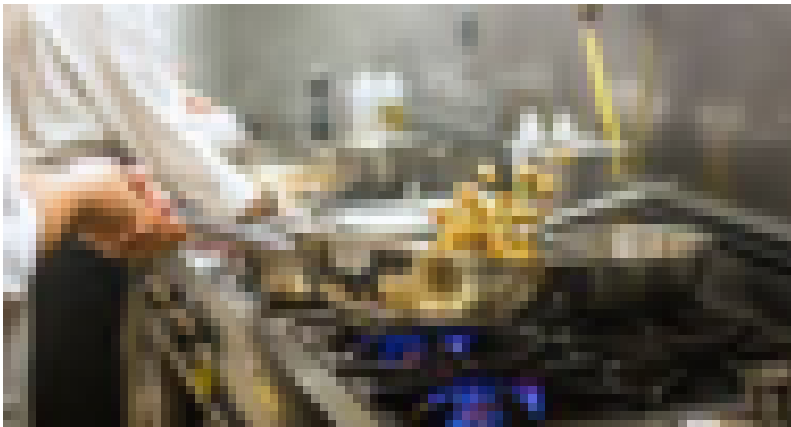


Craft and Technology

Secondary 2 Subject Talk





Introduction

3 Subjects:

- ❖ Higher Art
- ❖ O level Art
- ❖ O Level Design & Technology
- ❖ O Level Nutrition and Food Science

The background features several overlapping thought bubbles in shades of light blue and grey. Most bubbles contain a black question mark. One central bubble contains a blue line-art illustration of a lit lightbulb with radiating lines. The overall composition is layered, with some bubbles appearing to be cut out of a surface.

WHAT TO CONSIDER

**BEGIN WITH THE
END IN MIND**

LEARNING DISPOSITIONS

ART	D&T	NFS
CURIOSITY	PROBLEM-SOLVING	CURIOSITY
ATTENTION TO DETAILS	ATTENTION TO DETAILS	ATTENTION TO DETAILS
PERSERVERANCE	PERSERVERANCE	PERSERVERANCE
OPEN-MIND	ADAPTABILITY	CRITICAL THINKING
CREATIVITY	CREATIVITY	PROBLEM SOLVING
REFLECTIVE	REFLECTIVE	ANALYTICAL
COLLABORATION	COLLABORATION	ETHICAL AWARENESS

ASSESSMENT COMPONENTS

ART	D&T	NFS
P1: Coursework P4: Visual Arts Task	e-Submission Design Journal Presentation Board Prototype	Typed Report on MS Word 20 - 25 pages Skilful dishes
P2: Drawing and Painting	P1: WRITTEN PAPER	

P4: Visual Arts Task

The Singapore Art Museum is planning an exhibition to showcase Impressionist paintings and you have been recruited to join the curatorial team for this exhibition. The chief curator has requested each member of the team to present 3 paintings by different artists for curatorial selection.

As a member of the team, you are to make a selection of 3 paintings. Explain your choices.

D&T

The theme *TRANSFERRING* offers diverse design opportunities. For example in delivering parcels and packages, moving components and products, assisting the travel of people with limited mobility and repositioning sporting or musical equipment.

You are to **identify a design opportunity** that involves a personal response to the theme for which you are to design and make a prototype.

You are encouraged to work towards a proposed **design solution** that is imaginative and credible based on **meaningful and thoughtful** research. Your work should tell a creative storyline that you have taken to work towards the realisation of your prototype.

The process requires:

- + you to **sketch** when generating and developing ideas, to lead to details for a proposed design solution.
- + Your sketches, rendered if necessary, should be reasonably **accurate** in terms of representation and proportion.
- + The process also requires you to make **mock-up(s)** for generating/developing ideas and a prototype for realising the intent of the proposed design solution.

NFS

Different types of cheese can be used in dishes for family meals. Plan and prepare a range of nutritious dishes using different types of cheese, which would appeal to families. You should include a shortcrust pastry dish in your choice.

Investigate the effects of different types of fat to achieve a good quality shortcrust pastry.

How does it help in the calculation of L1R5

Relevant Subject 1 (R1)	Humanities, Higher Art, Higher Music, Malay (Special Programme), Chinese (Special Programme) or Bahasa Indonesia
Relevant Subject 3 (R3)	Humanities, Higher Art, Higher Music, Mathematics, Science, Malay (Special Programme), Chinese (Special Programme) or Bahasa Indonesia
Relevant Subject 4 (R4)	Any GCE O-Level subjects, except Religious Knowledge
Relevant Subject 5 (R5)	Any GCE O-Level subjects, except Religious Knowledge

Vest for open-heart surgery rehab is S'pore winner of James Dyson Award

Braille embosser, device that converts solar thermal energy into electricity are runners-up

Law/Eng
Correspondent

Mr Siew E Ian, 26, who has a passion for robotics, won the James Dyson Award 2023 for his vest for open-heart surgery rehab.

The vest for open-heart surgery rehab is a vest that converts solar thermal energy into electricity to power a pump that circulates blood in the chest.

Mr Siew, who was studying for a degree in industrial design at the National University of Singapore (NUS), decided to combine his skills and health experience by developing a first-of-its-kind solution to accelerate the healing process for open-heart surgery patients.

He worked on the project as part of his final year thesis in 2022, and later submitted it for the James Dyson Award. The research design engineer has since graduated.

The vest-like device called Sun Assist did well enough to be recognised at the 2023 Singapore award scheme.

The annual international competition, which supports budding design engineers at the start of their careers, received 289 entries from 30 countries in 2023. There were 40 entries from across six continents in Singapore.

A panel comprising external judges and Dyson engineers assessed the entries and chose the winners, who get \$2,000 and free coaching. They read a checklist to see the top international entries.

Mr Siew said that after undergoing open-heart surgery, it can take about eight months to a year for the heart muscle to heal completely. During that time, patients will often not be able to perform the usual activities in their daily lives.

Instead of wearing plastic, the garment provides instructions that help to heat the body. Braille



Mr Siew E Ian, who has had open-heart surgery twice, with the vest-like device that he developed. The vest-like device helps to accelerate the healing process for open-heart surgery patients. (S'pore Daily)



Mr Siew E Ian (right) and his team members working on their projects.

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Extracted from *The Straits Times*, 14 Sept 2023
Mr Siew E Ian

- studying at NUS Industrial Design.
- Born with pulmonary stenosis; had 2 open-heart surgery
- Combined his skills and health experience
- Developed first-of-its-kind rehabilitation tool
- To accelerate healing process for open-heart surgery patients.
- Received James Dyson Award

Mr Siew said:

“Using myself as a testing ground,
because I was a patient.....
Accelerated the whole prototyping
process”

Extracted from The Straits Times, 14 Sept 2023, pg A16

Study to help older adults delay cardiovascular disease

Joyce Teo

Senior Health Correspondent

Part-time office manager Sim Teng Kok, 60, recently had a bento meal of spaghetti with meatballs, stir-fried chicken, scrambled egg with vegetables and stir-fried celery with mushrooms - designed for him by a research team at the National Heart Centre Singapore (NHCS).

It was part of a three-month plan that also includes 12 exercise sessions guided by a physiotherapist at the centre.

The plan comes under a five-year NHCS research study, which aims to help older adults delay the onset of cardiovascular disease by tackling frailty. The study has received a \$4.7 million grant from the Ministry of Health.

Mr Sim has no family history of heart conditions, but he has a history of palpitations that worries him. He first experienced heart palpitations in 2020. When it occurred again and again in the same week with no warning, he consulted a specialist, who advised him to exercise and sleep active.

His palpitations have occurred on and off since then, he said. When he saw in the Health Buddy app a recent call for volunteers to join the NHCS research programme, he signed up.

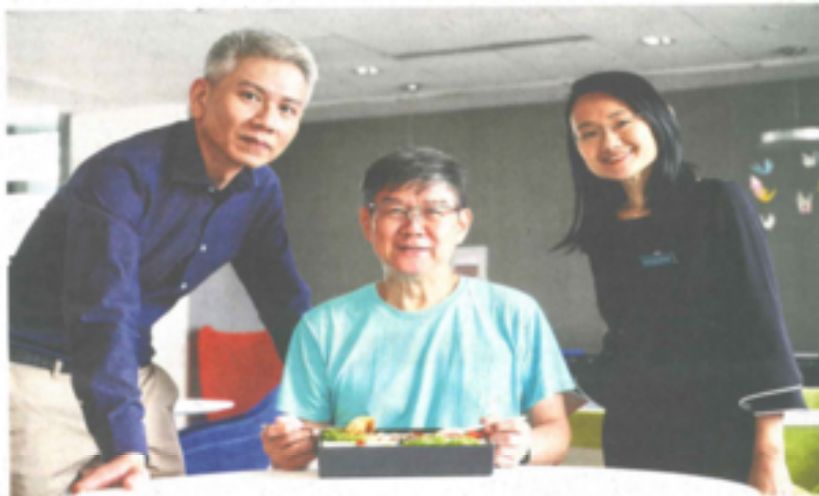
He is among the 15 older adults selected for the programme so far, after going through a series of tests to measure their baseline cardiovascular health status and frailty assessment such as hand-grip strength tests and gait analysis.

The researchers are looking out for physical frailty such as skeletal muscle weakness, such changes in their cardiac biomarkers, and cardiac function.

Mr Sim will be assessed with various tests after three months, said Associate Professor Angela Koh, a senior consultant from NHCS's cardiology department, who is leading the research team in the study.

Launched in July, the study aimed to recruit 400 participants who are either cardiac frail (have a weak heart) or at risk of frailty. They will go through a programme that will offer them a 12-week meal plan and, for those who are suitably fit, a customised exercise programme, at no cost to them.

"We are really looking at delaying frailty as an additional risk factor,"



said Prof Koh.

A senior with cardiovascular disease will be at greater risk of complications if he develops frailty, while one who is yet to have heart disease but develops frailty may be at higher risk of developing the disease, she said at a briefing on Wednesday.

Earlier studies have established the cardio-sarcopenia syndrome, where the weakening of the heart is happening together with the weakening of skeletal muscle mass in patients.

Prof Koh said that looking at some of the biochemistry underlying these changes in those studies has allowed the research team to put together a programme, for instance, with specific micronutrients in the meal plans that target the estrogen pathways that govern the weakening of the heart and heart muscle.

She hopes the study will help to raise the awareness of the need to screen routinely for frailty because frailty is now recognised as a risk factor for cardiovascular diseases. They also hope to educate more people that having targeted diet

and exercise interventions against frailty lowers their risk of developing heart disease.

A previous study that offered an exercise programme similar to the current one for the five-year study showed that there was an improvement in the patients' heart function and reduction in the stiffness of the heart after three months, which would help lower the risk of cardiovascular disease, said Prof Koh.

With the addition of curated diet plans, this intervention plan might be even more effective, she added.

There are currently six types of bento meals under the programme. They are curated according to those healthcare settings. The NHCS programme is being conducted at acute hospitals, community hospitals and outpatient clinics.

Private caterer Nigel Kok, who was at the briefing, said the meals are cooked with less salt and healthier oils, such as those that have the Healthier Choice symbol. They also contain a variety of vegetables and a certain amount of protein and carbohydrates.

The bento meals will be offered two to three times a week.

The participants in community hospital settings will go through six or 12 exercise sessions, lasting 60 to 90 minutes each, guided by trained physiotherapists. Those going for follow-up visits at outpatient clinics in the community will have 12 sessions.

Acute hospital patients do not go through an exercise programme, until they move to a community hospital or are discharged.

Under this study, the research team is also piloting a clinic at NHCS that conducts some of the tests in frailty screening. The clinic measures the patient's skeletal muscle mass, blood pressure and visceral fat - essential data to determine one's cardiovascular health in conjunction with frailty.

Institutions participating in the research programme include NHCS, Changi General Hospital, Sengkang General Hospital, Singapore General Hospital, Alexandra Hospital and Jurong Community Hospital, as well as collaborators from Tan Tock Seng Hospital and National Healthcare Group Polyclinics.

joyceteeo@sp.com.sg

Study participant Sim Teng Kok flanked by Mr Nigel Kok, the general manager of Richmond Group, which caters the healthy bento meals, and Associate Professor Angela Koh, who is leading the research team in the study. PHOTO: LIM HUI ZHONAN



Thank you