

THE



BIDDENHAM



DISCOVER MAGAZINE

CREATIVE SUBMISSIONS

- Artistic Piece
- Posters
- A Short Story



BEST REVISION TECHNIQUES

Find out how best to prepare for exams by reading Evie's article!



Thinking of studying medicine?

Read about the application process for medicine, written by a student who has gone through it!

Have we cured COVID-19?

A fascinating article on the different vaccines that have been developed this year.



INCLUDES A WORD SEARCH

Test your skills by attempting to complete Hanifa's word search.



BOOKS WORTH THE READ

Interested in finding an amazing new read, check out the book reviews on page 21.

Ready2Lead

Learn about an opportunity you could get involved with in the future.

"THE BEST PREPARATION FOR GOOD WORK TOMORROW IS TO DO GOOD WORK TODAY." - ELBERT HUBBARD

Contents



Thank you to everyone who submitted their articles. We at the Biddenham Discover team apologise to those who have not had their submission put in this issue of the Biddenham Discover Magazine. We would appreciate more submissions for our next issue so please send them in (details in the poster). Thank you once again.

Editors -

Natasha Aitchison
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- 2 - Message From The Heads Of School**
- 3 - Message From Sixth Form Director**
- 4 - Message From The Magazine Editors**
- 6 - Revision Techniques You Should Try**
- 7 - Joining The Royal Navy**
- 8 - Information Processing Theory**
- 10 - Great Denham STEM Fair**
- 11 - Sport Psychology**
- 12 - Ready2Lead**
- 13 - Art Submission**
- 14 - Anatomy and Physiology**
- 16 - Space Trip**
- 17 - Young Researcher Club**
- 18 - String Theory**
- 19 - Spaceport Workshop**
- 20 - North Atlantic Right Whale**
- 21 - Curing COVID 19**
- 22 - Short Story**
- 23 - Chemistry Word Search**
- 24 - My 5 Star Books Of This Year**
- 26 - Medicine Application**
- 27 - Can You Overtrain Your Body?**
- 30 - Lack Of Competitive Minority Swimmers**
- 32 - Period Poverty**
- 33 - Answers To Chemistry Word Search**

WELCOME TO THE BIDDENHAM DISCOVER MAGAZINE!

Welcome to the third edition of the Discover Magazine! We've spent a lot of time perfecting this. We are very excited for you to read it and we hope you enjoy what the students within Biddenham have to say. To set us off, here is a message from the heads of school.

Dear Reader,

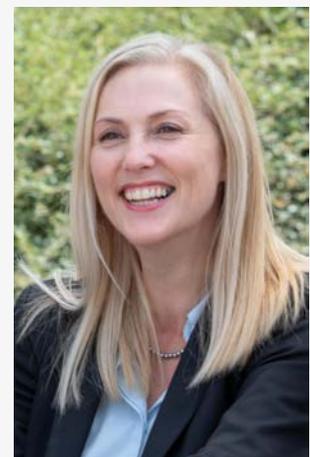
Welcome to the third edition of Biddenham's Discover Magazine. Here you will find articles ranging from topics such as 'Joining the Navy' to 'String Theory' and reports documenting workshops, trips and visits promoting the wider educational experience of our students. Importantly, this is a completely student led venture which goes to demonstrate their creativity, initiative and leadership. We believe the Discover society and magazine is an innovative project for all, whether you are a contributor, a participant, or a reader.

It has been a pleasure to witness our sixth form in a variety of contexts this term, including presenting a community project at Bedford School as part of the Ready2Lead initiative, performing in our 'A Night at the Musicals' production and contributing to events and activities as part of Black History Month.

We are incredibly proud of all of our students' achievements and hope you enjoy reading, as much as we did!

The magazine and society provides students with a wonderful opportunity to get involved in a project that incorporates the contributions of all year groups. They can do this in several ways, from writing an article on academic topics that they're interested in, or designing a piece that unleashes their creative abilities. This platform manages to successfully combine many important activities and skills, including opportunities to develop oracy skills through presentations and talks.

MR D BAILEY AND MS E GRYLLS



MESSAGE FROM THE SIXTH FORM DIRECTOR

I am so happy to be writing again for the Discover Magazine. The focus that the publication provides is just wonderful and the skills that it helps our students develop is invaluable. Since the inception of the society and magazine we have seen and heard so many wonderful ideas and discussions, the magazine continues to go from strength to strength. Our students always have the ability to make us feel so incredibly proud of their knowledge and interests and this edition is no exception. The variety and depth of the articles and artwork in this issue just goes to show the incredible nature of our staff and students.



Our community has gone through so much in recent years and we have learned so much about ourselves and those around us. There have been some incredibly challenging times but we have to remember there have also been some wonderful moments that have put smiles on our faces. For us as a school the magazine provides one of those moments and I hope that you join me in thanking all of the students who have contributed to such a fabulous edition. The time it takes to consider the topic of the articles and then to commit to writing for the publication is not to be underestimated, so I want to say a huge thank you to all who have contributed. Secondly, I wish to thank the team that is involved in collating and editing the magazine. The time, effort and commitment that Dharishna, Matilda, Natasha and Lucia have put in on top of their studies is remarkable. They will undoubtedly go on to be incredibly successful in all that they do after sixth form.

As ever, we hope that you enjoy this edition of the Discover magazine and wish you all the best for a happy and prosperous 2022.

Mr A Brown

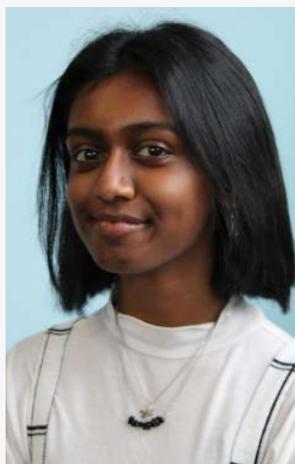
MESSAGE FROM THE MAGAZINE EDITORS

We are incredibly proud of all that we have managed to achieve with the Biddenham Discover Magazine. Although this is organised and put together by a team of sixth form students, all year groups are able to get involved by creating pieces that can be included. Throughout this process we have thoroughly enjoyed reading and looking at all the fascinating pieces of art and amazing articles that were sent to us about a number of different topics. The articles we receive are very diverse and show us how unique some of our student's interests are, as well as how talented people can be. We get articles about different peoples experiences and articles that are meaningful in their own way and reading them almost feels like getting to know the individuals that write or create the pieces of work.

To start with, we encourage students to write articles and create pieces for us to include in the magazine. Once these have been sent to our email, they are edited and placed into a folder by a member of our team. This is a reasonably lengthy process as we allow students lots of time to send us their entries to ensure that they don't feel pressured and enjoy the process. After all the pieces have been edited and approved, we can start to compile the actual magazine, which is incredibly exciting. However, whilst this process is fun, it can also be quite tedious as we triple check everything to avoid major mistakes. This means that the magazine is proof read multiple times by many different people. This is all worth it in the end though, as it ensures that we can create something amazing.



NATASHA AITCHISON



DHARISHNA REDDY



LUCIA SCOZZARI



MATILDA CRAFTER

We could not have achieved this without the contributions of everyone, so we would like to thank all those involved. This includes all the creators of the articles, all the staff members who gave us feedback to help us improve, and of course Mr Shakoor - who has helped us immensely throughout this entire process.

This experience has been more than enjoyable for all of us. Being part of a team and being a part of something much bigger than yourself has really been a journey and we can say that we'd happily do it again. We have developed valuable skills such as time management, communication, and commitment all through this experience which we will definitely use later in life.



REVISION TECHNIQUES YOU SHOULD TRY

If you need help with finding revision techniques that suit you, feel free to email me @3eviewright@mybiddenham.com :)

REVISION TIMETABLE

- ➔ Divide your subjects into red, amber and green based on how well you understand it
- ➔ Next, set yourself time targets, for example 1 or 2 hours of revision each day, and aim to spend a maximum of 30 minutes on each subject
- ➔ Remember you don't need to revise every day, 3 or 4 days per week is enough!
 - ➔ You can set out your own revision timetable however you'd like to, and you can even create one on your phone using the ADAPT app (available on Apple and Android)

FREE REVISION APPS

There are loads of free revision apps that are available to download on both Apple and Android devices, some that I found really useful include:

- ➔ **Seneca learning:** interactive revision suited to your subject's exam board
- ➔ **Quizlet:** you can make your own flashcards (or use ones that have already been made by other students), find subject quizzes, tests and games
- ➔ **GCSEPod:** allows you to watch revision videos and create mindmaps/flashcards as you go along
 - ➔ **BBC Bitesize:** contains a huge range of resources including videos, learner guides, quizzes, exam practice and model exam answers which are available for most GCSE subjects

RECORD YOURSELF

- ➔ Try recording yourself reading important notes and regularly play them back to yourself
- ➔ This is a suitable method of revision if you prefer to learn verbally rather than visually

NOTES, FLASHCARDS & MINDMAPS

- ➔ You can revise certain subjects by making notes, however, this can be quite wordy and hard to memorise
 - ➔ Therefore, it may be better to condense big chunks of information down by creating flashcards that contain short and snappy bits of information (these are available to buy from reprographics for 50p per pack)
 - ➔ Or, if you'd prefer, you could revise a topic by breaking it down onto branches of a mindmap, so all the information is there for you to read without needing to flick through notes or cards
 - ➔ For any of these methods you can also use colours and highlighters to make keywords stand out

REVISION SESSIONS

- ➔ Attend lunchtime and after school revision sessions that are run by your subject teachers (or ask them to do this if they don't already!)
- ➔ This is a great way to get help with specific topics that you find difficult or just general revision

MENTORING

- ➔ Sixth form mentors can help you with specific subjects as well as pastoral support
- ➔ You can ask your form tutor to arrange a suitable Y12/13 mentor for you

USEFUL WEBSITES

- ➔ **BBC Bitesize** contains a range of resources including videos, learner guides, quizzes, exam practice and model exam answers that are available for most GCSE subjects
- ➔ **Youtube** is great for revision videos and exam paper walkthroughs, just search GCSE + your subject (eg. English) and it will bring up loads of videos that you can watch One channel that is particularly good for English revision is Mr Bruff :)
- ➔ **Studywise** is also a great website as it covers most subjects and includes links to free resources including interactive notes, videos, worksheets and exam papers etc

THE 'POMODORO' TECHNIQUE

- ➔ This involves patterns of 25 minutes studying followed by a 5 minute break
 - ➔ For example, you may decide to spend 25 minutes revising English, take a 5 minute break, spend 25 minutes revising Maths, take a 5 minute break, and so on...
 - ➔ You also don't need to cram hours of revision in each night with this technique, you could just do 4 patterns of 25 minutes with 5 minute breaks in between which works out at 1 hr 40 minutes of studying and 20 minutes worth of breaks

PRACTICE PAPERS

- ➔ Completing practice papers is a really good way to get to grips with learning how to answer different questions and work on your time management during exams
- ➔ These are easy to find online, or you can ask your subject teacher for papers (as this way you could also get feedback)

JOINING THE ROYAL NAVY

There are many careers within the Navy, however not all of them are obvious. There are six main areas - warfare, engineering, aviation, logistics, medical and chaplaincy - and five services - surface fleet, submarine, fleet air arm, royal fleet auxiliary and the Royal Marines.

Once you've decided which role you want to pursue, you need to begin your application online. They will get in contact with you and request that you fill out a few online forms. On their website it informs you that the next step is the Naval Service Recruitment Test, where you will be tested on general reasoning, verbal ability, numeracy and mechanical comprehension. There are resources available on the website to allow you to practise these and prepare for the assessment.

Once you have completed the Recruitment Test they will arrange an interview with you, to see if you are serious about joining the Navy.

This interview is all about you and the reasons that you want to join, a chance to showcase your best self. Next is the medical test, where you will have your eyes tested and have to fill out a medical and health questionnaire.

Finally, you must complete the pre-joining fitness test, which includes

finishing a 1.5 mile run in a certain time (the time period is dependent on your age and gender). There is also a swimming test that will happen later on, along with another running test which is part of the pre-navy fitness course. This is a 4 day course, where you are either given a pass or a fail. The swimming test involves jumping off a 3m board, swimming 50m in 4 minutes and treading water for another 2 minutes - all whilst wearing overalls.

After that some people may have to give a 10 minute presentation to a board that will determine whether the Navy will accept you and send you to a university, however this part may not be the same for everyone. Once you have passed you will start the 10 week training at HMS Raleigh, completing your Navy application.

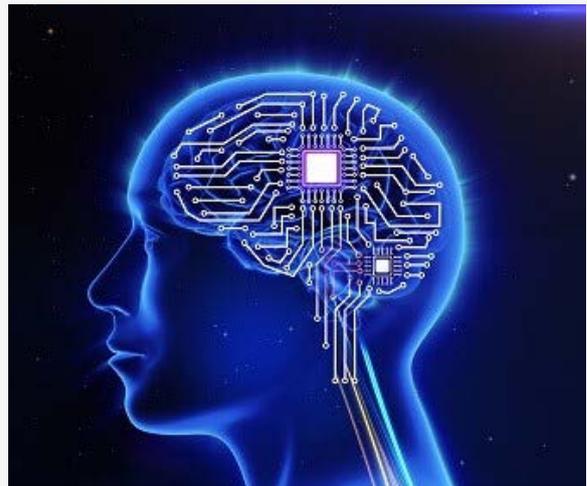
Charlotte McKenzie



INFORMATION PROCESSING THEORY

In the mid 1950s a man called George Miller developed an idea to explain how people process information into memory. This idea then developed into a theory - the information processing theory - that the human brain is like a computer as humans use the five senses (taste, touch, smell, sight and hearing) to process information and store it like a computer. The 'input' - the five senses - is the information we give to the computer or to our brains. The central processing unit is compared to our short-term memory and the hard-drive is our long-term memory.

George Miller was one of the founders of cognitive psychology and was born on the 3rd February 1920 in the United States. He received a Bachelor of Arts degree in 'English and Speech' (1940) and a Master of Arts degree in Speech (1941) during his days at the University of Alabama. He also received a Master of Arts in Psychology (1944) and a PhD in Psychology (1946) from Harvard University. During his time at Harvard University, Miller served in the Army Signal Corps in WWII. He later taught and did research at Harvard and Rockefeller University until 1979, when he joined Princeton University. There he founded the Cognitive Science Laboratory, where he later became a professor in 1990.



One theories he is most known for is the information processing theory in which he discovered that humans short term memory can absorb approximately 7 new things at a time before the information is lost. An example of this was when he asked people to recall a list of letters, words or numbers. The people who took part got stuck in the neighbourhood of 7, however this value did fluctuate; some recalled 9 things whereas others recalled 5. This research was not based on the things people had to recall, whether it was colours, numbers with decimals, numbers without decimals, as subjects would always recall approximately 7 things. However, even Dr Miller did not understand why the number was specifically 7.

This then calls up the idea that your brain filters information and decides what is important enough to be “saved” from the sensory memory to the short term memory and then becomes encoded to our long term memory. These are the 3 stages your brain goes through to store information: the sensory memory, short term and long term.

The first stage, sensory memory, is when the brain receives sensory input (the senses) eg, listening to an announcement of a movie, this will engage your ears which is known as the echoic memory. If this information is something you pay attention to, it will enter the second stage which is the short term memory but if it is unattended it will be lost.

The second stage, short term memory, is when the information from the brain has decided that the information coming from the sensory memory is important enough to enter. When it enters, the information must be rehearsed and repeated in order for it to be encoded to your long term memory, as no rehearsals can cause that information to be easily lost.

The final stage, long term memory, is when the information is coded into your brain and you have a full understanding of the details that you collected. This information will then stay but some details may be lost over time as more information is processed. When it is in the long term memory you can retrieve the details in the short term memory stage and use it when needed.

Mohammed Miah



GREAT DENHAM

STEM FAIR

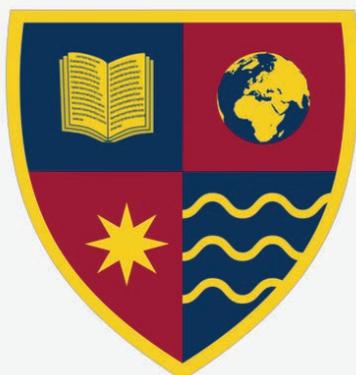
A small group of Year 12 Biddenham students volunteered to expand primary school students' basic knowledge of science. During the first half term of this year, we attended Great Denham Primary School every Tuesday to mentor year 5 and 6 pupils. The aim of this was to help these students create projects to be proud of and to present at the school science fair, which was planned to be held at the end of November 2021 for the pupils, parents and carers in the evening.

Unfortunately due to COVID-19 (SARS-CoV-2), the programme was postponed until the Summer term of 2022. During the winter term at Great Denham Primary School, the sixth form students split into groups. These groups picked out topics to base their projects on. Many projects were made, and they were all linked to different branches of science. This opportunity was aimed at helping them increase their knowledge and expand their skill set, which we feel we achieved.

Some examples of their projects were about space and the anatomy of a heart. Because they chose their own topics, we believe this was a great way to stimulate their interests in STEM subjects. At this point the groups were able to plan out their projects and brainstorm different ideas. They also included all ideas and created projects of their liking.

Hopefully, the projects will be completed by Summer 2022!

Joverea Malik



Ready2Lead?

Established in 2019, the Harpur Trust has been engaging Year 12 students all over Bedford and bringing them together to learn leadership skills from experts in all walks of life, from great entrepreneurs to crime reduction specialists. The Read2Lead programme's vision is to enable young people in the Bedford Borough area to become aware of the unique and positive impact they can have on the world surrounding them.

At the first 2021 conference that myself and a group of 8 other students attended, we had the pleasure of learning Amani Simpson's story from the man himself. A filmmaker and entrepreneur from London, Amani has been actively campaigning in changing stories around the reality of knife crime. At the age of 21, Amani was stabbed 7 times and, after the incident, he felt as though he needed to turn his life around. Since this decision, he has set an outstanding example of what can be achieved if you truly focus your mind on something and put the hard work in.

This speaker made me and many other students realise that anything like what happened to Amani can happen to us under any circumstances, and that we can sometimes take our lives for granted. This is one of the things that inspired us to really do something for this project that leaves a positive impact on our world.

Now moving on to what we actually did for our project. As one of the Global Social Leaders (GSL) Global Goals, my group and I decided to work towards leaving behind a positive change on the land. Our project involved litter picking locally and within our own school at first, but we have reached out to national charities and authorities of local communities such as Brighton to initiate litter picking programmes in those places too. From this conference and project planning as a whole, we can definitely say that we have learnt many new skills and improved on those we already hold, such as leadership, management and communication.

Ready2Lead has been a great experience learning from leaders and social influencers who are really just like us. I hope that you choose to take part in the Ready2Lead conference when you get to Year 12, because it will change the way you see life, and will influence you to create a change for the better.

Fauzia Begum



 @amani.simpson

 @Amani Simpson

Award-Winning Storyteller, Entrepreneur & Youth Coach

ART SUBMISSION



Stefano Filomarino
Year 10

ANATOMY AND PHYSIOLOGY



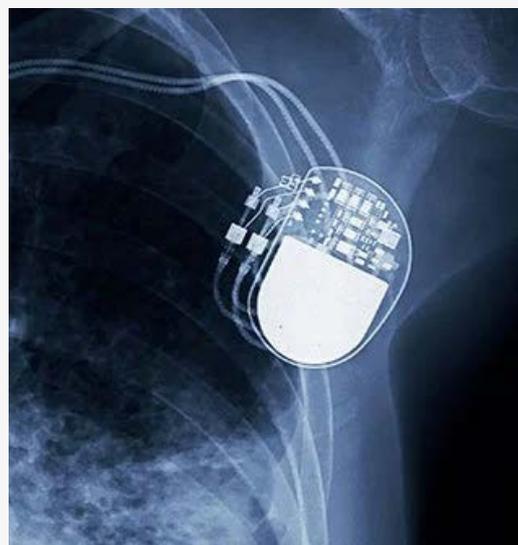
Anatomy and Physiology are two related biological disciplines. Many universities and colleges teach them together, so it is quite easy to get confused about the differences between the two. To put them into words simply, Anatomy is the study of the structure and identity of body parts, whereas Physiology is the study of the functions of these parts and how they relate to one another.

Anatomy is an offshoot from the field of Morphology. Morphology encompasses the internal and external appearances of an organism - for example, its shape, form or structure - as well as the location of external and internal structures, for example bones and organs. One organ in particular, the heart, we will explore further. A specialist in anatomy is called an anatomist. Anatomists gather information from living and deceased organisms, typically using dissection to master internal structures. Those who have studied History at GCSE would know a bit about the physicians during the middle ages; there were barber surgeons who could perform surgical procedures such as bloodletting, cupping therapy, pulling teeth, and amputation (removal of limbs or a section due to an uncontrollable infection). These barber surgeons would be hired by the physicians to undertake postmortems as they only dissected the people who had sinned, like criminals, murderers and rapists. They believed that if you were to touch the sinned person, you were no longer pure.

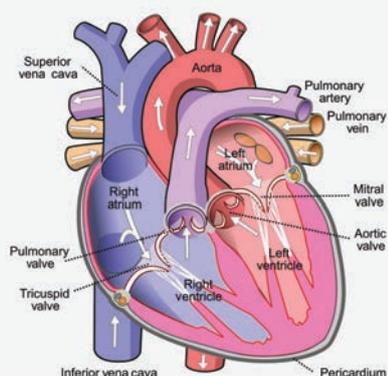
There are two branches of anatomy: macroscopic (gross) anatomy and microscopic anatomy. Gross anatomy is focused on the body as a whole and the identification and description of body parts large enough to be seen with the naked eye. Microscopic anatomy focuses at a cellular level, so structures may be observed by histology or various types of microscopy. Physiologists need to understand anatomy because the form and location of cells, tissues, and organs are related to their functions. In a combined Anatomy and Physiology course, anatomy tends to be taught first. If you want to study separately, anatomy may be a prerequisite for studying Physiology. The study of Physiology requires living respiring specimens and tissues. A Physiology lab may include experimentation to determine the reaction of cells of systems to alter. Compared to Anatomy there are many branches in Physiology. For example a Physiologist may focus on areas like the excretory system or the reproductive system.

Anatomy and Physiology work hand-in-hand. For example an X-ray technician might discover an unusual lump (macroscopic anatomy). A biopsy sees further and examines the lump on a microscopic level for abnormalities (microscopic anatomy) or a test looking for disease markers in the urine or blood is taken (which is the Physiology side).

Cardiac Physiologists are involved in the diagnosis and treatments of patients with heart conditions. They carry out cardiac tests, such as echocardiograms (ECG's), Holter monitors (24-hour ECG's), blood pressure measurement, and tilt-table tests. They may also work in the catheter lab assisting with angiograms and angioplasty procedures, or pacemakers/ICD implantations. In some hospitals, cardiac physiologists run chest pain clinics and are responsible for the long term monitoring of patients with heart valve disease or replacement valves.



Cardiovascular diseases (CVDs) are the leading cause of death globally, taking an estimated 17.9 million lives each year. CVDs are a group of disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions. More than four out of five CVD deaths are due to heart attacks and strokes, and one third of these deaths occur prematurely in people under 70 years of age.



The most important behavioural risk factors of heart disease and stroke are an unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. The effects of behavioural risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and obesity. These “intermediate risk factors” can be measured in primary care facilities and indicate an increased risk of heart attack, stroke, heart failure and other complications.

Cessation of tobacco use, reduction of salt in the diet, eating more fruit and vegetables, regular physical activity and avoiding harmful use of alcohol have been shown to reduce the risk of cardiovascular disease. Health policies that create conducive environments for making healthy choices affordable and available are essential for motivating people to adopt and sustain healthy behaviours. Identifying those at highest risk of CVDs and ensuring they receive appropriate treatment can prevent premature deaths. Access to non-communicable disease medicines and basic health technologies in all primary health care facilities is essential to ensure that those in need receive treatment and counselling.

Cardiovascular diseases consist of:

- coronary heart disease – a disease of the blood vessels supplying the heart muscle
- cerebrovascular disease – a disease of the blood vessels supplying the brain
- peripheral arterial disease – a disease of blood vessels supplying the arms and legs
- rheumatic heart disease – damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria
- congenital heart disease – birth defects that affect the normal development and functioning of the heart caused by malformations of the heart structure from birth
- deep vein thrombosis and pulmonary embolism – blood clots in the leg veins, which can dislodge and move to the heart and lungs

Heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. The most common reason for this is a build-up of fatty deposits on the inner walls of the blood vessels that supply the heart or brain. Strokes can be caused by bleeding from a blood vessel in the brain or from blood clots.

Check out this link for more information

<https://www.maxximagroup.com/blog/2020/12/all-you-need-to-know-about-working-as-a-cardiac-physiologist-in-the-uk>

Abubakar Ahmad



SPACE TRIP



On our trip to the National Space Centre, I learned many things about what astronauts need to do in order to go to space. I learned about how the space suits have to match specifications for all potential situations when in space. It has to protect you from extremely high and low temperatures, protect you from radiation and other unnatural conditions and occurrences that may take place in space.

I also learned that they have to take part in training where they experience zero gravity. This works by going inside a plane which flies up and falls down to replicate the feeling of weightlessness.

Another training session is practised by the astronaut going inside a capsule that rotates and orbits around a point at an increasing speed. We also had a workshop lesson where we learned about how rockets work. They work by pushing with a force stronger than the force of gravity therefore moving the rocket towards the sky. This is what we learned on our trip to the space centre.

Yuki Turner

YOUNG RESEARCHER CLUB

Natasha Aitchison

Recently a new ABC project has been launched at Biddenham, called 'Young Researcher Club'. This is an international project that involves a selection of 9 pilot actions focussed around integration and immigration.

Members of this group would be collaborating with university researchers to promote new methods for young people to get support when acting as a young translator. Together, they aim to learn more about how translating works and feels, how we can provide support, supply training to aid young translators, and develop research based on these findings.

This is a great opportunity for young people to develop their social research skills, social science methods and project management abilities. A project that the club will definitely be undertaking is the development of online learning resources across the European network. Examples of potential projects are a pop up exhibition or a digital filmmaking project. One of the university researchers, Prof. Sarah Crafter, created a digital comic book.



**Networking the
Educational World:
Across Boundaries for
Community-building**



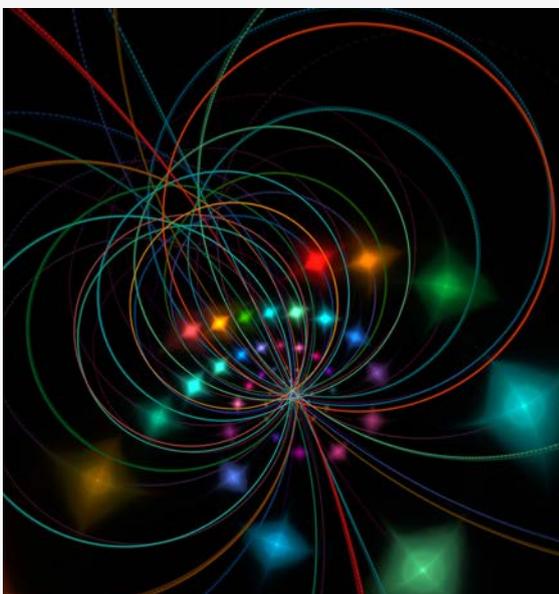
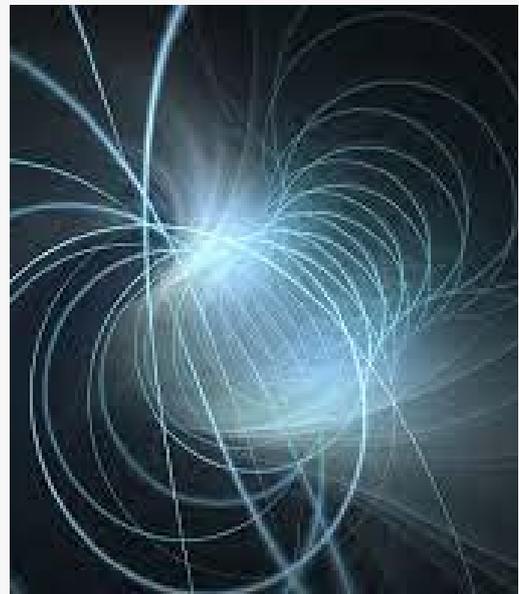
There is a lack of awareness of the challenges that face young translators, and this group aims to combat that using participatory research. As stated by Prof. Nelli Stavropoulou, 'translating is a form of caring', so by learning from them and developing resources, we can better support them. This is a great chance to join a group of creative and passionate young people to explore migration and caring for others who use different languages at home and at school. You will receive training and opportunities to develop your skills for work, your CV, your confidence and support other young people.

The Young Researcher Club is a safe and relaxing environment for anyone who wishes to get involved. It is full of exciting projects, interesting academic research, and snacks!

STRING THEORY

Originally it was believed that atoms were the smallest particles in the universe and were therefore indivisible, however the discovery of subatomic particles, such as the electron in 1897 by J.J. Thompson, disproved this theory. Since then, many other subatomic particles have been discovered, such as the neutron and the quark, with the quark currently thought to be the smallest particle in the universe. In current quantum theory, it is thought that nothing is contained within the quark, however some physicists have theorised that inside of the quark there are actually very small 'strings', with all of the matter in the universe being composed of these 'strings'. This is the essence of String Theory.

String Theory is a fairly popular, but highly controversial, theory in the world of quantum physics. As stated previously, string theory is the idea that fundamentally all subatomic particles, conventionally thought to just be point-like objects, are instead made up of tiny one-dimensional 'strings'. However these strings are so small (around 10^{-35} m) that to the naked eye they would appear to just be points. String theory further suggests that the properties of subatomic particles, such as their mass and charge, are determined by the frequency and vibration of these 'strings', and therefore the existence of different subatomic particles are due to the strings vibrating at different frequencies.



This idea of one-dimensional 'strings' was first thought to be theorised by Gabriele Veneziano, originally using the idea of strings to describe the properties of a group of subatomic particles known as "hadrons", which include protons and neutrons. More specifically, Veneziano tried to use strings to explain the force of attraction between the quarks located in the hadrons - the strong force. This theory turned out to be inaccurate, however these principles were later adapted to instead try and describe the properties of all of the subatomic particles. These ideas were popularised by many key theorists including John Schwarz and Joel Scherk.

String theory is often called a “unifying theory” as it is able to combine every type of matter, as well as all of the four forces that we observe in nature (weak, strong, gravitational and electromagnetic) into one theory that encompasses them all. This is something that has been greatly sought after by many physicists, including Albert Einstein, who himself tried to pursue this goal of a unified theory following his theory of general relativity in 1915. General relativity relates to the behaviour of gravity, and combines gravity, space and time, stating that gravity occurs due to curves and warps in space and time. This built on Isaac Newton’s law of gravity, which described the attractive gravitational force felt between two masses. String theory aims to combine these ideas of general relativity with the principles of quantum mechanics, which studies the motion and interaction of subatomic particles.

To this day, string theory still remains a very popular field of research, and despite the lack of progress that has been made on a complete physical theory, it has still proved to be crucial in connecting huge branches of mathematics and physics. Therefore, many physicists believe that it is still a productive field of research, with some hoping that one day it could develop into the unified theory that they have been looking for.

Tanvir Uddin

SPACEPORT WORKSHOP

The spaceport workshop was a science opportunity organised by Lockheed Martin. I found the science fair fun and interesting, where we were learning about rockets and aeroplane. We were able to choose what type of aeroplane or rockets we would use depending on cost effectiveness, and whether it would have an effect on the ecosystem. My group chose to look at a rocket.

We had to consider whether to send the machine up vertically or horizontally, alongside what materials and equipment we would need to make the rockets. We also needed to discuss where we would launch the rocket from. One of the more difficult things we had to decide was how the materials and equipment would be transported. An example of this is rocket fuel, as we also needed to consider how we could store this.

We detailed the engine test, radar station and launch pad in our booklets. Overall my team spent £8209 on the project. We then presented our plan to Mr Shakoor and the other teams. After everyone presented their plans there was a winner chosen by the judges, and my group won!

Madeline Aitchison



NORTH ATLANTIC RIGHT WHALE

*LIKE THE NAME SUGGESTS, THESE WHALES
CAN BE FOUND IN THE NORTH ATLANTIC SEA.*

THEY ARE THE MOST ENDANGERED
LARGE WHALE SPECIES WITH
FEWER THAN 400 REMAINING.

Although the species is slowly regenerating,
humans still pose the biggest threat to them
via entangled fishing nets and vessel strikes.

They are hunted for oil
and baleen used for making
things like corsets

THERE ARE ALSO NORTH PACIFIC
AND SOUTHERN RIGHT WHALES

HANIFA AND ZAYNAB

CURING COVID 19

We all know that the pandemic has been going on for quite some time. It has changed many lives, some for better but some for worse. However after many developments, trials and hard work from global health organisations, we've produced a cure. A cure to COVID-19.

Under normal circumstances, a typical vaccine can take up to 10-15 years to be completed due to complications scientists and researchers can experience in the development stages. However, this cure for COVID-19 was made in under a year, which is known as the biggest scientific breakthrough in history. Due to this vicious virus millions of people have died, as well as the majority of the global population experiencing long-term effects. There have also been many struggles economically and socially. For example, inflation is increasing due to economic losses around the world. Companies are going bankrupt, younger generations are missing out on their education, and much more. The types of vaccines that I am going to discuss are Pfizer, Merck pill and AstraZeneca.

The Pfizer vaccine and the AstraZeneca vaccine were released at relatively similar time periods. However they have key differences on how they operate, dosage, effectiveness and so on. In comparison to AstraZeneca, the Pfizer vaccine is considered more effective. AstraZeneca has an effective value of



63.09%, whereas the Pfizer vaccine has an effective value of 95%. Both vaccines require 2 doses, but have different specified time periods between each dose. The World Health Organisation (WHO) recommends a time interval of 21-28 days between each Pfizer dose, but the recommended dose interval for AstraZeneca is 8-12 weeks. Both vaccines are recommended by SAGE due to being effective against virus variants. This is accomplished through extensive data analysis.

In recent times, the new Molnupiravir has been developed through Merck and Ridgeback therapeutics. This pill is an antiviral which reduces the 50% of risk in adults, with moderate and mild symptoms that have the potential to drastically become ill, hospitalised or even experience death. The Molnupiravir interrupts the

replication of COVID-19. It copies a building block of the virus's genetic material and so when the virus reproduces it absorbs into its RNA. This allows errors in the genetic code and when there is enough of this build up, an 'error catastrophe' stops the virus reproduction altogether.

Over the winter, the UK government aims to sustain the huge progress that has been made and wants to prepare the country for future challenges. This will be accomplished through ensuring that the NHS is not being pressurised due to unforeseen events. To ensure this happens they advise more people who

are eligible for vaccines to take them, as it reduces the spread of the virus massively. They are also encouraging many people to get the vaccine for influenza, as this reduces the overall pressure on the NHS, especially this year, to help the possibility of a substantial resurgence in flu by identifying and isolating positive cases to limit transmission: Test, Trace and Isolate. Lastly they hope to pursue an international approach through supporting vaccinations around the world and managing risks at the border.

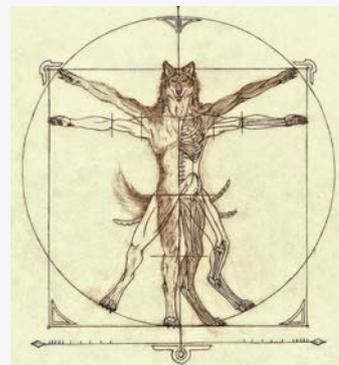
Sameena Hamid

SHORT STORY

It was on a dark and gloomy night of November that I accomplished things that would be impossible. My pain amounted to agony. The light around me was getting dimmer by the second and then by the minute I only have a few minutes left, the candle is melting all over the floor.

I am trying to get a spark so I can make him alive, the lifeless body on the floor, the rain tapping against the glass and thunder shouting across the sky. It is already one in the morning.

I thought that 'I can't make this pile of limbs move'. As I struck the spark I saw a twitch then the body lay there still as a rock. I heard the rain still tapping on the window panes, still trying to make him live but no hope to be seen at that moment. I saw a twitch, his finger moved. I look in interest at how he is moving his limbs. He opens his eyes, he is now breathing hard. I am backing away from my hideous and horrific creation that I made. He is looking, suspiciously, around the lab and touching things. He is walking around the lab picking stuff up and dropping them with anger and force. I hide behind something while he destroys the entire lab. He escapes the lab just as I peak. Only to see the wind was howling through the corridors and I ran into the lab after the monster to see where it was heading but I lost its track. It was gone, nowhere to be seen. I looked for a few minutes till I said I lost the humongous horrific creation.

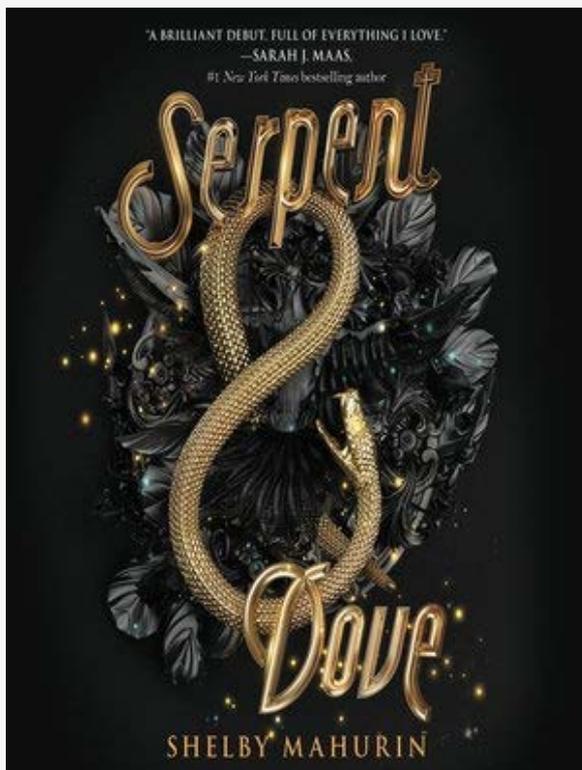
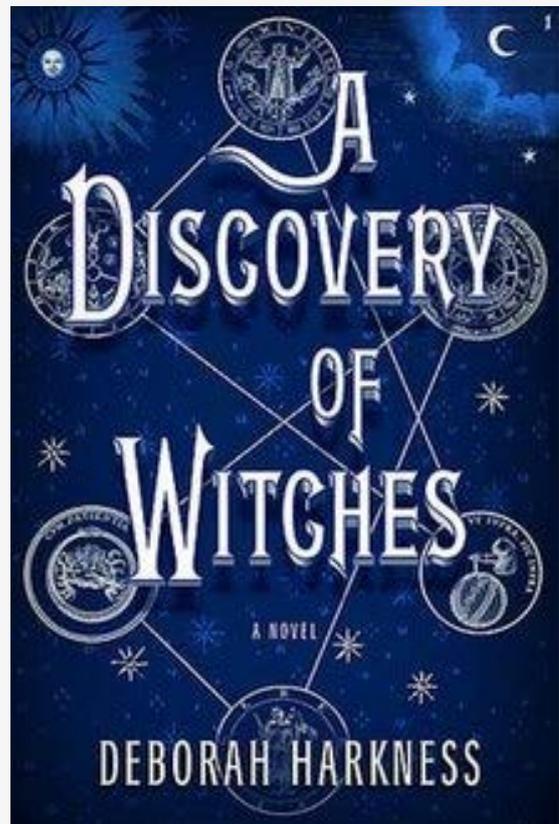


MY 5 STAR BOOKS OF THIS YEAR

Matilda Crafter

A Discovery of Witches (13+)

This was my first 5 star book of this year. It follows Diana Bishop who is a witch living in our modern world and her love story with vampire Matthew Clairmont. This book is a historical fantasy created by historian Deborah Harkness and I would strongly recommend it to lovers of supernatural, fantasy and historical books. The book is also incredibly historically accurate and even brings in fun elements of Greek myths.

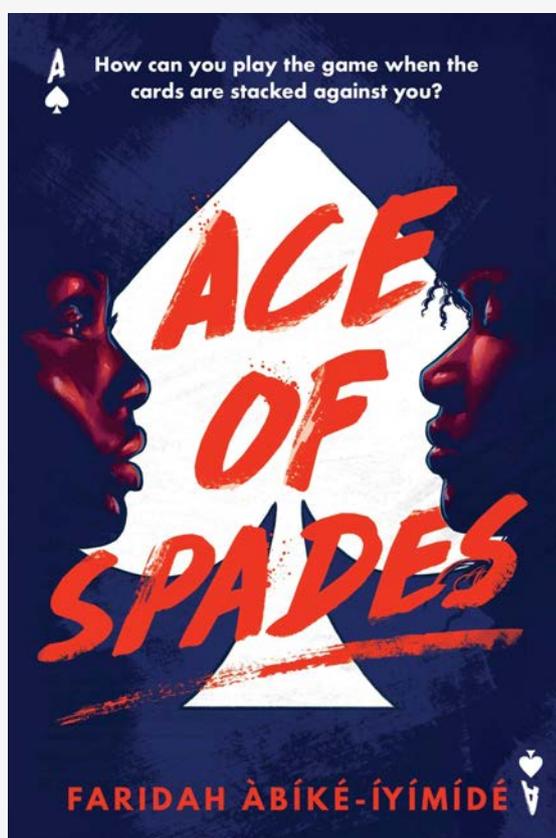
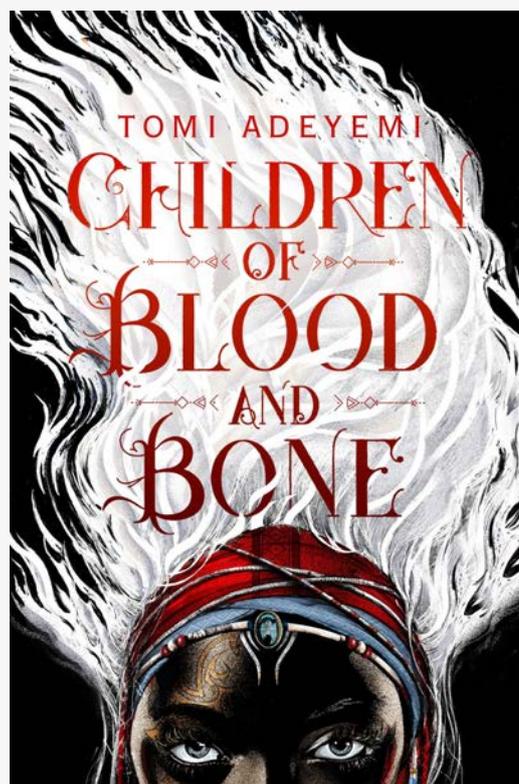


Serpent and Dove (14+)

This is the first book in a trilogy. This is a fantasy book set in a completely different world from ours, which means it includes a map! If you're a reader you'll probably understand the excitement that comes with a map. I only took three days to read this book. It is set in a world where witches are put to death simply for existing. I would strongly recommend this to fantasy readers and fans of strong female leads.

Children of Blood and Bone (13+)

This book is also set in a fantasy universe after a war between the maji and the jealous nobility. It follows Zélie, a powerful warrior who had her magic taken from her and her family. She goes on a mission with her brother and an unlikely ally to bring magic back and fight against the oppression of the nobility. I would recommend this to readers who enjoy fantasy, books surrounding race and racism, and YA readers.



Ace of Spades (14+)

This is a contemporary book based in an American private academy and my favourite 5 star read of this year. It follows Devon and Chiamaka with their experience of racism and cyber bullying in their predominantly white school. This book is not for the faint of heart as it is hard hitting and difficult to read at times, but totally worth it as you learn more about institutionalised racism than you ever thought you would be able to know. I recommend this for readers who like contemporary books based around racism and dark academia.



Make sure you read the trigger warning for all of these books as they may contain details that can affect you or others.

CHEMISTRY WORDSEARCH



ALKALI
ACID
CALCIUM
GERMANIUM
CHROMIUM
BASE
OXYGEN
ISOTOPE
SODIUM
LITHIUM
BORON
HYDROGEN
NEUTRON
STRONTIUM
HELIUM
SCIENCE
CHARGES
ELECTRON
FRANCIUM
PROTON

Hanifa Begum

Year 12

MEDICINE APPLICATION

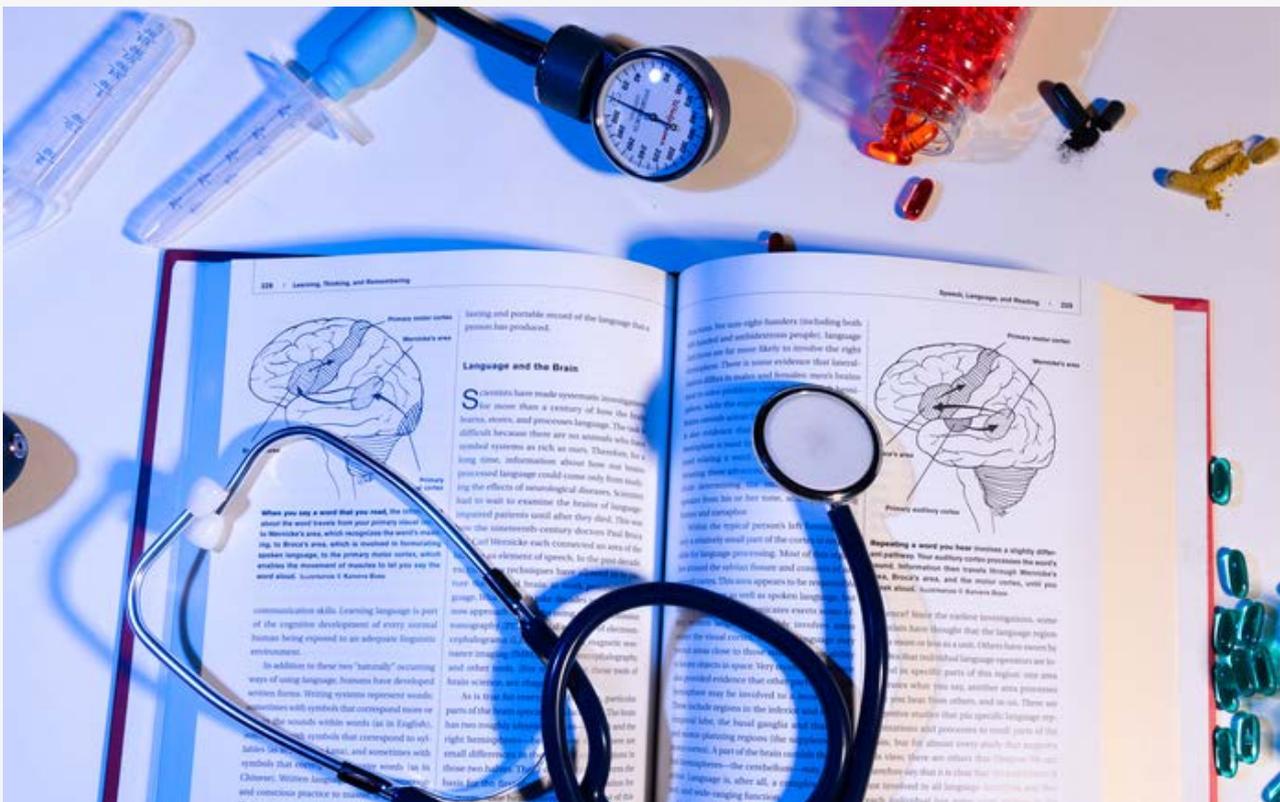
Saima Shenwari

Applying to study Medicine can be a very daunting process, as it has many steps and is not as straightforward as applying to other courses. However this article hopefully can guide you through a few of the more challenging aspects, and allow you to understand more about the process.

It is common knowledge that many universities require two Science subjects, however what are considered 'Science subjects' changes for every university. For example, some universities specifically require Biology and Chemistry, whereas others consider subjects such as Psychology and Sociology to be acceptable. Many, as a bare minimum, require at least

one of Biology or Chemistry. BTEC subjects are not accepted under any circumstances by any university for Medicine, so make sure to avoid taking these subjects if you wish to pursue a medical career.

All Medicine courses require students to take an exam prior to application, the most common one being the UCAT exam. This is a 2 hour multiple choice exam that is used in the shortlisting process for universities. It is usually sat in the summer after year 12, and is extremely important. It contains five sections; verbal reasoning, decision making, quantitative reasoning, abstract reasoning and situational judgement.



These sections test your reading, problem solving, mathematical skills, pattern recognition and medical ethics knowledge. Candidates are given an average score for the first four sections and then ranked on bands for situational judgement, with band 1 being the highest and band 4 being the lowest. Many universities rank candidates based on their score, and usually those who score higher are more likely to receive interviews. The exam itself does not cover any form of content, instead it tests cognitive abilities, and therefore frequent revision is the key to getting a good score. Once universities have received your UCAS application, they determine whether they wish to offer you an

interview or not. If provided with an interview, you will be invited by the university on a particular day, in order for them to see what type of person you are and whether you are worthy of an offer. Universities can ask a variety of questions in interviews, ranging from simple ones such as “why would you like to study Medicine?” to more complex questions like, “what two healthcare services would you remove from the NHS?”. If you impress admission officers, they will likely provide you with a conditional offer.

Once you have received a conditional offer, you must achieve the specified grades in order to confirm your place at that university.

CAN YOU OVERTRAIN YOUR BODY?

Is it possible to exercise your muscles too much, to the point where it becomes not beneficial but in fact detrimental to your progress? Well, this all depends on the type and intensity of the exercise you are completing. I wanted to look into both training for hypertrophy and for cardiovascular benefits, and I found that there are really no cut and dry answers to this but a general consensus people have come to.

When it comes to cardiovascular training, it recommends training between 1 and 4 times a week, due to allowing time to let the muscles recover. However, I believe that intensity is key in this; if you were to do a 5k everyday, trying to push yourself each time, then yes - 1 to 4 repetitions is probably a good bet. However, if you're looking to burn

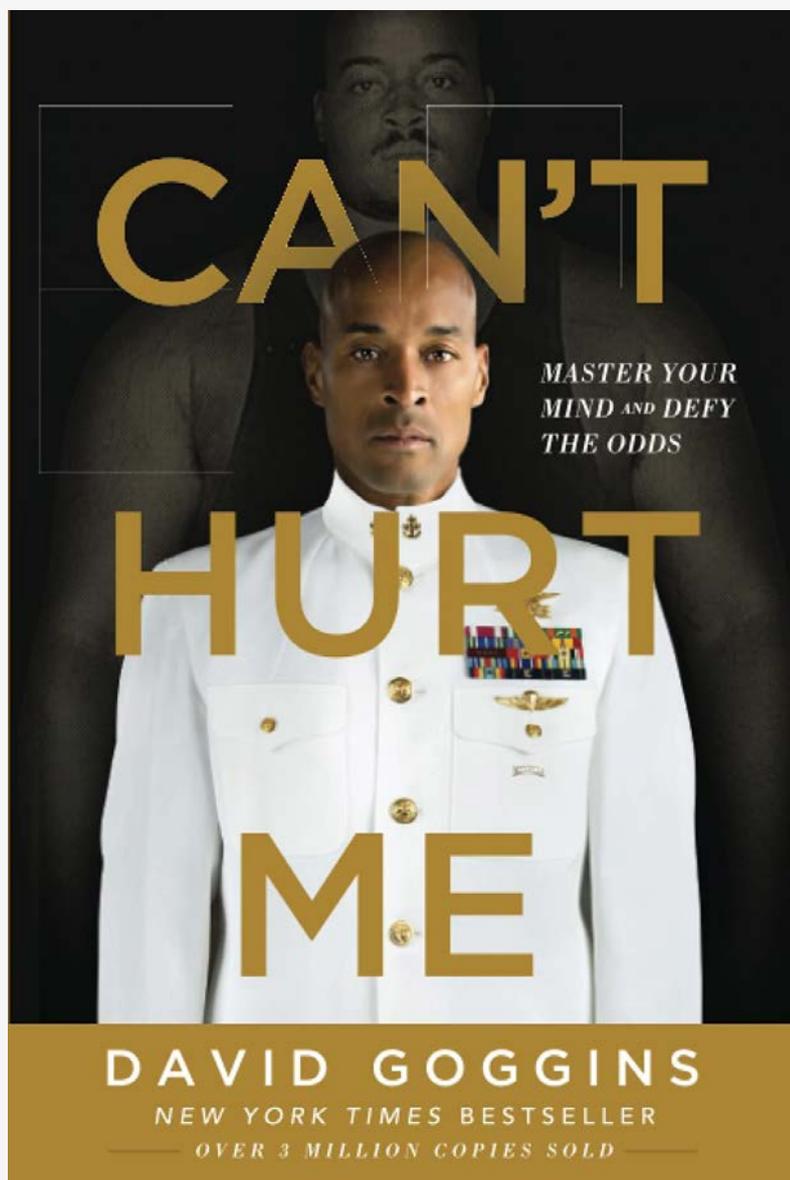
calories or develop a healthier heart, going for a light jog or a walk everyday wouldn't cause any issues; although the calorific run would be about half the time of running it would require less recovery time and would be less intense on the muscles. In addition to this, researchers found that after exercise your heart rate is elevated for around fourteen hours after, which uses even more calories. To burn fat the only thing that matters is that you're in a caloric deficit (burning more calories than consuming), and to have the option to eat a little more might ease the process.



For hypertrophy, weight training for optimal muscle growth, overtraining can become a lot more interesting as targeting specific muscle groups can allow for a high intensity workout. For example, if you exercise your leg muscles on day 1, you should take 48-72 hours rest before training legs again in order to make the most of your exercise. This does not mean that you should exercise twice a week but rather alternate between the muscle groups you are using. This opens up the possibility to train each group on different days. However it is still recommended to have 2-3 days a week to rest, as at a beneficial intensity it would take a large amount of toll on your body. Some say that it affects your organs, your central nervous system and metabolic functioning. That means everyday, your kidneys and liver are getting taxed with lots of toxic build-up. Your body can't possibly recover itself by working out everyday, which could affect your body's ability to "concentrate" on building muscle and burning fat. It goes into a sort of "preservation mode". Also, your central nervous system is regarded as delicate, which in my opinion doesn't sound very scientific.

I believe that a day where the body is not actively recovering from exercise is a day wasted, and it is also possible to substitute "rest days" for cardio or less intense days. There are 600 muscles in the human body and training the lesser known groups or ones used less frequently can still have many benefits, depending on your goal.

David Goggins, an ex-navy seal and someone I look up to, is known for training 7 days a week at an incredible high intensity. To train for ultramarathons and triathlons he runs around 10-20 miles everyday, cycles 50 miles and has a 1 hour lifting session.



He has won many long distance events and holds the record for most pull ups done over 24h (4,030), so I believe that his training is definitely working for him. Although this is an extreme case, and when it comes to different disciplines like powerlifting they train 4 days a week for very long sessions, the large volume of exercise is consistent.

However, not everyone needs to worry about overtraining. If you don't have enough time to dedicate large portions of your time to exercise you need to accept that you're either not going to make optimal results or you need to train with a much greater intensity to match the volume of splitting it up over more days. I have found that training 7 days a week does not become

detrimental to my body, but that it is important to have one day focused on purely cardio instead of specific muscle groups. In addition, it's much easier to stay consistent as I know that at some point I will go to the gym and even if I feel horrible I know that even if I do a shorter or easier day I will still be making progress. The amount of sleep you get, and nutrition, is however vital for faster muscle recovery and development and these would play a way more important role than worrying about training too much.

Jake Maule

LACK OF COMPETITIVE MINORITY SWIMMERS

Swimming is a professional sport that works every muscle in the body to cover a distance through water, whilst also competing against your swim records and other swimmers in each event. With high pressure and high expectations, swimming remains an arduous sport, where most fail to excel in or aren't able to because of the conditions that surround it. But why? Why should certain people encounter unfair political or social barriers in swimming that block them from finding a career in it?

Racial discrimination exists in every twist and corner in the world, including swimming. For example, only now in 2021, did Britain recruit its first black female swimmer (Alice Dearing) to represent Great Britain at the Tokyo Olympics earlier this year. Indeed, with the re-emerging protests for African-Americans, Middle Easterns and Caucasian Asians, the ruinous consequences of segregation are evident. Sport England has stated that “95% of black adults and 80% of black children in England do not swim at all, while only 1% of registered swimmers with the governing body identify as black or mixed race.” USA



swimming investigated this in America and found that “64% of Black children and 45% of Hispanic/Latino children have little or no swimming ability, compared to 40% of white children.”

This was all because the idea of swimming never fully embedded itself within the African-American community, as segregation had vetoed them from entering “white-only” pools in the past. While most white families slowly started to enjoy swimming, African-Americans could only dream about partaking in this beloved sport. With no foundation level experience of swimming, how on earth could a person of colour compete at an elite level? It’s not surprising many potentially talented African-American swimmers are wasted by the profound lack of opportunity to discover their ability. The chain reaction of older relatives and parents never learning how to swim was due to the self-worry brought by the prospect of swimming with prejudiced white people. This meant that their children were less likely to be taught how to swim, and their children’s children, and so on. Like a slippery slope, many were never taught, making black children 5.5 times more likely to drown than white children in the US and UK. Down in the Middle East and Asia, barriers exist too.

As concluded before, fundamental lack of opportunity hid away precious talent. However, another pressing issue evolved in the Middle East, where the resources and support swimmers needed wasn't provided. This could have been due to war, danger within the country, or the underfunding that comes with shortage of support or respect for the sport itself. In addition, the banning of most women from swimming competitively was thanks to the social backlash they traditionally receive. This could be towards revealing swimwear or sharing training facilities with men in swimwear.

The Diplomat wisely concluded that “non-existent investment for any other sport apart from cricket, inadequate infrastructure, and governments’ inability to promote sports” stops many from exploring a career in swimming when the luxuries provided for most Americans aren't found. Developing countries in Asia never choose to spend lavishly on swimming facilities and tools, because ample funds are deposited towards more high-profile sports like cricket and football. Unfortunately, that drives out athletes and so, many aspiring swimmers typically choose to not risk their future and follow a reliable path of office/estate work. Additionally, the abominable ideology of sport exclusive to men puts pressure on women through the backlash and hate, persuading them not to engage in the sport.



Raw talent can only get a gifted athlete so far. With the kind of attitude implemented and its circumstances, potential competitive swimmers don't receive the financial, physical, and emotional support they need to reach more senior levels. South Asia has won no recorded medals in swimming or synchronised swimming in the Summer or Winter Olympics.

The direct and indirect racial discrimination and the unavailable opportunities snatches away dreams and hopes of swimmers developing their talent into something more. Our sole hope is to spread awareness about this social issue, start up campaigns and charities to offer more children and young adults swimming facilities, and be inclusive. We shouldn't be robbing people of this chance when it doesn't benefit anyone.

Hala Elabd

PERIOD POVERTY

"Period poverty is the lack of access to sanitary products due to financial constraints, this can be caused by a wide range of life events that negatively impact on a girl or woman's ability to access sanitary products to manage a most intimate and regular occurrence in her life." (C Bagness, 2020)

Period Poverty is a global issue, including the United Kingdom. It is believed that 1 in 10 secondary school aged girls cannot afford to buy menstrual products and some end up missing their education.

"Meeting the hygiene needs of all adolescent girls is a fundamental issue of human rights, dignity, and public health,"
- Sanjay Wijesekera,
former UNICEF Chief of Water



1 in 10

One in 10 girls in Africa miss school because they don't have access to menstrual products, or because there aren't safe, private toilets to use at school.¹

50%

In Kenya alone, approximately 50 percent of school-age girls do not have access to menstrual products²

12%

In India, approximately 12 percent of its 355 million menstruating women cannot afford menstrual products.³

Within the UK:

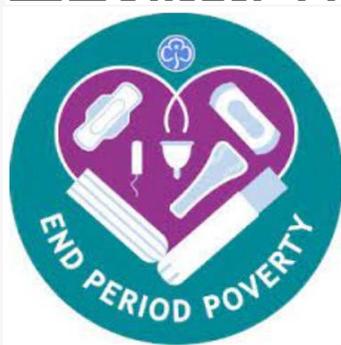
- One in seven girls have struggled to afford sanitary wear
- One in five girls have had to switch to less suitable sanitary wear due to cost
- More than one in ten girls has had to improvise sanitary wear due to affordability issues

We have an initiative at Biddenham where anyone can access free sanitary products in the baskets provided on the back of toilet doors in cubicles with sanitary bins. We also have a system of ordering free sanitary products delivered discreetly to a chosen location, within the school using the QR code linked to a google order form. This service can be used whenever is needed. The google form can be also found on the year groups notice google classroom.

Finally, as a way of raising awareness and supporting the dignity of our students we offer a non-judgmental service of education about anything relating to your menstrual cycle by emailing askaboutperiods@mybiddenham.com and I will answer questions or (if you preferred) organise a time when anyone can come either on their own or as a group to discuss any issues relating to their menstrual cycle.



Please make people aware that all these services are available to anyone. If you are interested in getting involved then please be in touch by emailing Mrs Fountain or askaboutperiods@mybiddenham.com.



ANSWERS TO CHEMSITRY

WORD SEARCH

M	O	I	T	N	E	G	O	R	D	Y	H	M	M	ALKALI ACID CALCIUM GERMANIUM CHROMIUM BASE OXYGEN ISOTOPE SODIUM LITHIUM BORON HYDROGEN NEUTRON STRONTIUM HELIUM SCIENCE CHARGES ELECTRON FRANCIUM PROTON
M	G	C	A	U	S	C	I	E	N	C	E	U	L	
U	E	A	L	K	A	L	I	C	B	N	O	I	S	
I	R	P	T	L	G	L	E	A	E	O	X	O	S	
C	M	R	G	M	C	H	S	E	L	R	Y	O	T	
M	A	S	N	H	U	E	R	O	U	O	G	S	R	
A	M	L	N	O	M	I	S	O	E	B	E	U	O	
R	I	M	C	N	R	E	L	F	N	N	O	N	O	
F	U	M	A	T	G	T	O	E	P	T	U	T		
M	M	O	I	R	U	T	U	R	H	T	U	O	I	
A	M	C	A	M	O	M	O	E	T	G	N	M	U	
I	C	H	A	S	N	T	G	M	N	X	Y	D	M	
A	C	I	X	O	L	I	T	H	I	U	M	C		
C	I	R	D	N	O	E	L	E	C	T	R	O	N	

December 2020 Vol 1 - 1st Edition

THE
BIDDENHAM
DISCOVER MAGAZINE

DNA: WHAT IS IT?
The structure behind the universal genetic code in all living organisms.

THE UNIVERSE
Is it actually expanding?



CREATIVE SUBMISSION
- Artistic Piece
- A Poem

Merry Christmas

THE CHRISTMAS SPECIAL
- Fun fact about Christmas
- Christmas activities

BLACK HISTORY MONTH

CELEBRATING BLACK HISTORY

MENTAL HEALTH
- The importance of mental health in a pandemic

LOTS OF INTERESTING ARTICLE INSIDE

THE BIDDENHAM DISCOVER TEAM
'EVERY POSITIVE ACTION MAKES A HUGE DIFFERENCE'

EMAGAZINE AVAILABLE 

July 2021 Vol 2 - 2nd Edition



THE
BIDDENHAM
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CREATIVE SUBMISSIONS
- Artistic Pieces
- A short story

CORONAVIRUS PARTICLE
We've been hearing a lot about Coronavirus, but do you know what it looks like? Look inside to learn more!

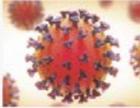
MINDFULNESS
Increase your ability, regulate emotions & de-stress



FLORENCE NIGHTINGALE
Learn about 'the Lady with the Lamp' and how she founded modern nursing.



DISCOVERY SOCIETY
Find out more about the Biddenham societies!



EXPLOSIONS
Find out what makes them bang!

ROYAL NAVY CAREERS
Interested in a career in the Navy? Read about Jake's experience.



"SUCCESS ONLY COMES TO THOSE WHO DARE TO ATTEMPT." - MALLIKA TRIPATHI

December 2021 Vol 3 - 3rd Edition



THE
BIDDENHAM
DISCOVER MAGAZINE



CREATIVE SUBMISSIONS
- Artistic Piece
- Posters
- A Short Story

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Read about the application process for medicine, written by a student who has gone through it!

Have we cured COVID-19?
A fascinating article on the different vaccines that have been developed this year.

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Read about the application process for medicine, written by a student who has gone through it!



Have we cured COVID-19?
A fascinating article on the different vaccines that have been developed this year.



"THE BEST PREPARATION FOR GOOD WORK TOMORROW IS TO DO GOOD WORK TODAY." - ELBERT HUBBARD

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THE

BIDDENHAM DISCOVER MAGAZINE

"Success only comes to those who dare to attempt." - Mallika Tripathi

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c6awqlz

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YOUR ARTICLES!**

**KEEP SENDING US YOUR
SUBMISSIONS!**