



Reimagining Education and Research through the Culture of Innovation

A case study at National University of Singapore (NUS)
Libraries

Dr Magdeline Ng | Vice University Librarian

lib.nus.edu.sg  | [@nuslibraries](https://www.instagram.com/nuslibraries)   [in](https://www.linkedin.com/company/nuslibraries) 

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Facebook

<https://www.facebook.com/NUSLibraries/>

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Acknowledgements

Special thanks:

Colleagues from NUS Libraries who have contributed to the content of the programmes and initiatives. Especially to my colleagues, whose programmes are featured in these slides. A shout out to our faculty partners from various disciplines. All the NUS colleagues and librarians who have contributed in one way or another



About NUS

Education & Research Ecosystem

Visions and Missions

NUS VISION

A leading global university shaping the future

NUS MISSION

To educate, inspire and transform

NUS LIBRARIES VISION

A leading global academic library

- Impacting research
- Enriching learning
- Revitalising experiences

NUS LIBRARIES' PURPOSE

Empower the NUS community with information resources, knowledge networks and interactive platforms to advance interdisciplinary learning, research and innovation

NUS Libraries



Central Library



Wan Boo Sow
Chinese Library



C J Koh Law
Library



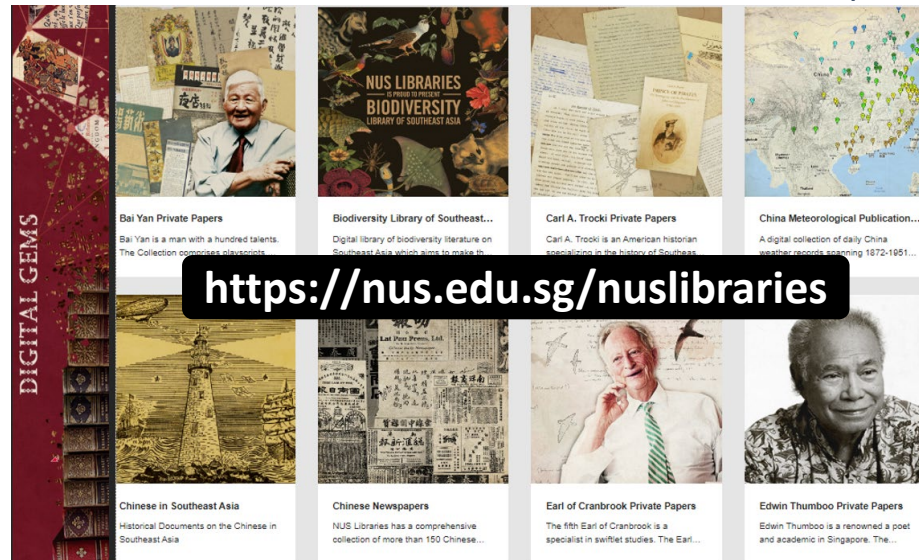
Hon Sui Sen
Memorial
Library



Music
Library



Library@UTown
/Yale-NUS
College Library



Digital Library



Medicine+Science Library

NUS Today

3

Campuses

6

Research
Centres of Excellence*

16

Colleges, faculties,
and schools

37

University-level Research
Institutes and Centres

Student Profile

30.3K

Undergraduates

12.8K

Graduates

Total | 43.1K

Faculty and Staff Profile

2.5K

Faculty

4.2K

Research

4.4K

Executive &
Professional

1.5K

Administrative

Total | 12.6K

Source: <https://www.nus.edu.sg/about#corporate-information> accessed 20 May 2024

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* 4th Research Centre of Excellence shared with Nanyang Technological University

Educational reforms

College of Humanities and Sciences officially launched a new college that will bring together two of its oldest faculties - **arts and social sciences, and science** - and take in more than 2,000 undergraduates.

Prof Tan said, "So the graduates of the future must be well prepared to navigate this new terrain and solve complex problems from multiple fronts. They need to not just work alongside one another, but with each other."

To allow students more flexibility across disciplines, the College of Humanities and Sciences will also offer three new cross-disciplinary degree programmes from next year, in data science and economics; environmental studies; and philosophy, politics and economics.

Source:

National University of Singapore. (2021, August 27). NUS launches two new colleges to deliver flexible, interdisciplinary education more accessibly, and at greater scale. NUS News. <https://news.nus.edu.sg/nus-launches-two-new-colleges-to-deliver-flexible-interdisciplinary-education-more-accessibly-and-at-greater-scale/>

<https://chs.nus.edu.sg/2021/04/07/conversation-president-tan-eng-chye/>

OECD

<https://www.oecd.org/education/ceri/Presentation-Bernard-Tan-National-University-of-Singapore.pdf>

<https://www.straitstimes.com/singapore/parenting-education/nus-launches-its-new-inter-disciplinary-college-of-humanities-and>

College of Design and Engineering – a fusion of the Faculty of Engineering and School of Design and Environment – is a future-focused, interdisciplinary learning and research institution designed to advance the applications and professions of **Engineering, Architecture and Design**.

Prof Ho said, "In the converging fields of engineering and design, professionals must be able to problem-find, ideate, build and realise their ideas into solutions that are practical, functional and appealing. This requires thinking and behaviour that reflect adaptability, empathy, creativity, and resourcefulness."

Blended learning approach



“In our view, fully virtual teaching and learning are still not satisfactory. But **we will not be going back to the traditional sage-on-the-stage type of teaching,**”...

“From NUS’ perspective, we see a need to gear up professors and students to the **new type of teaching and learning.**”

National University of Singapore. (2021, December 1). Delivering quality education through blended learning and international exposure. NUS News. <https://news.nus.edu.sg/delivering-quality-education-through-blended-learning-and-international-exposure/>

Slide adapted from Practices to Implement and Champion a Blended Learning Approach to Information Literacy at an Academic Library [Conference presentation],” by S. Lim, S. Wong and N.T.T. Ng, 2023, ALA, 2023

Is the Future of Information Literacy Instruction Blended? Re-Imagining Information Literacy Instruction Post-pandemic

*Siu Chen LIM and Tao Tao Magdeline NG
National University of Singapore Libraries
Singapore*

Abstract

Post-pandemic, blended learning is on the rise and librarians should keep pace with this new modality of teaching in their information literacy programmes. Following an introduction to the drivers of blended learning in higher education, the implementation of blended learning in information literacy programmes is discussed, including some examples from literature. Research-backed benefits of blended learning are then covered, together with some recommendations on factors that facilitate the adoption of blended learning in libraries.

Views Expressed Disclaimer: Views and opinions expressed in this article are the authors' own and do not represent that of the authors' place of work.

A Post-Pandemic¹ Vision for Information Literacy

Since COVID-19, librarians in Singapore, and indeed globally, have gotten into the swing of online delivery following a two-month closure of all physical university campuses in Singapore

Drivers of Blended Learning and
Associated Factors

Challenges of Implementing
Blended Learning and How
Information Literacy Librarians Can
Navigate These Challenges

<https://libguides.nus.edu.sg/blendedlearning>

Research, Innovation & Enterprise

8 key areas of focus

- Ageing
- Asian studies – eg. political transition, migration, urbanisation
- Biomedical science & translational medicine
- Finance & risk management
- Maritime
- Material science
- Smart nation
- Sustainability & urban solutions – eg. urban heat resilience, green energy, nature-based climate solutions

Research excellence

- ☆ 56K research & academic papers
- ☆ 69% with international collaborations
- ☆ Research publications feature in the top 10% most cited journals worldwide
- ☆ FWCI 2.0
- ☆ 2,369 new patent applications
- ☆ 504 patents granted

Source: <https://nus.edu.sg/impactreport/shaping-future-solutions/>

AGENDA



Culture of Innovation:

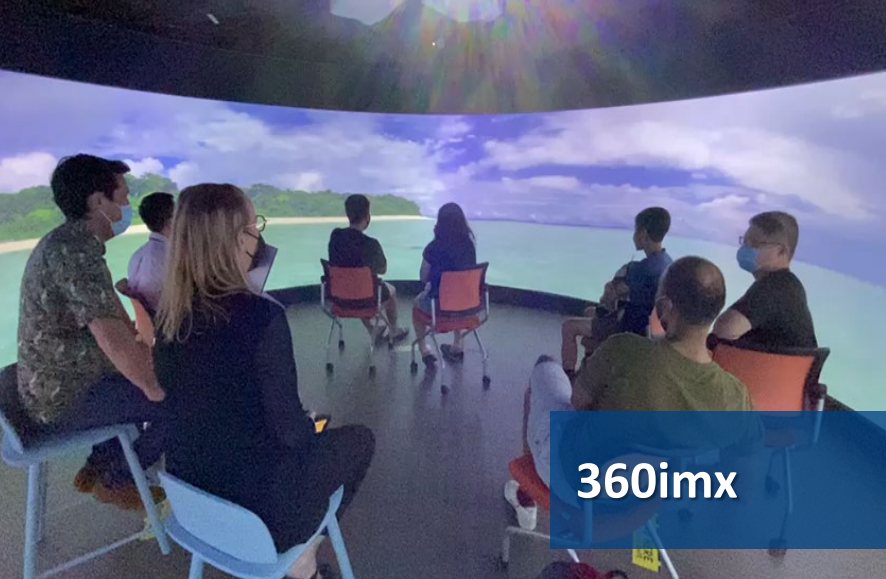
Platform (Space)
Programming
People



Platform ↔ Space



New Spaces
UNLOCKED



360imx



TEL-
Imaginarium



Digital
Scholarship Lab

Technology Enhanced Teaching, Learning and Research



Lightboard



Self Recording
Studio



Discussion and Project
Rooms with Airtime

Escape Room



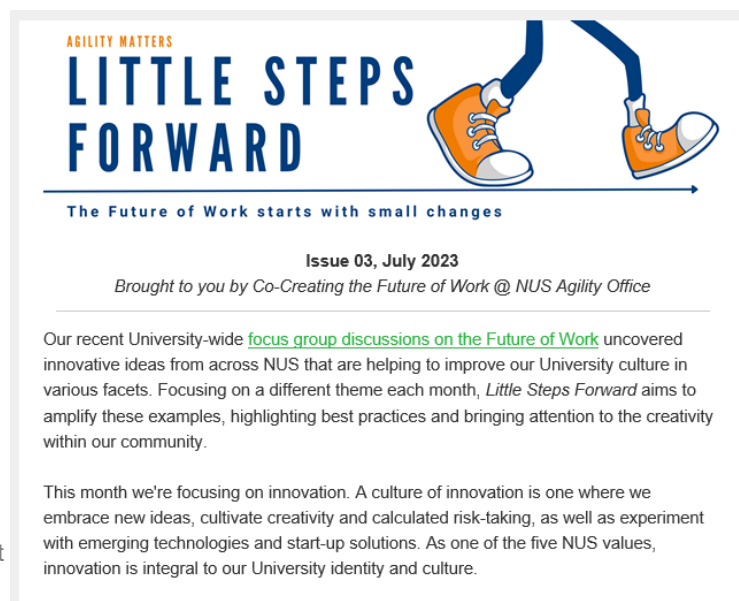
NUS Librarians created escape room games to introduce immersive technologies to the NUS community.

NUS Librarians created AR and VR applications, 360 videos, and 360 tours.

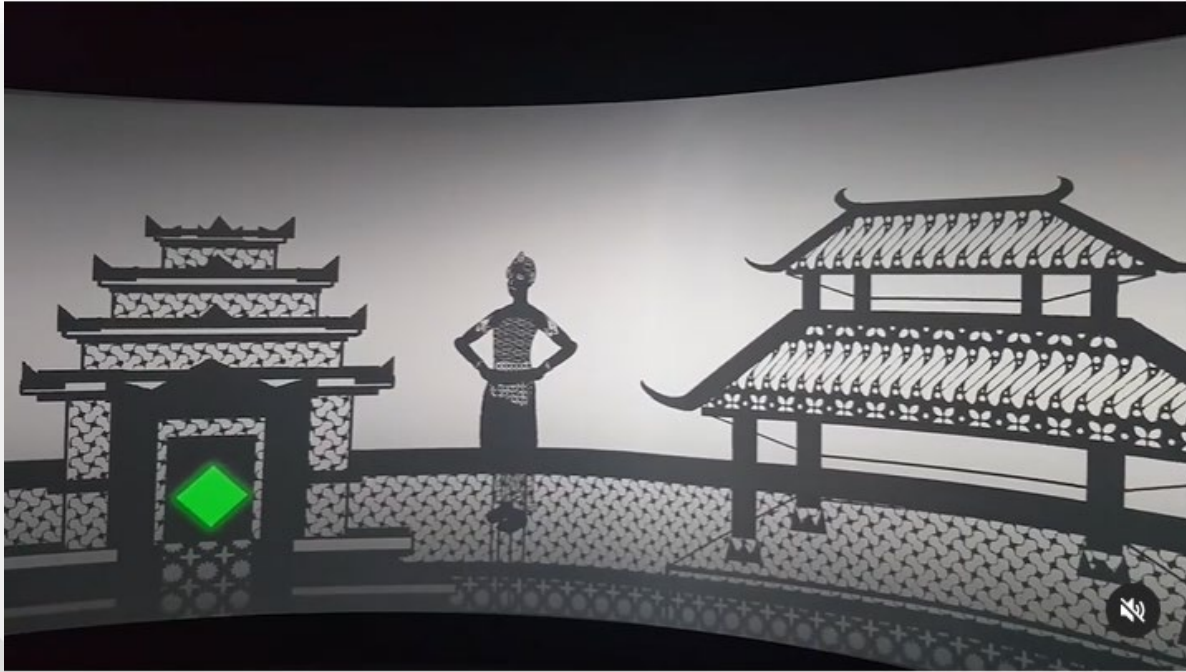
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Tech Central Carnival



Bringing collections ALIVE!



“The Escape Room format gives us an opportunity to tangibly demonstrate how the digital and immersive technology available at Tech Central can really **enhance the learning experience**,” said Dr Magdeline Ng, Cluster Head for NUSL’s Digital Strategy and Innovation Cluster, adding, “It also gives us a chance to **let our community experience our wider collections in a different context** and show how **technology enables** us to look at topics in a fresh way.”

<https://panji360.github.io/main/index.html>; <https://www.ifla.org/news/nus-libraries-tel-imaginarium-escape-room-adventure-discover-collections-through-immersive-learning/>;
https://www.instagram.com/p/ChlaCSLIdAp/?utm_source=ig_web_copy_link&igsh=MzRIODBiNWFIZA==

You are here: Home > News > NUS Libraries TEL Imaginarium Escape Room Adventure: Discover Collections through Immersive Learning

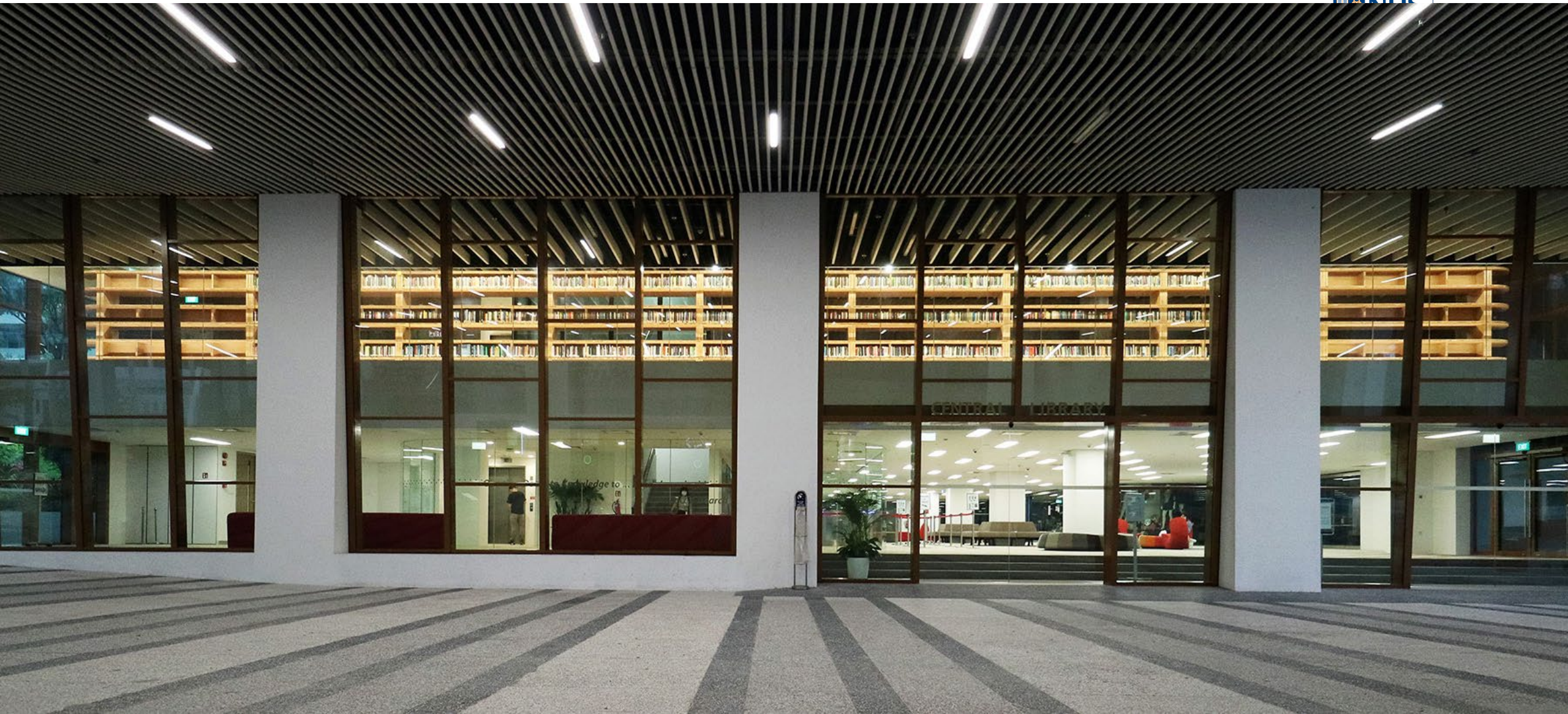
NUS Libraries TEL Imaginarium Escape Room Adventure: Discover Collections through Immersive Learning

23 October 2023

A subway train is mysteriously stuck at an underground station in the middle of Singapore’s oldest metro line, Bishan Station. Is it a creepy coincidence that the station sits on a historical graveyard, or something more sinister? Will you uncover the ghostly mystery impeding the train’s journey, or remain trapped aboard the train forever?

No, this isn’t the plot for Netflix’s latest horror flick, but the storyline for a Halloween Escape Room, which National University of Singapore Libraries (NUSL) has organised every October, since 2020. Besides being a lot of good fun, it’s also a great vehicle to showcase how NUSL harnesses technology to augment and enhance the university learning experience.





(top) Main entrance to the Central Library,
the Rare Books Collection is displayed on the BookBridge

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25 March 2021 | Highlights Research Community Sustainability

Bridging knowledge for a sustainable future



Present at the launch of BookBridge yesterday were (from left): Assoc Prof Okuda; Head of SDE's Department of Architecture Prof Ho Puay Peng; Mrs Lee and Prof Lam.

The NUS Central Library now features a new addition. Known as the BookBridge, it houses the library's rare book collection that needs to be stored in a controlled environment.

Designed as one of several central art pieces for the Central Library, the BookBridge is a first-of-its-kind bookshelf made from tropical Mass Engineered Timber (MET), a renewable, sustainable building material for architecture. It stands at approximately 31 metres in length, 0.6 metres in depth, 2.1 metres in height, and weighing about 3.6 tons, with shelving supports placed about 3.1 metres apart.

This was designed and developed by a team led by Associate Professor Shinya Okuda from the NUS School of Design and Environment's (SDE) Department of Architecture.

Mrs Lee Cheng Ean, the NUS University Librarian, who initiated the collaboration with the SDE team said, "The BookBridge which houses our valuable historical rare book collection takes centrestage in the NUS Central Library transformation project while actualising the practical use of tropical MET in design. The project also symbolises one of our missions of "bridging knowledge". We are very pleased with BookBridge's design philosophy and aesthetically-pleasing sturdy installation, which fills our senses with the serenity of the sustainable tropical forest."



The BookBridge's three-layer composite shelves comprise acacia as inner layers and Forest Stewardship Council certified meranti wood as outer layers.

Designed with sustainability in mind

Assoc Prof Okuda was inspired to design the BookBridge using sustainable timber components. Tropical MET can retain substantial quantities of carbon, becoming an effective carbon sink and a true game-changer in the long term, according to the Building and Construction Authority, MET in general has a lower carbon ratio than concrete, which may speed up construction time by up to 35% on its density, could also lock one ton of atmospheric carbon dioxide in every cubic metres of tropical MET.

As the rare book collection is meant for long-term display, a key engineering challenge was the deflection of the timber shelves, expected under gravity load. To mitigate this, structural engineers strategically designed the timber shelves with built-in bracing to counteract the calculated deflection. Two types of fast-growing plantation timber were used: columns made of jabon wood that was developed by the SDE team under the NUS Research Fund, with three-layer composite shelves consisting of acacia as inner layers and Forest Stewardship Council (FSC) certified meranti wood as outer layers.

All MET components were digitally fabricated with a computer numerical control milling machine in Singapore which enabled the level of precision required for the BookBridge project.



The BookBridge (in photo background) is one of the first structural applications of tropical Mass Engineered Timber and is one of the central art pieces in the NUS Central Library transformation plan. Fully visible from the public plaza, it houses a rare book collection, which needs to be stored in a controlled environment.

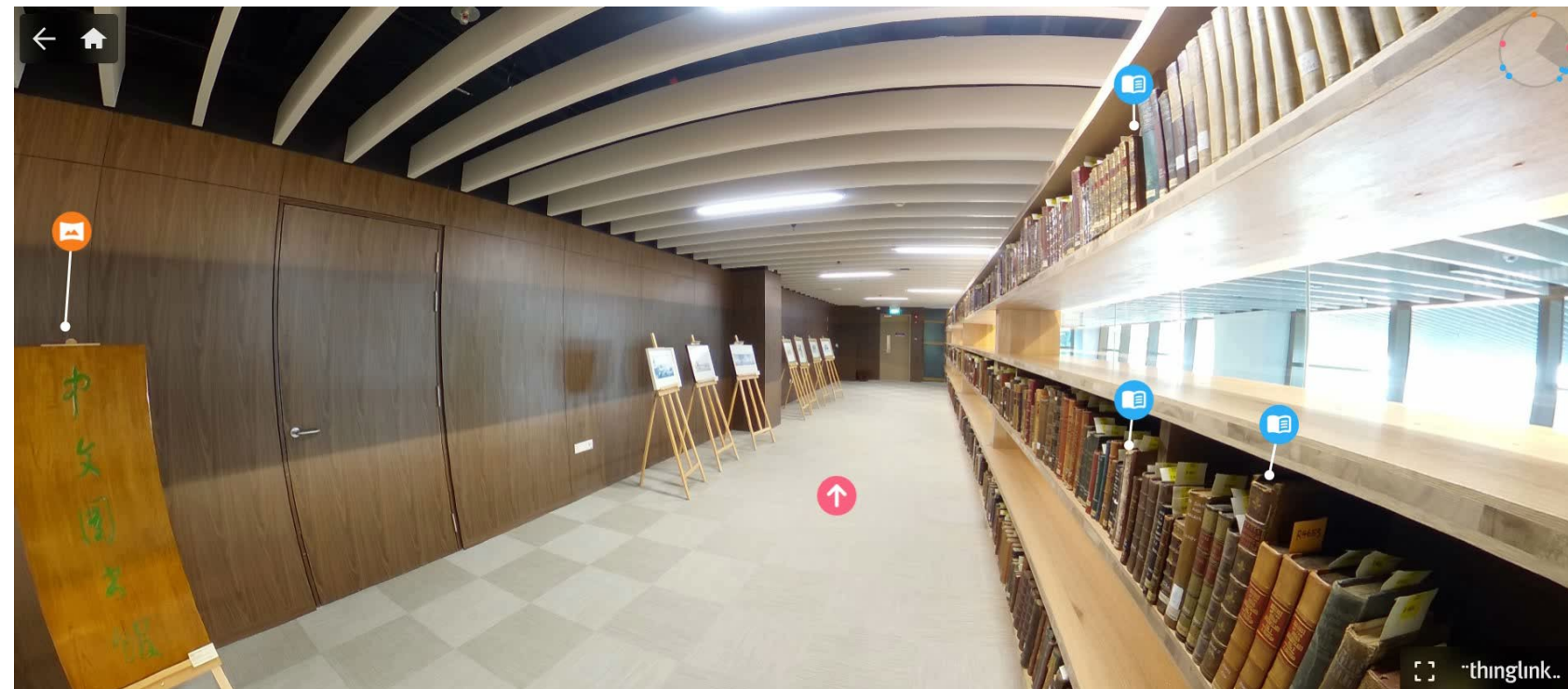
360° virtual tours of NUS BookBridge

- Using 360 Virtual Tour to enable **access to rare books and manuscripts that are otherwise inaccessible** - Providing access to our rare books collection through an online 360 tour
 - Exposes our collection through an innovative and interactive platform
- A shift away from libraries being a custodian towards creating experiences and discovery

Explore [here](https://www.thinglink.com/card/1729811676544369317)!

Tour developed by
TEL Imaginarium with
Collections team.

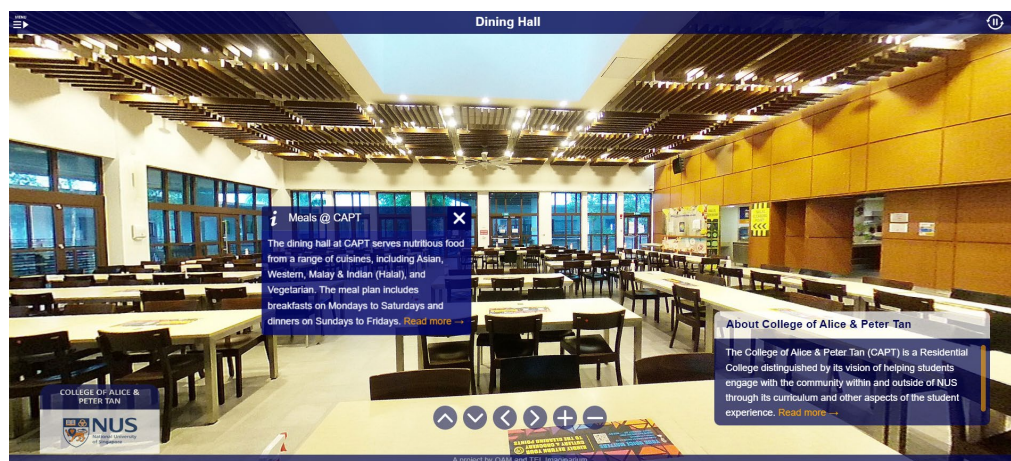
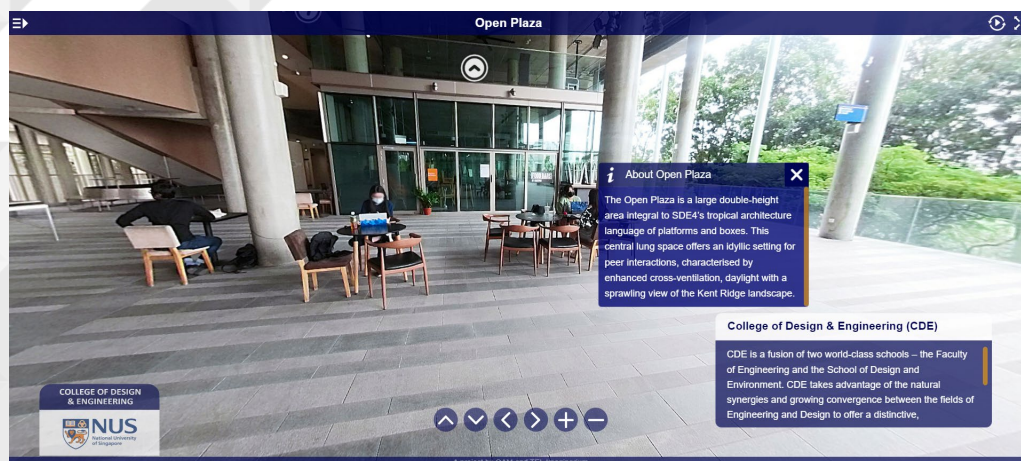
<https://www.thinglink.com/card/1729811676544369317>



360° virtual tours of NUS

- Developing a series of virtual tours in conjunction with NUS Open House
- To date, 12 tours are launched, featuring 205 spots within NUS' campuses
- Showcase learning facilities and campus life to remote prospective students
- Partner with NUS Libraries since Nov 2020

Tours developed by TEL Imaginarium team in collaboration with Office of Admissions, with assistance from featured departments







Leveraging on technology to bring collections **ALIVE!**



Programming

Forensic Science

FSC4203 : Forensic Toxicology & Poisons

FSC4206 : Advanced Criminal Litigation – Forensics on Trial

FSC5202 : Forensic Defence Science

- Developing XR and WebGL experiences to complement teaching and learning allows students to **explore crime scenes in a safe environment** and **reset the crime scene with the click of a button, reducing human error for multiple student groups**
- Students were able to work in groups through Zoom using the WebGL experiences during the pandemic, ensuring that their learning experiences were not disrupted
- Partner with NUS Libraries since Nov 2018

e.g. FSC4203 Forensic Toxicology & Poisons

(coordinator Prof Stella Tan and Dr Shawn)

- VR, AR and web applications
- Students went through a VR crime scene to collect evidence which they would scrutinize further using the AR app. A web app then shows the potential suspects that they can question

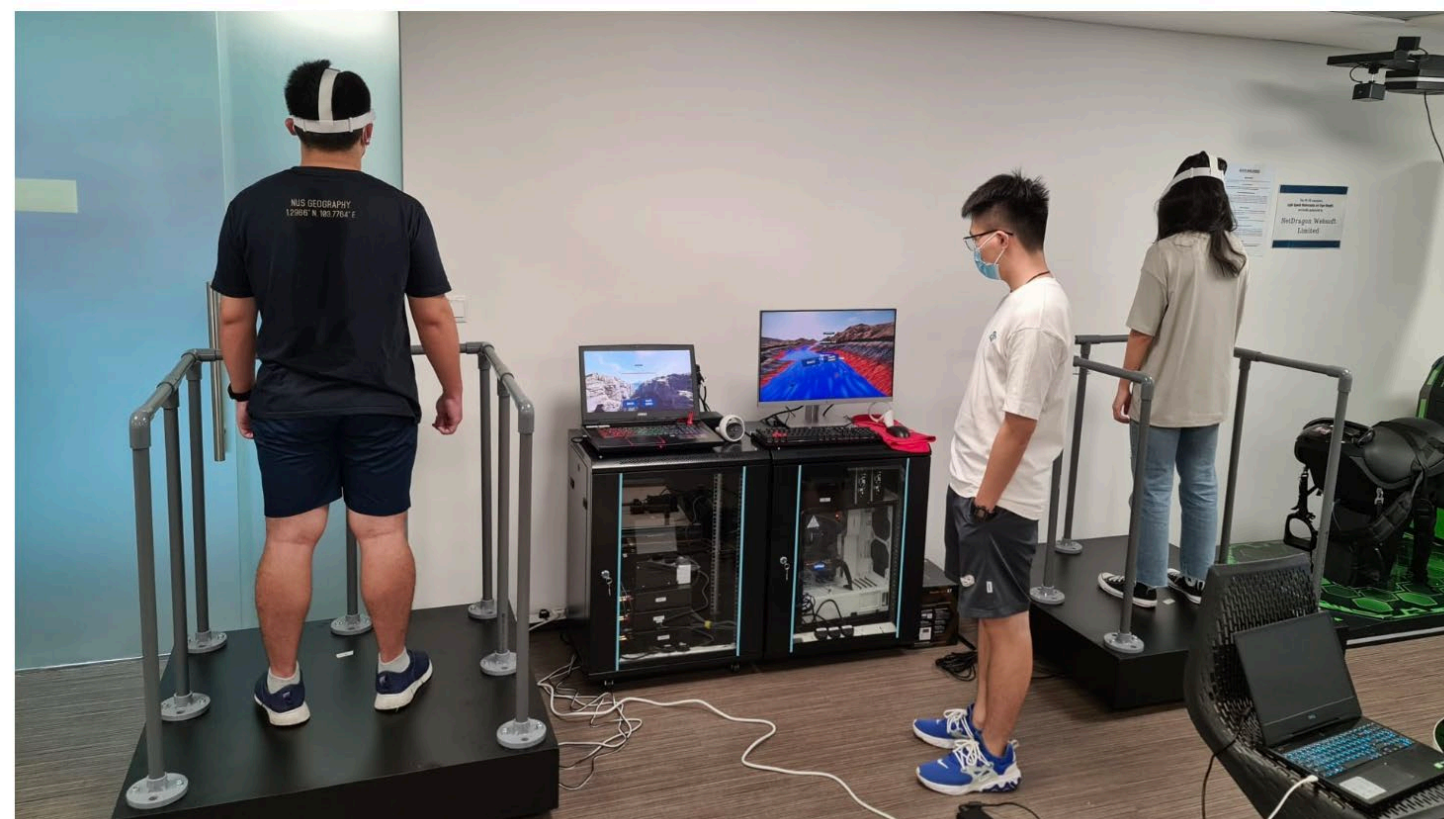


VR Headsets and Controllers for Forensic Science Module

Developed by librarians e.g. simulation of crime scene



Feel tremors under your feet or watch an ocean bed split open: VR tech brings geography lessons to life



Simulation scenarios include a major earthquake as viewed from an outdoor environment.

VR Project by Geography Professor



National University of Singapore. (2022). *Feel tremors under your feet or watch an ocean bed split open: VR tech brings geography lessons to life*. NUS News; National University of Singapore. <https://news.nus.edu.sg/feel-tremors-under-your-feet-or-watch-an-ocean-bed-split-open-vr-tech-brings-geography-lessons-to-life/>

Geography and Environmental Studies

- Projecting a 360° film in 360imx can greatly enrich geography and environmental studies, **allowing students to virtually explore global locations**. This **immersive** experience deepens their understanding of diverse environments, landscapes, and cultures.
- Partner with NUS Libraries since June 2022

<https://news.nus.edu.sg/new-360imx-takes-immersive-learning-to-new-heights-and-depths/>

NUSnews

Home Highlights Research Press Releases News Reports Press Room Staff Awards

20 June 2022 | Highlights Education

New 360imx takes immersive learning to new heights and depths



GE3255 – Dr. Gretchen Coffman

- Roots to Reefs 360

ENV1101 – Dr. Chua Siew Chin

- Our Stake in the Forests 360



www.kopelkinabatangan.com

360imx: How it works



Used in geography modules for virtual field trips to facilitate "deep dive" e.g. underwater

Simulate cities that no longer exist e.g. HSA1000:
Asian Interconnections CHS integrated module

Placemaking

Bring meaning to library spaces and beyond to meet diverse needs of the community!

e.g. activating a place as touchpoint, and community engagement.

The Gimbap Roll-volution - Its History & Nutrition

🕒 Tuesday, 27 February 2024, 11:00am - 02:00pm
📍 Atrium & Collaboration Space, Medicine+Science Library (Level 1)

Register Now!



<https://nus.edu.sg/nuslibraries/researcher-unbound/current-workshops/the-gimbap-roll-volution>

Are Plants Our Saviour?

🕒 Tuesday, 20 February 2024, 12:00pm - 01:00pm
📍 Collaboration Space, Medicine+Science Library (Level 1) & Zoom

Registration Links Below



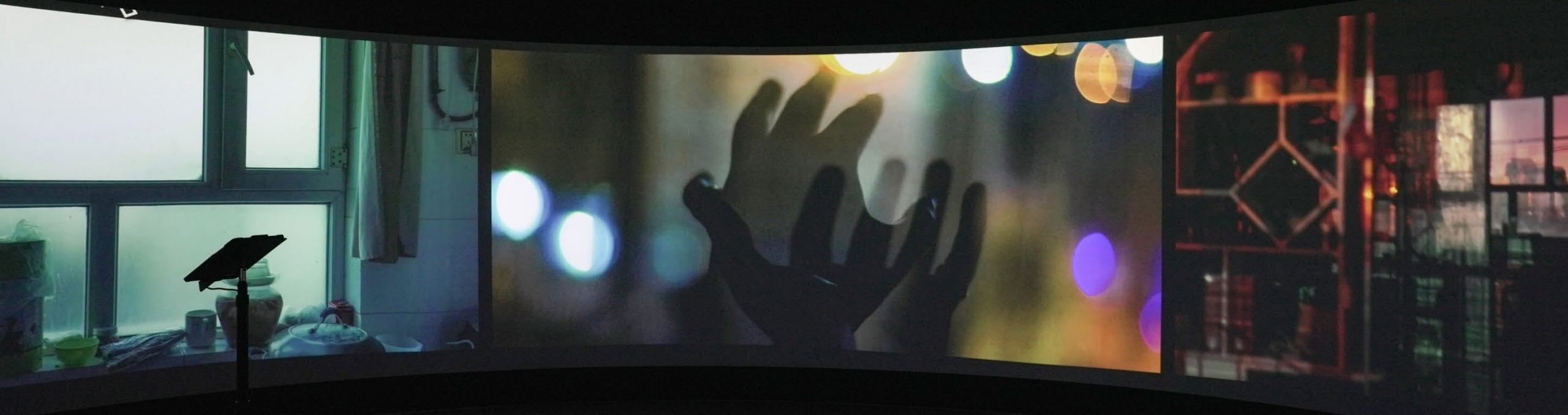


Strategic partnerships and collaborations to foster interdisciplinarity!



People ↔ Community

Series C by Ethan ZhangCheng@360imx, Central Library



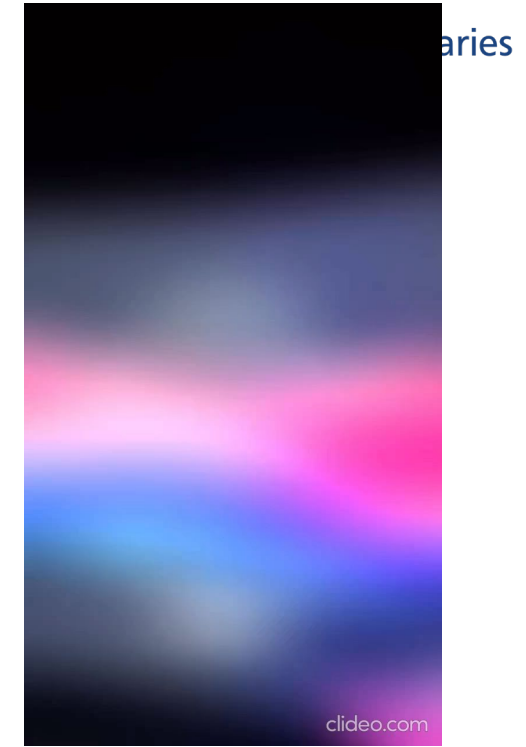
Photography Journal Open Call (PJOC):
A Collaboration with NUS Museum



Science Journalism Club

Engaging students via the Science Journalism Club as co-creators to bring student activities into library spaces

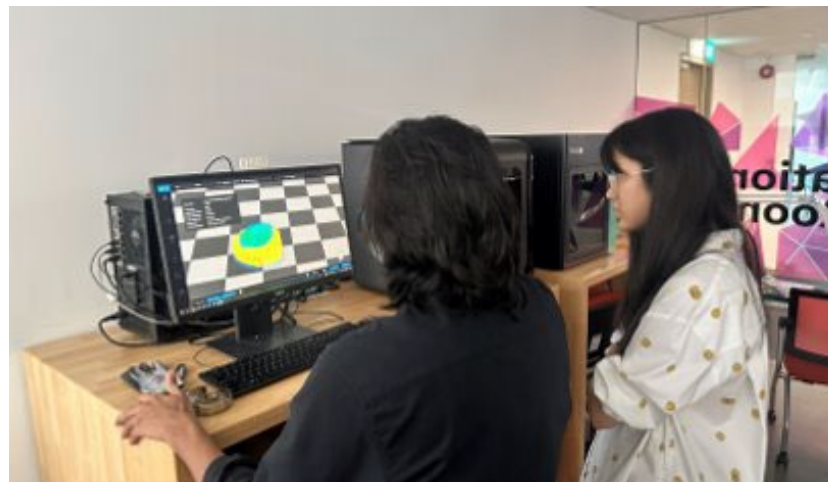
- Library Showcase at Central Library (23/2/23 – 5/5/23)
- S&T Agora: Inner Worlds Photography competition at 360imx @ Tech Central (20/3/23 – 24 March 2023)
- Medicine+Science Library Opening Ceremony (1/8/23)
- Library Showcase at Medicine+Science Library Atrium (7/8/23 – 20/9/23)



3D Modelling, Scanning and Printing



Collection: NUS Museum artefacts



NUS MUSEUM Archaeologist a Day

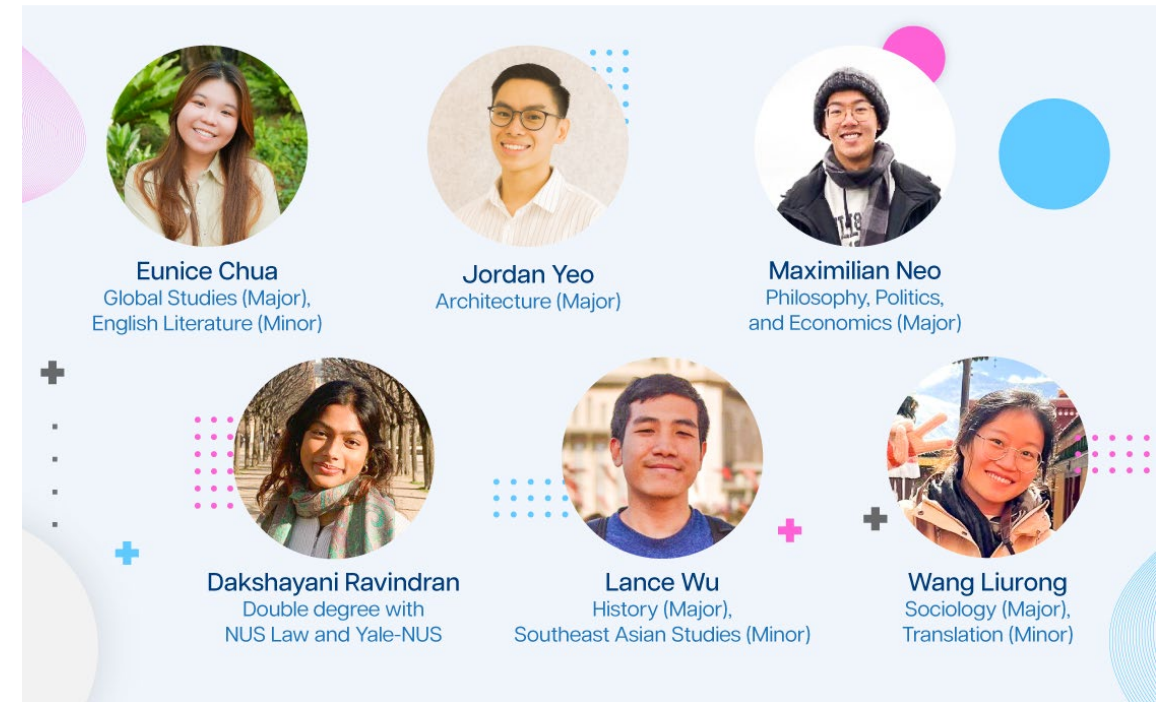
3D scanning and printing for NUS Museum [Workshop] - Be an Archaeologist for a Day
Throughout the scanning and printing procedures, the team also provided comprehensive training to NUSM colleagues, enhancing their expertise and proficiency.

NUS Librarians created 60 printed objects for this workshop

Library Fellowship Programme for Students

Opportunities for Students to Pursue Research with a Southeast Asia Focus

- Students are encouraged to utilise and discover the richness of NUS Libraries' collections for their research and at the same time contribute towards our collection development
- Partnered with different subject librarians for mentorship
- Successful applicants will be offered a stipend during the course of their project



(top) Selected Fellows of 2024



Students as partners and co-creators!



Building capability and capacity - Librarians & Community

Award of Innovations - QS Reimagine Education Award



Roots to Reefs



Librarians Shaping the Edu-Tech Landscape: NUS Libraries at EDUTech Asia 2023, Asia's Largest Conference for Educators

[Home](#) » [Bulletin](#) » Librarians Shaping the Edu-Tech Landscape: NUS Libraries at EDUTech Asia 2023, Asia's Largest Conference for Educators



Librarians Shaping the Edu-Tech Landscape:
NUS Libraries at EDUTech Asia 2023, Asia's
Largest Conference for Educators

/ Bulletin, Librarian News / December 6, 2023



360 VR



VR



AR



Design



Tinkering

Jumpstart minis



Learning in progress!

Source: <https://nus.edu.sg/nuslibraries/researcher-unbound/past-workshops/ay2022-2023>

Researcher Unbound: Flagship Programme

- Open to NUS community
- Nearly 80 programmes a year for 3000 participants
- Interdisciplinary programmes to support learning and research
- Programmes in emerging areas such as use of ChatGPT for systematic reviews, DS Tools
- Partnership with relevant departments

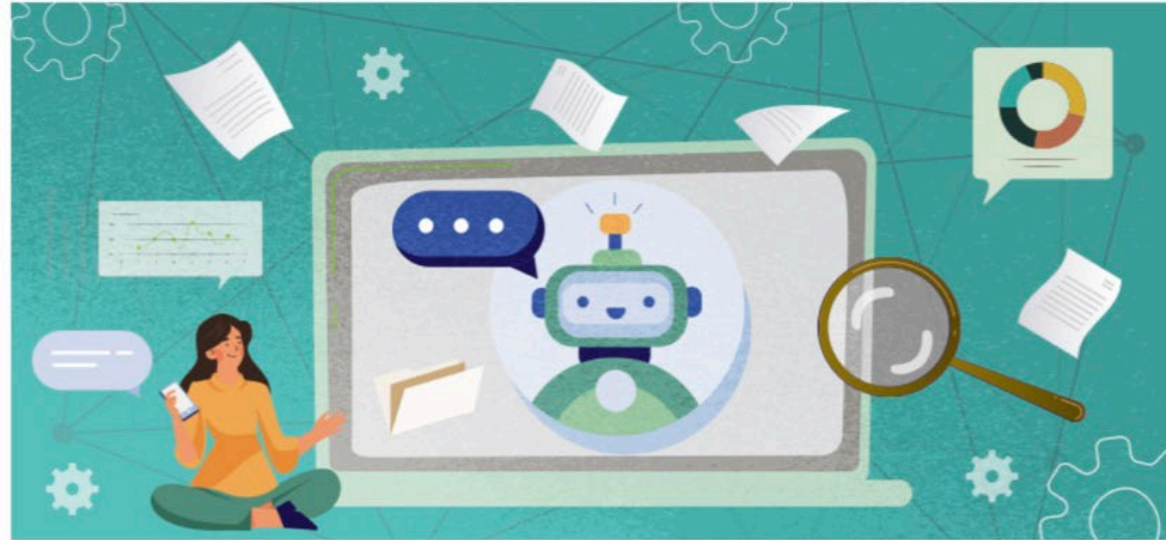


Research Skills Framework

Researcher Unbound is underpinned by the Research Skills Framework (RSF) - designed to offer a holistic palette of relevant knowledge and skills to guide and enhance your research capabilities.

Mapped across the research journey, it comprises skills-based learning under 7 domains. Its user-centric design adopts a learner-centred approach, allowing you to select programmes to suit your research and learning needs.

Researcher Unbound was developed as part of our library's evolving role in supporting University research. The [book chapter](#) details the creation and design of the Research Skills Framework.



Let's Chat! Using ChatGPT to Conduct Searches for Literature & Systematic Review

DATE & VENUE

9 May (Tue), 10am - 11.30am
Digital Scholarship Lab, Central Library Level 4

ChatGPT has taken the world by storm in recent months, generating a spark of interest as well as trepidation in many. Join us in this open discussion where we will explore the potential of using ChatGPT... [Read More »](#)

Register

Outline

01. Explore a research topic
02. Uncover research gaps in the literature
03. Generate search statements for literature & systematic reviews



Ideate

Search



Scope & frame an idea for your research

- Articulate, define, frame ideas to demonstrate the novelty of your research or to identify gaps in research
- Apply various methods, techniques, tools and filters to critique existing research or discover emerging trends

Conduct effective literature search to support your research

- Plan, construct and adopt various search strategies according to the sources, scope and information needed
- Match information needs and search strategies to the appropriate search tools and databases

RU-Mini

Fun-size sessions to **maximise learning**. Short in duration, **big on content**.



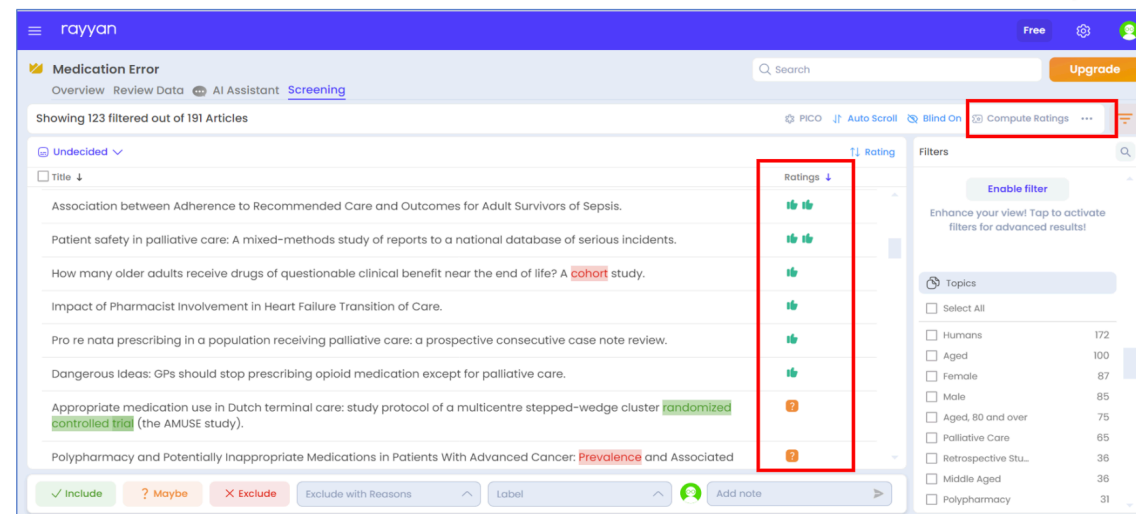
25 Jul (Tue), 10am – 10.30am
Speed up Systematic Review with Rayyan

SEARCH

Rayyan is a free web-based tool that dramatically speeds up systematic review. Join us to catch a glimpse of its features and how to use this collaborative tool to accelerate the screening process in a systematic review.

Demo: AI-Powered Rating System

<https://help.rayyan.ai/hc/en-us/articles/17461088734353-Using-Rayyan-s-Predictions-Classifer-for-Relevance-Ranking>



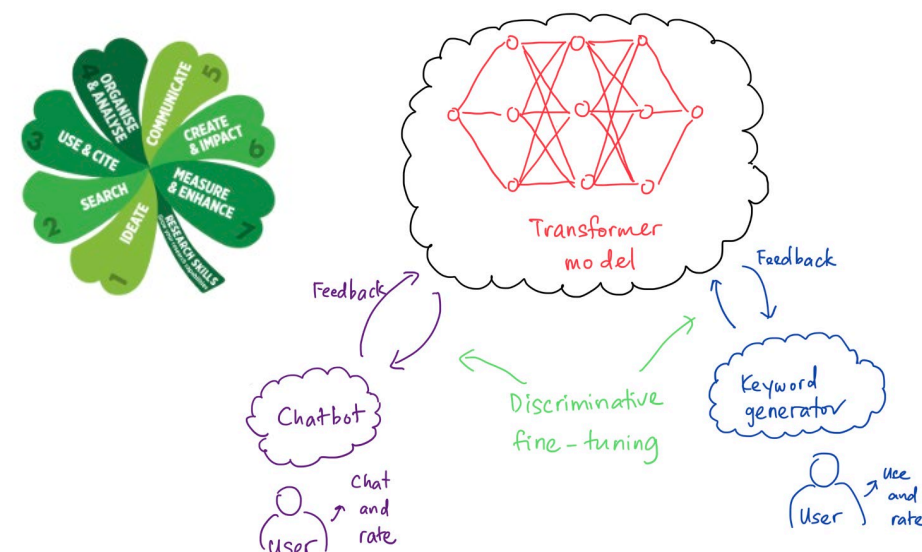
1. Make at least 50 include/exclude decision
2. Click **Compute Ratings**

*Note: AI engine calculate probability of each undecided references being include/excluded based on decisions made
Each undecided reference will be assigned a rating from 2 thumbs down - near zero likelihood of inclusion to 2 thumbs up- very high likelihood of inclusion, and ? for no recommendation*

Organise & Analyse

Collect, store, organise, manage & analyse information effectively

- Apply latest tools for research collaboration and keeping current in your field of research
- Apply digital research methods and tools to visualise and analyse data



AI x INFORMATION

THE SEMINAR SERIES

NAVIGATING THE AI IMPLEMENTATION AT ASEAN LIBRARIES

24-25 APRIL 2024

Join us

Join us for an online seminar series, presented in collaboration by the Office of Academic Resources at Chulalongkorn University and the libraries of the National University of Singapore and the Singapore Management University. Let's explore knowledge sharing and discussion on AI practices in library operation and services among our library friends, fostering a community of practice that is well-equipped to navigate the digital future.

24 APRIL
09:00-10:30 a.m.
(Bangkok Time)

Session 1: An "Aye" for AI? NUS Libraries' journey with adopting AI

- Find out how NUS Libraries equips users to use AI responsibly
- Learn how NUS Libraries uses AI to improve its services
- Gain insights on collaboration strategies and overcoming roadblocks to successful AI adoption

Eng Aun CHENG
Principal Librarian
(Library Data Analytics and Procurement Manager)

Siu Chen LIM
Senior Librarian
(Research Librarian - HASS)

SAUL-RSTF WEBINAR 2023

Rethinking Scholarly Communication in the Age of AI

1 November 2023
Wednesday
9:00am - 12:00nn (SST)

<https://bit.ly/RSTF2023>

TIME (SST)	PROGRAMME
9.00 am	Welcome
9.05 am	Opening Address
9.15 am	Generative AI for translational scholarly communication Lucy Lu Wang , Assistant Professor, University of Washington Information School
9.45 am	15 ways AI could ruin scholarly communication - and what we can do about it Deborah Fitchett , Associate University Librarian - Digital Scholarship, Lincoln University
10.15 am	Help is on hand: Can AI help ease the burden of research communications? Andy Tattersall , Information Specialist, University of Sheffield
10.35 am	Break
10.45 am	Pandora's box or cornucopia - should we accelerate open access to feed Large Language Models? Aaron Tay , Lead Data Services, Singapore Management University Libraries
11.15 am	Book Publishing and AI - a help or a hindrance? Katie Peace , Senior Publisher, Taylor & Francis Book Publishing
11.45 am	"Generate Your L(AI)brary Hackathon" Showcase • SMU AI • librarybuddies
11.55 am	Closing
12:00 nn	End

Brought to you by: Singapore Alliance of University Libraries (SAUL)

PLATFORM (SPACE)

Leveraging on technology to bring our **collections ALIVE!**

PROGRAMMING

Strategic **partnerships** and collaborations to foster **interdisciplinarity**

PEOPLE

Students as partners and **co-creators!**

Building capability and capacity – **Librarians & Community**

“When we come together as communities, that’s where magic happens.”

The Way Forward

“Many libraries are **rethinking** and **reimagining** what a library truly does. Being part of the management team, we have to rethink the academic library in today’s educational landscape. I see libraries as **dynamic hubs** where **librarians transcend the traditional role of being custodians of knowledge and material, into creators of experiences and discovery** for our community and beyond.”

Magdeline Ng

Source:

<https://www.rsc.org/journals-books-databases/librarians-information/library-insights/librarian-spotlight-magdeline-ng/>



Find Us – NUS Libraries

Email

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Website

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<https://www.facebook.com/NUSLibraries/>

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THANK YOU

lib.nus.edu.sg 

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