

2021 TERTIARY EDUCATION RESEARCH FUND GRANT CALL

April 2021

General Information

The Tertiary Education Research Fund (TRF) funds applied educational research projects on a competitive basis across Singapore's publicly-funded universities, polytechnics and the Institute of Technical Education (ITE).

Through the TRF, the Ministry of Education (MOE) empowers these Institutes of Higher Learning (IHLs) to actively and continuously improve teaching and learning (T&L) practices **based on reliable research and data**. The TRF promotes effective and innovative T&L practices which have the potential to improve the quality of T&L across all IHLs in Singapore.

Each grant proposal submitted should have a total project value (TPV) of between \$40,000 and \$250,000 over a duration of 2 years.

TRF projects may take one of the following forms:

1. Ideation or Proof of Concept Projects

These projects develop existing ideas into implementable models (e.g. synthesis of existing principles or theories to develop a curriculum/lesson for the class or division).

2. Translation Projects

These projects implement proven and tested ideas in new contexts (e.g. the implementation of an idea from one faculty to another).

3. Scaling Projects

These projects implement tested ideas in a larger number of sites than currently in practice (e.g. implementing an idea across the different faculties in an institution).

4. Evaluation Projects

These projects verify the worth or effectiveness of new and/or existing projects, programmes, procedures and/or interventions, as well as the overall outcome or change (e.g. how successful the implementation of an intervention has been).

All TRF proposals are required to incorporate the measurement of student outcomes, since this is important for all teaching and learning-related research projects.

Principal Investigators (PIs) and co-Investigators (co-Is) must be full-time staff based locally in our Autonomous Universities (AUs), Polytechnics and ITE. Collaborators can be based overseas but the research funded under TRF has to be conducted in Singapore.

Results of these grant calls will be announced by March 2022.

Thematic Focus (Optional)

In addition to the general grant call, the 2021 grant call continues to invite proposals which address either of the following themes:

Theme 1: Developing a spirit of creativity and innovation in students

Singapore's education system has long been reputed for its rigour and success in producing academically outstanding students. However, it has also been critiqued for an over-emphasis on rote learning and high-pressure examinations, resulting in a results-oriented, risk-averse culture which stifles creativity and innovation. Based on the results of past Graduate Employment Surveys, graduates of the IHLs perceived that their education and school experience prepared them least for the competency "Creativity and Innovation" (compared to other indicators such as Oral Communication and Presentation Skills/ Critical Thinking and Problem Solving).

Given our national emphasis on innovation and enterprise, this thematic focus encourages IHLs to explore teaching and learning practices which develop creative thinking and problem-solving skills in students. Proposals addressing this thematic focus should clearly describe the pedagogical approaches or tools used to engender a spirit of creativity and innovation in students, as well as how such competencies can be meaningfully assessed.

Theme 2: Personalised Education through AI-enabled learning and assessment

Students start at different points and progress at varying rates in their learning throughout their progression from General Education, Higher Education and beyond into lifelong learning. However, there is a limit to the teacher's provision of continuous, detailed feedback for each student at scale, including providing more personalised attention to level-up slower learners who are struggling with their academic subjects.

Recognising the potential for technology to transform the delivery of education, this thematic focus encourages IHLs to explore how Artificial Intelligence (AI) may be used to effectively assess the unique learning needs of students, and/or leveraged to customise T&L practices to address these needs. This could take the form of AI-enabled learning systems which provide optimal, step-by-step learning pathways for each student, or AI-enabled autonomous evaluation tools which provide learning feedback to each student according to his unique pace and ability.

Review Process

The proposal will be reviewed and evaluated by an Expert Panel.

Evaluation Criteria

Proposals will be evaluated based on the following considerations:

- i. Clear aims and well-justified need for project;
- ii. A sound understanding of existing research literature in the area proposed;
- iii. Strong evidence of effectiveness and/or innovation of proposed approach;
- iv. A pedagogically-sound implementation plan which clearly links to the original aims of the projects;
- v. A sound evaluation plan to assess the aims and outcomes, in particular student outcomes; and
- vi. A feasible budget and resource plan for the project.

Application

Submitted proposals have to be verified by the IHL's Office of Teaching and Learning (OTL) and endorsed by the Director, OTL (DTL) before it can be considered for evaluation.

IHLs should send all endorsed proposals to MOE_HED_TRF@moe.gov.sg by **5 p.m. on 25 June 2021.**

For Applicant's Compliance

1. **The proposal shall be self-contained, comprise a maximum of 15 pages, and adhere to the following formatting: Arial font size 12, double-spacing, 1 inch margins.** All supporting documents (e.g. quotations) should be appended.
2. Word count and formatting limits stipulated in the online application form must be strictly adhered to.
3. Details of Research Proposal. Applicants should adhere to the guidelines listed in **Annex A** for the preparation of their proposals. They should seek guidance from their institutions' Teaching and Learning Offices where necessary.
4. Project Deliverables. PIs should identify project deliverables expected upon completion of project and describe how they align to the respective IHL's or MOE's needs. Project deliverables may include publications in journals on education research, development of software, development of classroom teaching materials, devices, etc.
5. Proposed Budget and Justification. Budgets should realistically reflect what is required to execute the scope of work that is proposed. Where possible, existing equipment and facilities should be used. Cost estimates should be credible, i.e. there should be no budget inflation. All proposed equipment must be supported by quotations, indicative breakdown to be provided for the types

of Materials and Consumables required. A list¹ of non-fundable items is found in guidelines circulated together with this call document. MOE also reserves the right to readjust the budget after the project is approved for funding.

6. All budgetary items should be clearly justified. **Budgetary items which lack proper justification will not be funded.**
7. Suggested External Reviewers. Prior consent should be obtained from suggested external reviewers before nomination. Doctoral students **should not** be nominated as external reviewers.

Supplementary Information

ANNEX A Details of Research Proposal

ANNEX B List of Academic Journals in Education Research

¹ This list is non-exhaustive and MOE reserves the right to make changes to the list.

Annex A**DETAILS OF PROJECT PROPOSAL**

The description of the proposed project should include:

- Scope of the project (Outline the aims of the proposal and identify the potential contributions of the proposal to improving student outcomes or teaching and learning practices)
- Review of existing literature
- Significance of the project (highlight focus of teaching and learning outcomes)
- Approach and Implementation (Provide a clear and appropriate plan with consideration to potential difficulties and limitations)
- Evaluation Plan/Method (Define the key milestones)
- Details of research team
- References

Please include references cited at the end of the document. References do not count towards the 15-page limit. Information provided should be sufficiently self-contained for an assessment of the proposal without further reference to other materials.

a) Scope of Project

- **Nature of project:** *What is the nature of the project (ideation/proof of concept, translation, scaling or evaluation project)?*
- **Aims of project (Research Question):** *What does the project want to achieve? How are these aims related to improving student outcomes in your classroom/institution?*
- **Target audience:** *Which group of students will benefit from the project?*

b) Review of Existing Literature

- *What does existing literature say about the aims and approach of the project?*
- *Are there any tensions/challenges discussed in published research that is worth highlighting, or that will inform the conduct of the project?*

c) Significance of the Project

- *Why is this project important in your institution/at the national level?*
- *How will the success of the project lead to improved student outcomes? It is important to identify specific learning outcomes that your project aims to enhance, explain why these are significant and how the impact of your proposal on these outcomes can be evaluated.*
- *Where appropriate, you are encouraged to explore local and international developments on learning outcomes, and to develop*

local benchmarks for learning outcomes that can be applied across different disciplines, or to specific disciplines, as well as for different education pathways, such as the applied degree pathway.

d) Approach and Implementation

- *What is the conceptual framework/design/method used to conduct the project?*
 - *Why was this framework/design/method chosen?*
 - *What does research say about the validity or challenges of this proposed approach?*
 - *How does the project propose to overcome potential challenges (if any)?*
- *How will the project aims be achieved?*
 - *What are the key development stages in the project?*
 - *What are the final deliverables for the project?*

e) Evaluation Plan/Method

- *How will the outcomes of the project be evaluated?*
- *How will student learning outcomes be measured?*
- *What kind of data will be collected? What method of analysis will be used?*
- *What are the alternative evaluation plans and method (if any)?*
- *Why was this evaluation plan proposed over alternative plans?*

f) Details of Research Team

- *What is the role and contribution of each member in the research team?*
- *Why are the PIs in a good position to lead the project?*

g) References

- *Please list in chronological order the titles and complete references to recent representative publications pertinent to this research proposal and the applicants' publications related to this research proposal.*

ANNEX B

A list of academic journals with a focus on education research is provided in the table below. Applicants are encouraged to publish their findings in at least one of these journals.

Name of Academic Journal	Brief Information
Academic Medicine	A monthly peer-reviewed medical journal covering research on medical education.
American Educational Research Journal	The American Educational Research Journal (AERJ) is the flagship journal of AERA, with articles that advance the empirical, theoretical, and methodological understanding of education and learning. It publishes original peer-reviewed analyses spanning the field of education research across all subfields and disciplines and all levels of analysis, all levels of education throughout the life span and all forms of learning.
Asia Pacific Journal of Education (APJE)	APJE focuses on education policy and governance, curriculum and pedagogy, and the translation of research for the everyday lives and practices of school leaders/management, educators and students with relevance to Asia, and the Pacific region.
Assessment & Evaluation in Higher Education	A peer-reviewed journal which publishes papers and reports on all aspects of assessment and evaluation with higher education. Its purpose is to advance understanding of assessment and evaluation practices and processes, particularly the contribution that these make to student learning and to course, staff and institutional development.
College teaching	A quarterly cross-disciplinary academic journal focused on the subject of teaching in higher education and the Scholarship of Teaching and Learning, with special focus on improving student learning.
Computers & Education	Computers & Education aims to increase knowledge and understanding of ways in which digital technology can enhance education, through the publication of high-quality research, which extends theory and practice.
Educational Psychologist	The scholarly essays, reviews, critiques, and theoretical and conceptual articles featured in this exceptional journal contribute to understanding issues, problems, and research concerning all aspects of educational psychology. From meta-analyses of studies probing the effectiveness of teaching methods to historical examinations of textbook standards, the journal provides insightful explorations of new educational concepts and accepted educational practices.

Educational Psychology Review	Educational Psychology Review is an international forum for the publication of peer-reviewed integrative review articles, special thematic issues, reflections or comments on previous research or new research directions, interviews, and research-based advice for practitioners - all pertaining to the field of educational psychology.
Educational Research Review	Educational Research Review is an international journal addressed to researchers and various agencies interested in the review of studies and theoretical papers in education at any level.
Higher Education	Examines educational developments throughout the world in universities, polytechnics, colleges, and vocational and education institutions.
Higher Education Research & Development	Publishes scholarly articles on the theory and practice of higher education and educational development.
International Journal for the Scholarship of Teaching & Learning (IJ-SoTL)	A peer-reviewed, international electronic journal published twice a year by the Center for Excellence in Teaching at Georgia Southern University to be an international vehicle for articles, essays, and discussions about the scholarship of teaching and learning (SoTL) and its applications in higher/tertiary education today.
International Journal for the scholarship of Teaching and Learning	An open, double-blind peer reviewed electronic journal for research and information about the scholarship of teaching and learning and its applications in higher education.
International Journal of Nursing Education Scholarship	A journal for original research and scholarship about health care delivery, organisation, management, workforce, policy and research methods relevant to health related professions.
Journal of Educational Psychology	The main purpose of the Journal of Educational Psychology® is to publish original, primary psychological research pertaining to education across all ages and educational levels. A secondary purpose of the Journal is the occasional publication of exceptionally important theoretical and review articles that are pertinent to educational psychology.
Journal of Engineering Education (JEE)	A quarterly peer-reviewed academic journal covering research on engineering education.
Journal of the Scholarship of Teaching and Learning (JoSoTL)	Founded in 2001, the Journal of the Scholarship of Teaching and Learning (JoSoTL) is a forum for the dissemination of the Scholarship of Teaching and Learning in higher education for the community of teacher-scholars.
Medical Education	Medical Education seeks to be the pre-eminent journal in the field of education for health care professionals, and publishes material of the highest quality, reflecting world wide or provocative issues and perspectives.

Medical Teacher	A leading international journal publishing research into medical education for teachers and trainers in the health professions.
New directions for teaching and learning	A journal that aims to inform readers about current and future directions in teaching and learning in post-secondary education, to illuminate the context that shapes these new directions, to illustrate these new directions through examples from real settings, and to propose ways in which these new directions can be incorporated into other settings.
Review of Educational Research	The Review of Educational Research (RER) publishes critical, integrative reviews of research literature bearing on education, including conceptualizations, interpretations, and syntheses of literature and scholarly work in a field broadly relevant to education and educational research
Review of Research in Education	Review of Research in Education (RRE), published annually, provides a forum for analytic research reviews on selected education topics of significance to the field. Each volume addresses a topic of broad relevance to education and learning, and publishes articles that critically examine diverse literatures and bodies of knowledge across relevant disciplines and fields.
Scholarship of teaching and learning in psychology	A peer-reviewed academic journal that features teacher-ready reviews of current research and contemporary theories as well as empirical research designed to foster systematic intentional changes to improve teaching and learning outcomes.
Studies in Higher Education	Publishes international research on higher education issues including institutional management and performance, teaching and learning.
Teaching and Learning Inquiry	An official publication of the International Society of the Scholarship of Teaching and Learning. It includes insightful research, theory, commentary, and other scholarly works that document or facilitate investigations of teaching and learning in the higher education,
Teaching and Teacher Education	An international journal concerned primarily with teachers, teaching, and/or teacher education situated in an international perspective and context.
Teaching Sociology	Publishes articles, conversations, notes, and reviews to advance the quality of sociology instruction and the scholarship of teaching and learning in the discipline.
The Internet and Higher Education	A quarterly peer-reviewed journal devoted to addressing contemporary issues and future developments related to online learning, teaching, and administration on the Internet in post-secondary settings.