

**IRS EXHIBITION
Project Abstract
Primary Schools' Section***

NO	PROJECT	ABSTRACT
1	<p>HOMEROOMS IN CATHOLIC HIGH SCHOOL</p> <p>Haris s/o Rames Catholic High School (Primary)</p> <p>Teacher-mentor: Miss Thum Chuay Lin</p>	<p>In 2005, Catholic High GEP adopted the homeroom system whereby students attend classes in subject specific classrooms. I am interested to find out the impact the homeroom system has on pupils and whether the students are more capable of asking better questions. A survey was given out to a random sample of 26 out of 31 P5 GEP pupils. This was followed by 3 interviews and a lesson observation to confirm the findings of my survey. From my findings, a physically and visually conducive classroom truly enhances pupils' learning.</p>
2	<p>DO MOTORISTS PREFER TO USE THE NORTH-SOUTH EXPRESSWAY?</p> <p>Cheow Yong Jian Catholic High School (Primary)</p> <p>Teacher-mentor: Miss Thum Chuay Lin</p>	<p>I have been travelling to Malaysia since young. I observed that motorists prefer to use the North-South Expressway (NSE) despite its tolls. I hypothesise that this is due to the numerous facilities that are available along the NSE. I conducted a non-random, convenient survey on 43 Malaysians from Penang, Kuala Lumpur, Perak, Melaka and Johor to find out more about surveyees' preferences and opinions about the use of the NSE. I found that most of the surveyees prefer to use the NSE, although not all prefer it because of its facilities.</p>
3	<p>ANIMAL TELEPATHY — WHAT IS IT AND IS MY DOG TELEPATHIC?</p> <p>Lee Kun Siang Henry Park Primary School</p> <p>Teacher-mentor: Mrs Chong Khim Ling</p>	<p>There have been several reports of dogs knowing when their owners or others needed help. Could they have been tipped off by these people's actions? Did their acute hearing alert them? Or are animals able to read people's minds? This project seeks to find out what animal telepathy is, the communication of thoughts without the use of the spoken word or signs, and whether my Golden Retriever, Harvey, is telepathic. Books and the Internet were searched for relevant information and I observed my dog closely for a period of 7 months. Based on the 7-month observation of Harvey, I can conclude that Harvey is telepathic as he has exhibited some unusual behaviour.</p>
4	<p>WARSHIPS FROM 1780 TO 1950</p> <p>Eugene Neo Yi Xin Henry Park Primary School</p> <p>Teacher-Mentor: Mr Yip Yew Fei</p>	<p>Warships play a great part in wars as planes and missiles are launched from them. The aim of my project was to find out the use and importance of warships in the last two centuries. I also wanted to find out about the weapons that were used then. Advancement in technology, innovation and invention has caused great developments and changes in these two areas. I made use of information from encyclopaedias, books and websites for my study. I created a short animation to show the development of warships. A brief writeup on the weapons used in different warships over the years was also included in the report.</p>

* All projects in the Primary Schools' section in the IRS exhibition are done by Primary 5 pupils.

NO	PROJECT	ABSTRACT
5	<p>THE PROBLEM OF HEAVY SCHOOL BAGS</p> <p>Gareth Ting Shi Xun Lim Jun Ming Nan Hua Primary School</p> <p>Teacher-Mentor: Mdm Shadidah Binte Mokhtar</p>	<p>Many pupils in our school carry heavy bags to school everyday. As this problem concerns us, we decided to take up this project to find out how much the school bags weigh among the P5 pupil population in our school and to recommend ways to solve this problem. Through background research, data collection and surveys, we defined what we mean by 'heavy' school bags and discovered that many pupils placed unnecessary items in their bags which contributed to the excess weight. This project has taught us to apply our creative and critical thinking skills to solve a real-life problem.</p>
6	<p>FISH ALIVE</p> <p>Lim Toh Han Nan Hua Primary School</p> <p>Teacher-mentor: Mrs Finella Goh</p>	<p>The objective of this project is to find out how a guppy farm survived and continued with its business despite unfavourable conditions, and how Singapore became the top guppy export country. At the fish farm, I carried out an observational field study to observe and describe the fish farmer's daily operations. Finally, I wanted to find out whether it would be possible for us to breed guppies at home. The methods I used included visiting a guppy farm and interviewing the fish farmer. I also carried out an experiment on breeding guppies at home.</p>
7	<p>THE USE OF WESTERN OR CHINESE MEDICINE TO TREAT SINUSITIS</p> <p>Loh Sheng Hng Nanyang Primary School</p> <p>Teacher-mentor: Miss Serene Yeo</p>	<p>This study focuses on people's choice in seeking treatment for sinusitis. Singapore is a country influenced by both Eastern and Western cultures. This project seeks to find out the type of therapies people would use to ease the discomfort of sinusitis. A convenient sample of 50 sinusitis patients and nonsinusitis patients, aged 7 to 40 years, were approached. There is no best way to treat sinusitis but avoiding allergen and spraying the nose with saline seem to be the most effective to the respondents.</p>
8	<p>A STUDY OF ABANDONED PETS</p> <p>Lim Jia Ying Nanyang Primary School</p> <p>Teacher-mentor: Ms Janice Nim Hui Boon and Ms Wong Swee Wan</p>	<p>The aim of this study is to find out why so many cats are abandoned in Singapore and what can be done to prevent cats from being abandoned. A convenient sample of 34 respondents was used. They came from diverse backgrounds and age groups. The results show that the two reasons when pets are abandoned are when pets become sick and when pet owners feel that they have no time to take care of their pets.</p>
9	<p>HOW PERVASIVE IS PIRACY AMONG SINGAPORE SCHOOL CHILDREN</p> <p>Naomi Monisha Lourdesamy Raffles Girls' Primary School</p> <p>Teacher-mentor: Miss Lim Chiat Hwee</p>	<p>The electronic media makes it convenient for intellectual property to be pirated. This project studied how pervasive piracy is among pupils. The original hypothesis was "The Majority of the pupils resort to piracy without realising it is stealing". A survey was carried out with 51 primary and 42 secondary pupils to see how rampant the problem of piracy is among the respondents. The results showed about 72% of the respondents resorted to piracy. Although these pupils knew piracy was wrong, they continued to do so as it was cheap and convenient. It would be recommended that schools look into ways to educate pupils about piracy.</p>

NO	PROJECT	ABSTRACT
10	<p>A VETERINARIAN'S CAREER</p> <p>Amanda Lee Chian Hui Stefanie Lee Raffles Girls' Primary School</p> <p>Teacher-mentor: Mrs Janice Low</p>	<p>This project is an in-depth review of the work routine of a professional veterinarian and a practising veterinarian. The purpose is to educate people who want to be veterinarians about the problems they may encounter, working as a veterinarian. We interviewed a professional veterinarian and a practising veterinarian. A video of a check-up was taken to show part of the work routine of a veterinarian. In addition, an educational website was created to inform people about the typical work of a veterinarian. There are many challenges a veterinarian has to face although their work can also give immense satisfaction and joy.</p>
11	<p>LEONARDO DA VINCI</p> <p>Sun Yiming Raffles Girls' Primary School</p> <p>Teacher-mentor: Mdm Ng Chen Hia</p>	<p>Leonardo da Vinci is famous for his astonishing multiplicity of talents: he dabbled in architecture, sculpture, engineering, geology, hydraulics and the military arts. My IRS project is an in-depth and concise study, with focus on the aspects of Leonardo da Vinci's life and his contributions. A survey was also conducted to find out how much P3 pupils in the school know of Leonardo da Vinci's life and works. Most of the P3 pupils whom I surveyed were unaware of the contributions he made to our society in the present day. To follow up on the survey, a picture book will be created to educate the P3 pupils about Leonardo da Vinci's life and works. Through this project, I became more aware of the importance of past intellects.</p>
12	<p>CREATING SUPER PAPER AIRPLANES</p> <p>Phua Chuen Yen Rosyth School</p> <p>Teacher-mentor: Mrs Esther Koh</p>	<p>The aim of my project was to investigate the factors affecting a paper plane's flight time and distance covered. Through my reading on making paper airplanes, I got interested in researching on various modifications that could improve flight efficiency. I investigated on how wingspan could affect distance travelled and whether an elevator could affect glide distance. I had also used different types of paper and different positions for launching the plane. In addition, I also tested whether a rudder could affect flight and whether throwing hard could result in mediocre flight. Throughout the course of my project, I learnt useful tips for making super paper airplanes.</p>
13	<p>MUSIC AND GRADES</p> <p>Zera Ong Huixian Rosyth School</p> <p>Teacher-mentor: Mrs Esther Koh</p>	<p>Many articles state that learning music could improve one's grades. I wanted to find out if this was true so I decided to work on this IRS project. My aim was to find out whether there is a correlation between learning music and better grades. I would also like to find out the relationship between music and the ability to concentrate and whether there is a correlation between parents' acquisition of musical skills and the child's academic results. From the 110 respondents to the survey I conducted, I found out that there is a positive correlation in pupils who take music lessons and better grades.</p>

NO	PROJECT	ABSTRACT
14	<p>RECYCLING PROGRAMME IN SHPS — AN ASSESSMENT</p> <p>Ng Wai Yee Ryan St. Hilda's Primary School</p> <p>Teacher-mentor: Mr Tan Boon Tee</p>	<p>My research aimed to examine the effectiveness of my school's present recycling programme and to suggest improvements based on the survey findings. I surveyed 111 pupils from the Primary 4 – 6 GEP classes and observed periodically the use of the recycling bins for aluminium cans and plastic bottles, which were located outside the canteen. I found out that less than half of the pupils surveyed made use of the recycling bins for aluminium cans and plastic bottles but most of the pupils used the recycling boxes for paper which were located within the classrooms. A few solutions were proposed and these included moving the bins to a convenient location, and coming up with a reward system to encourage recycling efforts in my school.</p>
15	<p>SCRABBLE YOUR WAY TO SUCCESS IN ENGLISH</p> <p>Teo Pei Rong Grace St. Hilda's Primary School</p> <p>Teacher-mentor: Mrs Tan Lay Yong</p>	<p>My research was to examine the possible correlation between the playing of Scrabble and Primary 4 – 6 GEP pupils' performance in their English Common Test (CT) in SHPS. My findings indicated that pupils who played Scrabble tended to obtain higher English CT marks. I also conducted a survey amongst these pupils to find out if there were any significant character traits among Scrabble players. From the results of the survey, respondents reported that through playing scrabble they learnt to be more patient as well as more flexible in their thinking and had acquired time management skills. The end product was a blog on my research findings as well as the benefits of playing the game.</p>
16	<p>CHARITY ORGANISATIONS: A STUDY OF SINGAPOREAN PRIMARY SCHOOL CHILDREN'S VIEWS AND SUPPORT</p> <p>Tan Hwee Min Michelle Tao Nan School</p> <p>Teacher-mentor: Mdm Phaedra Pang Mae Zee</p>	<p>This project aimed to investigate whether Singapore charities were well supported by primary school children. The views of 41 eleven-year-olds towards charity organisations in Singapore were documented in the research which also attempted to find out their reasons for donating and their choice of charity organisations. A survey was conducted amongst 41 eleven-year-old children who were chosen using non-random sampling from two primary schools in the East. The findings revealed that most of the respondents donated in monetary means to at least one charity a year. It can be concluded that the spirit of donation was healthy in the sample group surveyed.</p>
17	<p>FEASIBILITY OF A COFFEE OUTLET IN TAO NAN SCHOOL FOR THE BENEFIT OF THE TEACHERS</p> <p>Alvin Soh Wei Jie Tao Nan School</p> <p>Teacher-mentor: Mrs Martha Tan</p>	<p>Based on the assumption that many teachers were increasingly stressed at work and would appreciate a ready source of coffee to enhance their performance, this project aimed to look into the feasibility of setting up a coffee outlet for teachers in Tao Nan School. It also examined the different factors to consider when setting up such a coffee outlet. A survey was administered to 65 teachers from the school to find out if they would like a coffee outlet on the school premises. Subsequently, more information on the teachers' preferences, in terms of preferred location, amenities and food to go with their coffee, was gathered from the survey. A proposal, looking into factors such as feasibility and estimated working capital and profit, was then produced for interested investors to consider when setting up a coffee outlet in the school.</p>

NO	PROJECT	ABSTRACT
18	<p>FERTILISERS THAT PROMOTE THE GROWTH OF LEAVES IN MINT PLANT</p> <p>Chng Sze Ning Tao Nan School</p> <p>Teacher-mentor: Mrs Fiona Soh</p>	<p>The project aimed to find out which of the three kinds of fertilisers – liquid chemical, solid chemical or solid organic – best promote the growth of leaves in mint plants. The project also attempted to investigate the amount of fertiliser which would result in the optimal growth of mint leaves. Nine similar mint plants were used. Three of them were treated with different amounts of liquid chemical fertiliser, another three with different amounts of solid chemical fertiliser and the remaining three with different amounts of solid organic fertiliser. A control was set up using a similar plant. Other conditions were kept constant for all the nine plants. The increase in the number of leaves was noted at the end of the experiment. The results showed the mint plant which was given the solid organic fertiliser had the greatest increase in the number of leaves.</p>

**IRS EXHIBITION
Project Abstract
Secondary Schools' Section**

NO	PROJECT	ABSTRACT
1	<p>HOW CAN YEAR 2 STUDENTS IN ACS (I) BE MOTIVATED TO LEARN CHINESE?</p> <p>Srawan Vijayakumar Year 2 Anglo-Chinese School (Independent)</p> <p>Teacher-mentor: Mrs Jacqueline Yeow-Loke Chia Tee</p>	<p>The objective of the study is to find out how to motivate Year 2 students in Anglo-Chinese School (Independent) to learn Chinese. In order to do this, a survey was carried out to gather 150 Year 2 students' opinions about how they could be motivated to learn Chinese. The survey results indicated that the teaching methodologies and syllabus contributed to students' lack of motivation to learn Chinese. Following the survey, suitable suggestions and recommendations to motivate students were collated in the hope of seeing a change in the attitude of the students.</p>
2	<p>THE IPOD PHENOMENON</p> <p>Shaun Lee Jian Jie Year 3 Anglo-Chinese School (Independent)</p> <p>Teacher-mentor: Ms Kwoh Siew Lay</p>	<p>The iPod was a phenomenal success in terms of the sales of digital products, despite its lack of features compared to other competitors. The study focused on the factors for its success. For this purpose an attempt was made to examine the features of the iPod that contributed or hindered the success of the product to increase the sales of other similar digital products. It was confirmed which of these factors actually affected the success the most, through a survey. It was found that friends and family, television, aesthetics of the product, and price affected the success the most.</p>
3	<p>DIGITAL MEDIA CENSORSHIP IN SINGAPORE</p> <p>Phay Chun Wah Wesley Year 2 Anglo-Chinese School (Independent)</p> <p>Teacher-mentor: Mr R. Devendran</p>	<p>The study focuses on the current state of digital media censorship in Singapore. In an age where digital media is easily accessible, digital media censorship is necessary. This project has three main goals: to find out more about the Ministry of Information, Communications and the Arts' (MICA) stand on digital media censorship; to find out what Year 2 students in ACS (I) think about digital media censorship; and to raise awareness among Singapore youths about the laws pertaining to digital media censorship. A survey was carried out among the Year 2 ACS(I) students. The survey was confined to a small group of Year 2 students (81 responded out of 100 questionnaires issued). The results facilitated the creation of a website which was designed to raise awareness about digital media censorship among Singapore youths. The focus of the website was based on the feedback of the respondents regarding various genres of media being censored.</p>

NO	PROJECT	ABSTRACT
4	<p>HELPING GREEN BEAN PLANTS GROW BEST</p> <p>Tang Ya Xuan Alissia Lim Jia Hui Ng Su Qin Miao Ziyan Secondary 1 Dunman High School</p> <p>Teacher-mentor: Madam Nora Kamsir</p>	<p>What can normal gardeners do to ensure maximum efficiency in helping their plants grow? Everyone knows that plants get either more or less nutrients depending on the type of water used to water them. However, which really is the best type of water available in the home that can be used to ensure that plants grow well? Is it possible to use readily available water in the home without having to add fertilizers to the water for added nutrients? If so, which type of readily available water is best? This was an experimental research which used salt water, tap water, soapy water, rice water and boiled water on green beans to study its speed of growth. At the end, the hypothesis that rice water would be the best was proven correct but in the course of the experiment, the group discovered some interesting results.</p>
5	<p>STUDIES ON THE EFFECT OF GARLIC (<i>ALLIUM SATIVUM LINN.</i>), GINGER (<i>ZINGIBER OFFICINALE ROSCOE</i>) AND ONION (<i>ALLIUM CEPA</i>) ON THE GROWTH OF BACTERIA (<i>ESCHERICHIA COLI</i>)</p> <p>Brendan Soon Lip Hon Goh Xue Xun Lan Jia Ren Lee Qian Min Issac Secondary 1 Dunman High School</p> <p>Teacher-mentor: Mdm Serene Lam Non Har</p>	<p>The antimicrobial effect of aqueous extracts of garlic (<i>Allium sativum Linn</i>), ginger (<i>Zingiber officinale Roscoe</i>) and onion (<i>Allium cepa</i>) were investigated using <i>Escherichia coli</i>. Discs were cut from filter paper using a hole-punch, and soaked in 3.0g of crushed spices mixed with 200 ml of distilled water. Single discs were placed on aseptic agar plates which had 200 ml of <i>E. coli</i> in them. The plates were incubated for 24 hours at 37°C and the growth was then observed. Each disc on the agar plates gave an inhibition zone where no growth of bacteria occurred, between 6.0 mm and 20.1 mm. The highest inhibition zone of 26.0 mm was observed for garlic. Garlic has the best antimicrobial effect on <i>E. coli</i>. In the past, people have been adding spices to food to preserve them and enhance their taste. The result of our studies will be of use for food manufacturers and restaurants as they could use spice in their products to kill more microorganisms and enhance the taste of food.</p>
6	<p>现代的女性注重外在美吗？</p> <p>Jessyln Loo Qiao Ying Liew Xin Yuan Eileen Liu Suyin Sharon Teo Rui Yi Doria Secondary 1 Dunman High School</p> <p>Teacher-mentor: Madam Loo Chou Mui</p>	<p>每一个人都对外在美的看法不相同。有句话说：beauty lies in the eyes of the beholder。有些人可能会认为其实最重要的并不是外在美，而是内在美。我们向公众做调查，找出所有跟外在美和内在美有关的资料。我们所作的这项调查是 semi-structure。我们的调查对象是介于 12 到 41 岁的女性。我们总共访问了 52 位女性。我们的调查结果显示：现代女性都比较注重外在美，尤其是年龄介于 21 到 40 岁的 B 组女性，这也许是因为在这个年龄他们接触的社会面是比较注重外观的。在我们的报告里，我们也会详细地告诉你女人爱美的原因，女人注重外在美的方法等等。</p>

NO	PROJECT	ABSTRACT
7	<p>PROGREEN CLUB — A COMMUNITY PROBLEM - SOLVING PROJECT</p> <p>Tan Bing Ching Lincoln Low Soon Aik Dominic Leung You Rong Michael Seah Yao Hui Jonathan Ong Kian Chong Secondary 4 Hwa Chong Institution</p> <p>Teacher-mentor: Mrs Mok Shiueh Ling</p>	<p>Our underlying problem states, "How might we inculcate responsibility to the environment in high school students so that they will be more active in environmental conservation in 2007 and beyond?" It was our aim to witness an increasing number of students playing a part in environmental conservation. We formed a club in our school with like-minded environmental enthusiasts to orchestrate all environmental activities in our school. We planned to achieve our goal through a series of activities carried out on three levels. The first level was to let students experience direct service to the environment. We progressed to increasing awareness by increasing educational efforts. Lastly, we impassioned students to conserve the environment through environmental initiatives of their own.</p>
8	<p>EUTHANASIA — A LITERARY STUDY OF DEATH, DISEASE AND SUFFERING</p> <p>Ng Li Ki Muk Chen Weng Peter Haw Han Beng Tan Wei Cher Secondary 1 Hwa Chong Institution</p> <p>Teacher-mentor: Mr Jared Quek Jian Zhi</p>	<p>The aim of this project was to explore death, disease and suffering, eventually taking into account Euthanasia as a perfectly viable choice. We utilised a three-pronged approach to achieve a variegated and sufficiently balanced view on the issue. Firstly, we interviewed the Ambassador of Belgium for his views and legislation of Euthanasia, as well as his personal opinions on the matter. Secondly, we conducted several visits to Assisi Home and Hospice to experience their suffering firsthand. Lastly, we did literary comparisons with <i>City Of Joy</i> and <i>Flowers For Algernon</i> to gain other authors' views on similar central themes. All these would ultimately culminate in a novella through which we could convey our ideas and findings authentically based on our own understanding of these issues.</p>
9	<p>LORD OF THE HOUSEHOLD</p> <p>Tan Yen Seow Yu Bin Yu Zheng Hang Low Chee Lum Benjamin Secondary 2 Hwa Chong Institution</p> <p>Teacher-mentor: Ms Quah Lee Hwang</p>	<p>This project explored and tested simple and practical solutions to common household problems such as removal of stains and household pests. Through interviews and surveys, data was gathered to identify common problems. Possible solutions were researched and tested. The end-product is an interactive website that teaches users how to solve common household problems. In addition to providing useful information, interactive games and a discussion forum are included to enhance the interest value. The target audience was originally homemakers but a further study revealed that domestic helpers would also benefit; thus, an information booklet was created for them.</p>
10	<p>HYDROPHOBIC STUDIES OF METAL-COATED CARBON NANOTUBES</p> <p>Lau Kang Ruey Gregory Ye Dan Qi Year 4 National University of Singapore High School of Mathematics & Science</p> <p>Teacher-mentor: Mr Lim Kim Yong</p>	<p>Carbon nanotubes (CNT) have numerous potential technological applications, and the present study focuses on the superhydrophobicity of CNTs. The superhydrophobicity of CNTs can be demonstrated by the large Contact Angle (CA) water droplets have on its surface (CA>160°). It was found that the hydrophobicity of the CNT could be adjusted by coating a thin layer of gold, and a systematic study was conducted. The CA of CNT was also found to change when the sample with the water droplet was tilted (from CA>160° to CA<130°). Water droplets remained on the CNT despite having the CNT suspended upside down. Increasing air pockets in CNT by cutting grids to change the CA is also being tried out.</p>

NO	PROJECT	ABSTRACT
11	<p>DO WALKING TRAILS IN TROPICAL FORESTS OF SINGAPORE AFFECT SEED AND EGG PREDATION?</p> <p>Tsang Li Ping Marianne Loh Yuan Jie Donovan Koh Zhiwen Sidwyn Janelle Chua Xue Mei Year 2 National University of Singapore High School of Mathematics & Science</p> <p>Teacher-mentor: Mr Malcolm Soh Chu Keong</p>	<p>Nature forest reserves in Singapore are becoming increasingly popular with a more environmentally conscious public, and more walking trails have opened up that extend well into the forest interior. To date, few studies have thoroughly examined the impact of such trails on native biodiversity. For this on-going study, we will determine if various types of forest walking trails and their associated characteristics such as tree canopy cover and trail width affect the predation of seeds and eggs. Apart from using real seeds and eggs, plasticine models were used to determine the type of predators by analysng bite marks. The results from this study can be used to help formulate measures to improve future trail design in tropical forests here and beyond.</p>
12	<p>SCANNING MIRROR ON VIBRATING MEMBRANE FOR DYNAMIC OPTICAL TRAPPING</p> <p>Zhao Ye Zhai Weichao Seah Wei Ling Year 4 National University of Singapore High School of Mathematics & Science</p> <p>Teacher-mentor: Mr Lim Kim Yong</p>	<p>We report a simple technique for the dynamic optical trapping of colloidal particles. The main feature of this technique is an addition of a scanning mirror on vibrating membrane in the optical train of a typical optical tweezers set-up. When the membrane is vibrated using sound input from a normal speaker, the laser beam that is reflected off the mirror traced out a wide variety of laser patterns of Lissajous figures.</p>
13	<p>STUDYING OVERSEAS</p> <p>Koh Mei-En Bethany Secondary 3 Nanyang Girls' High School</p> <p>Teacher-mentor: Mr Kuo Yu Hsuan</p>	<p>This project investigated why Singaporean students want to study overseas, and their views regarding the experience. Websites were accessed to give a basic idea of studying overseas but the information obtained was generalised and not in-depth enough. Hence, a research study was carried out, comprising a survey and an interview. It was found that most respondents who study overseas faced problems, but to them these could be overcome. Students could also mentally and physically prepare themselves for the experience, to help ease their transition. The project served as a guide to students, to give them a full picture of what to expect overseas. Results were then summarized into a pamphlet for parents and students intending to study overseas.</p>

NO	PROJECT	ABSTRACT
14	<p>CLASS SYSTEM: THE PAST, THE PRESENT AND THE FUTURE</p> <p>Kristie Lai Yuen Ying Joanna Chng Wenxin Secondary 3 Nanyang Girls' High School</p> <p>Teacher-mentor: Mrs Cheryl Chan Poh Geok</p>	<p>This project delved into the intricacies of the class system of the medieval through to the renaissance age (700 – 1500 AD) in an attempt to uncover the trends and patterns of the development of the class system. This knowledge will be applied when representing an illustration of the social class system of the future. An interview was conducted with a nobleman, who is the chief of Clan Mackintosh in Scotland. Insights on the evolution of the social and political system of the world were drawn from the interview. Society is gradually placing more emphasis on meritocracy than on legacy. Progression in technology has impacted the social class system throughout the ages. With the rise of globalisation and emphasis on knowledge, the future class system is dependent on the possession and power of knowledge.</p>
15	<p>TALENT SEARCH PROGRAMMES AND THEIR EFFECTS</p> <p>Chan Siming Secondary 1 Nanyang Girls' High School</p> <p>Teacher-mentor: Ms Chooi Chee Yeen</p>	<p>Talent search programmes are television programmes that aim to find talents in Singapore after rounds of elimination, an example being the <i>Singapore Idol</i>. This research project aimed to find out the effects of such programmes on teenagers currently studying in junior colleges, and to find the advantages and disadvantages of such programmes. Very little research had been conducted specifically on this theme and an objective, comprehensive secondary source could not be found. To gather more information, surveys were conducted amongst teenagers from two junior colleges as well as amongst their parents, and interviews were carried out with the participants of the talent search programme, <i>Campus Superstar</i>. From the perspectives of the survey respondents and interviews, it was concluded that there were not many negative effects of talent search programmes.</p>
16	<p>MICROPROPAGATION STUDIES OF <i>TECTARIA SINGAPOREANA</i> FERN</p> <p>Shen Wanqin Charlene Low Ling Yu Jesulyn Lim Shi En Secondary 4 Raffles Girls' School (Secondary)</p> <p>Teacher-mentor: Ms Lee Tien</p>	<p>The aim of this research project was to marry modern biotechnology with conservation efforts, through tissue culture of fern species <i>Tectaria singaporeana</i>. The tissue-culture medium was supplemented with various additives—banana, potato and coconut water, which are cheaper alternatives to commercially available plant growth regulators—to investigate their effects on callus growth and sporophyte regeneration of the fern callus tissue. Results showed that the addition of 5g/l of banana into the culture medium was most effective in promoting callus growth, while the addition of 15g/l potato was most effective for sporophyte regeneration. Results obtained showed the potential of developing a cost-effective system for rapid multiplication of fern population for reforestation.</p>

NO	PROJECT	ABSTRACT
17	<p>INSCRIBED AND ESCRIBED CIRCLES OF RIGHT TRIANGLES AND THE FOURSQUARE, THREE-SQUARE PROBLEM</p> <p>Ho Wan Zhen Xu Rui Secondary 2 Raffles Girls' School (Secondary)</p> <p>Teacher-mentor: Mr Kenneth Lui Cherng Ginn</p>	<p>This research project aims to survey some of the theorems outlined in the article "On Inscribed and Escribed Circles of Right Triangles, Circumscribed Triangles, and the Four-Square, Three-Square Problem" (Hansen [2003])**. The first part of the project seeks to provide the proofs to some of the basic and crucial relationships between the inscribed and escribed radii and sides of any right triangle given in the article. Following this, the reader will be shown how these relationships lead to some interesting theorems which form the thrust of the article. The project ends with a discussion of how these results are useful in answering a number theory problem i.e. the four-square, three-square puzzle.</p>
18	<p>THE IMPACT OF MASCULINE AUTHORITY ON THE PREVALENT FEMINIST IDEALS IN SYLVIA PLATH'S POETRY</p> <p>Lee Yi-Wei Casatrina Ruth Ng li-Yung Teo Wei Shan Secondary 2 Raffles Girls' School (Secondary)</p> <p>Teacher-mentor: Miss Ong Sook Yee, Sharon</p>	<p>This project explores the impact of masculine authority on the prevalent feminist ideals in Sylvia Plath's poetry. Links were made between research about the key men in Plath's life and their roles, and her poetry. Through analysing her poetry, feminist ideals were uncovered, and the relation between the major concepts, masculine authority and feminism, was made. It is hoped that through background knowledge of Plath, the general RGS population will be better able to appreciate Plath's poetry, thereby understanding that literature and the poet's job is not to tell a story of a person, but a story of a community.</p>
19	<p>A STUDY ON THE DISTRIBUTIONS OF THE PERIWINKLES ON A PILLAR AT LABRADOR BEACH</p> <p>Nicholas Chee Chong Kit Joshua Tung Yi Min Kaushik S V Yeap Choon How Secondary 2 Raffles Institution</p> <p>Teacher-mentor: Mr Law Hock Ling</p>	<p>The tide levels of three species of periwinkles on a rock pillar at Labrador Beach were being measured in the months of Feb, Mar and Apr 2006. The rough periwinkles occupied a significantly higher tide level than the smooth periwinkles in all the sampling months. We hypothesised that the morphological adaptations of the rough periwinkles enabled them to colonise a higher tide level and thus better able to withstand thermal and desiccation stresses.</p>

** Hansen, David W. (2003) "On Inscribed and Escribed Circles of Right Triangles, Circumscribed Triangles, and the Four-Square, Three-Square Problem" *Mathematics Teacher* 96 (5), 358

NO	PROJECT	ABSTRACT
20	<p>BURROW-DEPTH AND ECOLOGICAL CORRELATES OF THE SAND BUBBLER CRAB, <i>SCOPIMERA GLOBOSA</i>, AT CHANGI BEACH, SINGAPORE</p>	<p>Our study explores the distribution patterns of the burrows of the sand bubbler crab, <i>Scopimera globosa</i>, on a sandy shore at Changi Beach, Singapore. Four characteristics of the burrow were measured: tide level (TL); burrow depth (BD); surface temperature (ST) and burrow temperature (BT). These characteristics were measured from three different shore levels. Significantly deeper burrows were dug at the high shore level than at the mid and low shore regions. There was also a significant positive correlation between BD and TL in three of the sampling months. We hypothesised that digging deeper burrows in the high intertidal helps the crabs to maintain lower burrow temperatures when the tide recedes and this is especially important to the survival of the crabs on a hot occasion. Burrows in the lower shore regions are generally more anoxic than those in the mid and upper shore regions and we believe that constructing shorter burrows in the lower zones of the shore could help in improving aeration because longer burrows accumulate more stagnant air. Our studies also showed that BT did not necessarily decrease with depth and we attributed this to the varying weather conditions in the four months of sampling.</p>
	<p>Lim Zong Yi Kieran Ram Chandra Tiong Kee Aaron Secondary 2 Raffles Institution</p>	
	<p>Teacher-mentor: Mr Law Hock Ling</p>	
21	<p>INVESTIGATION ON THE EFFECTS OF VARYING WAVELENGTHS OF VISIBLE LIGHT ON THE WEBSPINNING BEHAVIOUR OF <i>ZYGIELLA CALYPTRATA</i></p>	<p>The aim of this project is to investigate the effects of varying wavelengths of light on the web spinning of the orb-web spider <i>Zygiella calyptrata</i> (capped blackheaded spider). We hypothesise that the higher the frequency of the electromagnetic waves of the visible light spectrum, the less complete the webs spun by the spiders. We postulated that higher wave frequencies (higher energy) would impede the spider's web-spinning ability. Five set-ups were used, mainly to test for the effects of red, green, blue, white and no light on the web-spinning behaviour of the spider. The results showed that the webs spun were most complete under the influence of the following, in ascending order: green light, blue light, white light, red light, and no light. This implies that spiders can detect green light best, and that as the wavelength of the light tested moves away from the wavelength of the green light in the visible light spectrum, the more complete the web spun. This also means that the spiders' ability to spin webs is affected by light detection, other than the energy levels of the electromagnetic waves.</p>
	<p>Toh Ying Jie Aaron Tang Kai Wen Cho Chung Ting Patrick Lim Vern Khan Edward Secondary 2 Raffles Institution</p>	
	<p>Teacher-mentor: Mr Joseph Chong Perng Shyang</p>	