

RIE2025 Human Health and Potential

Science of Learning (SoL): 4th Grant Call

Webinar, 4 June 2024



RIE2025 Human Health and Potential Domain

Human Potential Programme

Human Potential as an integral part of ***Health & Biomedical Sciences research*** and its applications in RIE2025:

VISION

To advance Human Potential in **health, biomedical sciences and Science of Learning** research and its applications at **critical junctures** of an individual's life course

PRIMARY OUTCOME

An individual is provided the support and opportunity to **develop optimally at critical junctures of his/her life course**. This will enable the individual to **achieve optimal health, well-being and learning capacity** to contribute his/her best to Singapore.



Objectives and Desired Outcomes of SoL Programme

Objectives: The SoL programme seeks to support science-based research that could explicate the principles, processes and mechanisms of learning and skills acquisition in order to generate implementable and scalable interventions that improve education and skills development, and hence advance Singapore's human potential.

Outcomes

Improve teaching & learning processes with informed pedagogy and andragogy



Outcomes

Create a vibrant multi-disciplinary research community



Types of Funding Available

The RIE2025 budget for the SoL programme is ~\$80 million and there are two Types of funding

Type A: Use-inspired Basic and Applied Research

- For knowledge creation that can potentially lead to applications in teaching, learning and skills development

Type B: Development and Translation

- To develop implementable and scalable applications for teaching, learning and skills development and assess their efficacy and effectiveness.
- To build a vibrant multi-disciplinary SoL research community and strengthen research-policy-practice nexus

Outcome of 3rd Grant Call

21 Whitepapers were received, with 19 full proposals subsequently reviewed by the SoL Expert Panel. The following 8 have been selected for funding.

PI / Host Institution	Project Title
Type A2 (Investigator-led Projects)	
Sun He (NIE, NTU)	Promoting Early Book Reading at Home: An Intervention with Enhanced eBooks
Tan Hui Ling Renee (IAL, SUSS)	Enhancing Metacognition in Adults through a Tech-Augmented Learning Programme
Ho Moon-Ho Ringo (NTU)	Enhancing Learning and Transfer of Digital Literacy in Adult Learners
Chan Hiu Dan Alice (NTU)	Pathways to early literacy in bilinguals' non-dominant language
Type A3 (Seed Grants)	
Jack Fogarty (NIE, NTU)	Mindful High-Intensity Interval Training Sessions (Mindful-HIITS)
Peter Tay (SIT)	Integrating adaptive forgetting and remembering in experiential learning
Sun Lining (IHPC, A*STAR)	Adult Learning for Career Change: Motivating Skills Transfer and Reskilling
Azilawati Jamaludin (NIE, NTU)	RISE-M: Regulation Competencies for At-rISk Adolescents: Social Well-bEing & Neurophysiological Markers

List of Awarded SoL Projects

S/N	Project Title	Grant Type	Principal Investigator	Host Institution	Partner Institution(s) / Collaborator(s)
2021 Call					
1	Early Support for Foundational Skills of Preschool Children at Socio-economic Risk in Singapore	B	Beth O'Brien	NTU	-
2	Data and Theory Driven Artificial Intelligence to Boost the Science of Learning	A1	Liu Guimei	A*STAR	NTU
3	Understanding Brain Networks of Reading and Math to Inform Diagnostics and Interventions	A1	Annabel Chen	NTU	MOE, etc
4	Refinement of a Whole Child Panel to assess School Readiness Risks	A2	Evelyn Law	NUS	A*STAR, MSF
5	Teacher-Child Neural Scaffolding for Executive Function & School Readiness	A2	Victoria Leong	NTU	-
6	SLIONS: an AI-enabled Platform to Promote Personalized Chinese language Learning for Adult Language Learners	A2	Wang Ye	NUS	NTU, etc
2022 Call					
1	Cerebrovascular Health, Adult Learning, Resilience and Mechanisms: CHARM Study	A1	Nagaendran Kandiah	NTU	NUS, NNI
2	Identifying Math Learning Difficulties with Video-evoked Brain Activity	A2	Cheong Kang Hao	NTU	-
3	Unlocking Motivations, Confidence, and Positive Outcomes for Adult Learners	A3	Charmaine Tan	A*STAR	NTU, SUSS ⁶

List of Awarded SoL Projects (cont'd)

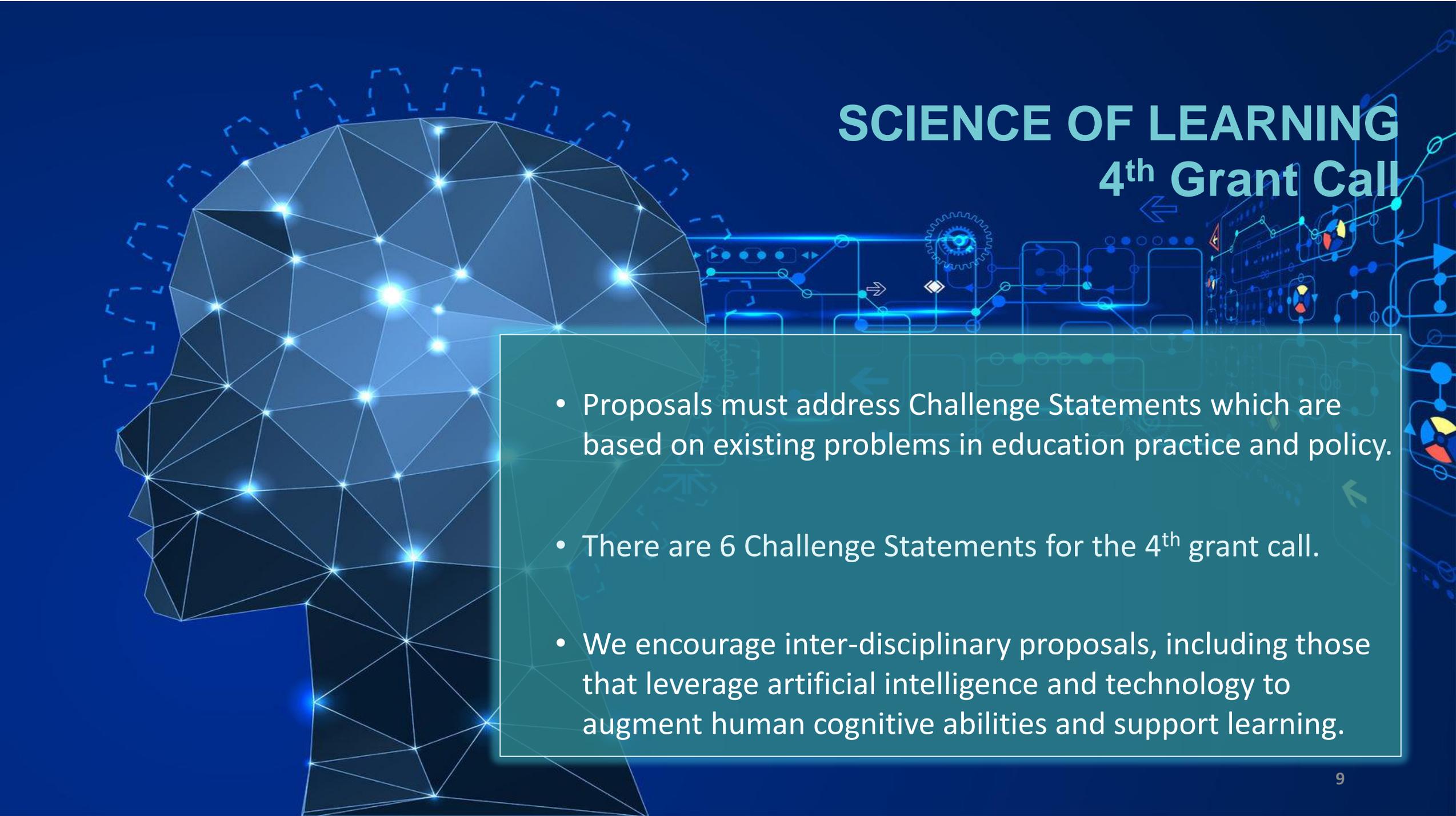
S/N	Project Title	Grant Type	Principal Investigator	Host Institution	Partner Institution(s) / Collaborator(s)
2023 Call					
1	Promoting Early Book Reading at Home: An Intervention with Enhanced eBooks	A2	Sun He	NIE, NTU	SUSS, MOE, NTUC First Campus, etc.
2	Enhancing Metacognition in Adults through a Tech-Augmented Learning Programme	A2	Tan Hui Ling Renee	IAL, SUSS	A*STAR, NUS
3	Enhancing Learning and Transfer of Digital Literacy in Adult Learners	A2	Ho Moon-Ho Ringo	NTU	-
4	Pathways to early literacy in bilinguals' non-dominant language	A2	Chan Hiu Dan Alice	NTU	SUTD, etc
5	Mindful High-Intensity Interval Training Sessions (Mindful-HIITS)	A3	Jack Fogarty	NIE, NTU	IMH
6	Integrating adaptive forgetting and remembering in experiential learning	A3	Peter Tay	SIT	JCU Singapore
7	Adult Learning for Career Change: Motivating Skills Transfer and Reskilling	A3	Sun Lining	IHPC, A*STAR	SUSS
8	RISE-M: Regulation Competencies for At-rISk Adolescents: Social Well-bEing & Neurophysiological Markers	A3	Azilawati Jamaludin	NIE, NTU	IMH, TLL

Characteristics of Competitive Proposals

1. Academic/scientific significance/potential impact is well-articulated.
2. Research hypotheses, methodology (including power analysis) and analytical plan must be clearly laid out. For Type B projects, demonstrated effectiveness/efficacy based on prior studies conducted locally or overseas would be viewed favourably.
3. Comprehensive, yet succinct, literature review that clearly supports the project's aim(s).
4. Clear sense of what is novel and innovative (vs. derivative/adaptive research).
5. Confidence and supporting evidence that the proposed work can be done.
6. The research scope is credible and realistic in the given timeframe.
7. Budgets realistically reflect what is required to execute the scope of work that is proposed.
8. Team members (including collaborators and visitors) have well-motivated, concrete and integrative roles in advancing the research objectives, and leverage on one another's strengths.
9. PIs have strong track record as researchers. Especially for Type B projects, track record of close collaboration with service delivery agencies, policy makers and practitioners would be viewed favourably. *Researchers new to this field are encouraged to consider smaller focused proposals (e.g. type A3 or A2) to establish feasibility before applying for programmatic proposals.*

Other characteristics:

- *If neuroscientific and AI techniques are included in the proposal, their relevance and value add to the project objectives are clearly justified.*



SCIENCE OF LEARNING 4th Grant Call

- Proposals must address Challenge Statements which are based on existing problems in education practice and policy.
- There are 6 Challenge Statements for the 4th grant call.
- We encourage inter-disciplinary proposals, including those that leverage artificial intelligence and technology to augment human cognitive abilities and support learning.



Challenge Statement 1 - focus on function and performance

How to leverage SoL to:

- Ensure that students are **well prepared and ready** to learn in school? Efforts can include understanding the mechanisms of cognition in areas such as literacy, numeracy, and translating the understanding into interventions.
- In particular, how to level-up students, especially those from **disadvantaged backgrounds, in their early school years** (e.g. from Primary 1-4)?



Challenge Statement 2 – focus on overall well-being of individuals

How might we leverage SoL to:

- Build and strengthen our students' **social and emotional skills, and mental health and well-being** so that they are effective in facing life's challenges throughout the different milestones in their lives, especially during the puberty and adolescent period?
- Efforts focussing on affect and psycho-social development can include understanding the mechanisms and pathways in areas like emotion and psycho-social functioning and well-being, and translating the understanding into interventions especially for adolescents and young adults.



Challenge Statement 3 – focus on transfer of adult learning across context (Priority for 4th Call)

How to leverage SoL to:

- Ensure effective transfer of learning from one domain to another and from one context to another?
- Ensure that what our students/ workers learn in PET and CET can prepare them for their future jobs in workplaces that will be constantly changing throughout their life-course?
- Efforts can include programmes and/or interventions to help workers contextualise skills acquired to the changing requirements of their current workplace. In particular, how can we help our workers better transit across job roles or industry domains?



Challenge Statement 4 – focus on adult learning and ageing (**Priority for 4th Call**)

How to leverage SoL to:

- Enhance **acquisition and retention of learning across adulthood** (particularly for learners in their 40s and 50s)?
- In particular, how to account for neurological, psychological and physiological changes and challenges at different life stages, to maximise learning and skills acquisition by adult learners?

Efforts can include:

- Enhancing delivery of training across different modalities, e.g. workplace learning, hybrid courses, short vs long-form courses.
- Identifying what types of skills are more “CET-able” to older learners.



Challenge Statement 5 – focus on AI in education (New!)

How to leverage SoL to:

- Inform policies, programmes and practice on the application of technology, including Artificial Intelligence (AI), to optimise students'/workers' capacity and learning of different knowledge and skills?

Efforts can include:

- Harnessing AI to enhance the overall learning (e.g., accelerate learning, improve accuracy) and to augment abilities in different settings (e.g., schools, workplace, informal learning space).
- Understanding the effects (beneficial/detrimental) of GenAI/ Large Language Model (LLMs) on neurological, psychological and physiological development, and performance and functioning of students/workers.



Challenge Statement 6 – focus on learning contexts and environment (New!)

How to leverage SoL to:

- Optimise development, learning and functioning of individuals in different life-stages in rapidly changing contexts and environments (including work settings).

Efforts can include:

- Understanding the effects of different learning environment (e.g. workplace and classroom settings) and of the material environmental factors (e.g., design, architecture, blue-space, and greenspace), and/or sociocultural factors, on neurological, psychological and physiological development, performance and functioning of students/workers.
- Understanding the effects of digitalisation of learning contexts on neurological, psychological and physiological changes across learners' lifespan.

Types of Funding Available

Type A – Use-Inspired Basic and Applied Research

Sub-Type	For	Budget (Prelim)
A1	Research Programmes. Team-based efforts, with sub-projects.	Up to \$5M (including 30% IRC) per award, for up to 5 years
A2	Investigator-led Projects	Up to \$2M (including 30% IRC) per award, for up to 5 years
A3 (Updated Quantum!)	Seed Grants for proof of concepts and/or support young investigators	Up to \$500K (including 30% IRC) per award, for up to 3 years

Type B – Development and Translation

Type	For	Budget (Prelim)
B1	Research Programmes. Team-based efforts, with sub-projects.	Up to \$5M (including IRC) per award, for up to 5 years



Eligible Institutions

- The following Institutions may apply for the SoL Grant:
 - Autonomous Universities
 - A*STAR Research Institutes
 - Polytechnics and Institute of Technical Education

- Institutes/schools would apply through their host university, e.g.
 - IAL through SUSS
 - NIE and LKC Medicine through NTU
 - Duke-NUS through NUS, etc



A3 Seed Grant (Updated Quantum!)

- Each grant is for up to \$500K (including IRC), for 2-3 year projects.
- Open to all researchers.
- For early investigators who are new to SoL research, i.e. Asst Prof/equivalent or below (generally within 9 years from obtaining a PhD):
 - Institutions should nominate Mentors who support successful applicants through a period of supervised research to nurture these young investigators' capabilities to conduct larger projects independently in future
- Applicants are encouraged to submit A2 grants upon successful completion of these A3 projects.



General Evaluation Criteria

1. **Relevance:** The relevance to at least one of the challenge statements.
2. **Potential Impact:** The potential benefits of the research to education (including adult training and skilling) in Singapore and in advancing Human Potential.
3. **Synergy:** Leverage and enhance existing research capabilities in the broader research landscape in Singapore.
4. **Technical Merit:** Scientific and intellectual rigour, potential to create new and important knowledge, and appropriateness of research design and methods. The effective use of innovative and interdisciplinary approaches will strengthen the proposal.
5. **Quality of Research Team:** Capabilities and track record of the proposed research team.
6. **Execution:** Coherence in the proposed execution plans, feasibility of carrying out the research within the given timeframe, and the cost-effectiveness and value for money of the research.
7. **Capability-Building:** Potential to boost and catalyse the development of local SoL research capabilities in Singapore.

Other considerations:

Proposals that involve multi- disciplinary and/or multi-institutions will be given prioritised consideration as one of our goals is to develop a vibrant SoL research community in Singapore.



Application for 4th SoL Grant Call

Aug: Whitepapers
Nov/Dec: Full Proposals

- Requests for Proposal, administrative guidelines, templates, etc, will be made available through the Offices of Research by June
- Whitepapers and Full Proposals must be submitted to the Ministry of Education (MOE) through the Host Institution



Q & A