue sections. This will not only showcase your department's equipment, but it will generate interest from all ages.



Another great way to instantly capture attention and get attendees to ask questions is the mesmerising patterns of a ripple tank. Setting up a ripple tank, like the **Lascells Mini Ripple Tank** (VTN12302601), is a visually engaging approach to effectively demonstrate various physics concepts, such as wave propagation, reflection, refraction, interference, and diffraction. The Lascells Mini Ripple Tank is an ideal self-contained option, including three robust dippers and a selection of barrier shapes and lenses.

Recognised for its interactivity, incorporating a range of wireless sensors such as PASCO Scientific to showcase various scientific measurements, including temperature, motion, light, force, and more. A simple hands-on activity includes the **PASCO Wireless Temperature Sensor**, SPARKvue and a laptop, smartphone or tablet, a large plastic jar and beads to investigate the relationship between kinetic energy and temperature. Simply start the data collection, shake the jar of beads, with the sensor in it, for 30 seconds and see the change in temperature!



Watch the video or flick back to page 8 for more **things to do** with a PASCO Temperature Sensor.

Image: Tardigrade found using EduLab Moss Safari Kit (40x Magnification). See page 54 for a full product listing.

Captivate a crowd of prospective students and their families by creating an effervescent universal indicator 'rainbow'? Sodium carbonate solution is added to a burette containing a little hydrochloric acid solution and Universal Indicator solution. The two solutions react, with effervescence, and the liquid in the burette shows a 'rainbow' of all the colours contained within the **Universal Indicator** from red through orange, yellow, green and blue to purple.

Utilise these ideas to showcase your science department to prospective students and families. By creating engaging and interactive experiences, you'll stimulate enthusiasm and showcase the diverse and exciting aspects of science education at the secondary school level. Don't miss this opportunity to make a lasting impression – start planning your engaging science-themed open evening today!

TECH'S TIPS FOR THE TERM...

One thing that's been beneficial for me and our team within the science department is finding a local technician network. We have 6 technicians across our school – granted, mostly in different buildings/subjects, but there's nothing I love more than having the time to go and catch up with them and ask some questions/swap ideas/get them to repair or build things for our science tech team etc. We're also lucky enough to be part of an academy school system, which means we can communicate with/meet with and swap skills with a more experienced tech on another site who is fantastic at repairing items or training us to repair items we struggle with, such as microscope servicing, etc.

Take time to look at your annual review if you have one. What did you hope to achieve? Have you got there? Is there anything small you can do this term to meet those targets or anything fun you want to try to end the year on a positive note? For me, last summer term, I realised I'd been a senior tech for 2 years, including 9 months working solo, followed by successfully training an assistant over the subsequent 18 months. I recognised the need to enhance and invest in my skillset. Thus, I found a course offered by the National STEM Centre, tailored to senior technicians. This summer, I'm attending a long-awaited CLEAPSS course for servicing pressure cookers/autoclaves that I've wanted to do for years.

As we approach the final term of the school year, it is essential to adopt a strategic approach, particularly for term-time technicians. Implementing what I term a "seesaw plan" can help balance the day-to-day demands of running your department, whilst winding down the current school year with end-of-year tasks such as final orders and lab tidying, and planning for the next academic year as much as we can such as putting in September orders before they close for summer, etc.

Thanks to Emma Frankland (Senior Technician at Millthorpe School in York) for sharing her tips... We're always keen for more tips, so why not share yours with us?

Send as many as you like in an email to **tips@vittaeducation.com** with the subject 'tech tips' and you might just see them featured in our next magazine or on our social media channels.

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THANK YOU FOR BEING A VITTA READER!

As always, we are eager to enhance your experience, and your feedback is crucial in keeping our magazine fresh, insightful and valuable to you. The SUMMER TERM issue is a testament to our commitment to delivering engaging and insightful STEM education content.

We would greatly appreciate your thoughts and opinions on the articles, features, and overall design. Your feedback will not only help us understand what resonates with you but also guide us in shaping future editions to better meet your interests.

Whether it's constructive criticism, suggestions for improvement, or even compliments on what you enjoyed, your insights are invaluable to us. Thank you!

We look forward to hearing from you. Please go-ahead and **scan the QR Code** to submit your feedback.

TAKE A BREAK & WIN!

Find the missing word for a chance to WIN 1 OF 5 VITTA RADIOS

Take a look through our jumbo science wordsearch to find the missing word from the list below. Take a pic and email your answers back to **win@vittaeducation.com**

Entries close 31/07/24. Terms apply. See website for full details.

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O N B U U D H V I M U P U H K B P A Y D R Y Q O E
Y P H O T O S Y N T H E S I S G C D Z J B B Y U B
O N E A I J I Q Q U I O V B C L F O W V I N G S P
Z T A T O M G M P E N I O J R D P M P C O S F U R
D V Q L D X M C V H L D P G E X A M S H L O L M A
E I T G U P I T I R Y L V O E R X K V E O S A M C
D T B U A U C U B V S S Y Q M P G F K M G K K E T
U T W Q G Q R O K F M N I M U O S S V I Y K L R I
C A K E S N O T E C H N I C I A N D M C R E U Z C
A O P O P R S W D C H E M I S T R Y P A F M D Q A
T M T C L Y C E O B P D L H Z O B B A L Y Y K I L
I H S K H P O S H Z V R F E O X X J S S M V G W Y
O D U C T V P D Z L P K K V I U F P C T M Y N W N
N I W T I N E N B I T X D A R I Z F O A L P R X N
I S Q M K E S A G C U H M P E H Q M X N A P V R Z
Z C H E C I N R O G L N E O T B T K G X B N W E W
I O A K X P R T Z A E L N R A S H H R P E K F W X
V V Z M B F T W I X A L W A M G I T W R A P L A B
M E Q A B E O E G S M A Y T P O X B K G K V A R C
Q R E U T H G U R A T O X I O J M L L Q E B B D P
J Y D X T O S L Q E X O L O W F E E U Y R W L S S
M V M L C M D D Z I L F T N X R L G T Z Y Q I H N
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Search for the missing word...

Photosynthesis	Microscope	Practical	Holiday	Trolley
Exams	Discovery	Chemicals	Physics	Atom
Evaporation	Education	Biology	LaBLiFe	Summer
DNA	Chemistry	Camera	Thermometer	PASCO
Technician	Scientist	Rewards	Beaker	VITTA

MISSING WORD:

Well done to our Spring Term winners: Sheena Murphy, Jo Cooney and Cleo Rauch.

PRODUCT index

Seen something that would look great in your prep-room or department? Listed below you'll find all names and codes for the products shown throughout this SUMMER TERM magazine.

Page	Product Description	VITTA Code
2	PASCO Wireless Light & Color Sensor	PS-3248
8 / 54	PASCO Wireless Temperature Sensor	PS-3585
21	BMS 037 LED Microscope	VTT12300650
25	Becelec 2 Electric Burner	VTN12301369
27	Two-Door Hazardous Storage Cabinet	613-011
31 / 56	PASCO Wireless Conductivity Sensor	PS-3210
31	Fingertip Pulse Oximeter	VTN12301800
31	PASCO Wireless Heart Rate Sensor	PS-3207
31	Muscular System Leg Model	ZHM680020
34	Amazing Bugs Habitat	VTN12301655
34	PASCO Wireless Conductivity Sensor	PS-3210
35	UV Detecting Beads (Pack of 100)	VTT12306204
35	Grid Quadrat 25 squares	VTN12302141
35 / 40	EduLab Moss Safari Explorer Workbook	ELB0001
40	PASCO SPARKvue	N/a
40	PASCO Wireless Melting Point Apparatus	PS-3239

Page	Product Description	VITTA Code
40	PASCO Photosynthesis Chamber	PS-3251
41	3-Shelf Laboratory Trolley	VTT12302786
41	Lascells Ripple Tank Mini	VTN12302601
43	Hanna Pocket pH Tester	VTT12300448
43	Plastic Spotting Tiles (Pack of 10)	VTT12306011
49	BeeSpi V Light Gate	VTT12303282
49	Holding Rod for BeeSpi V	VTT12303288
49	Borosilicate Test Tubes (Pack of 100)	VTT12302229
49	Lightweight Safety Spectacles	VTT12302596
49	150ml Pestle & Mortar	VTT12306728
49	Natural Gas Bunsen Burner	VTT12301162
50	Lascells Mini Ripple Tank	VTN12302601
50	EduLab Moss Safari Kit for KS2-3	VTT12307061
52	Large 3-Shelf Laboratory Trolley	VTT12302795
52	Adam Compact Dune Balance	VTT12300414
52	Hotplate & Magnetic Stirrer	VTT12300626






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VITTA is our termly magazine from the team at VITTA Education. If you like what you see and wish to get involved with future issues, you may have a story to tell or a great product to shout about, but whatever it is we'd love to hear from you. Contact us on **hello@vittaeducation.com**

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See page 53 for our break-time teaser!

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