

# Participant Information Form:

## Phase 1 Study

### Project Title

Empowering Educators: Enhancing STEM Competencies in Australian Primary Schools

Researcher	Supervisors		
Lucy Bennett Faculty of Education (SERC-STEM Education Research Centre) University of Canberra (02) 6201 2446	Dr Holly Tootell Faculty of Education (SERC-STEM Education Research Centre) University of Canberra 0438 258 068	Prof Thomas Lowrie Faculty of Education (SERC-STEM Education Research Centre) University of Canberra 0416 285 612	Dr Tracy Logan Faculty of Education (SERC-STEM Education Research Centre) University of Canberra (02) 6206 8973

### Project Aim

The aim of this research study is to address the challenges and opportunities related to Science, Technology, Engineering, and Mathematics (STEM) education in primary schools in Australia. The study recognises the significance of STEM education in preparing students for the rapidly evolving global landscape and seeks to make valuable contributions in this field.

The primary goal of the research is to identify the essential elements of a professional development framework that supports primary school teachers in integrating STEM effectively. While Australia has established policies for STEM education, there are significant challenges in implementing successful STEM education in primary schools. The research aims to bridge the gap in research by delving into the realms of interdisciplinary STEM integration and student-centered teaching approaches. By exploring strategies for seamless interconnection of STEM subjects and cultivating an engaging and participatory learning environment, the research aims to enhance students' understanding of these subjects and boost their motivation and enthusiasm for STEM.

Furthermore, the research will acknowledge the varying stages of teachers' careers and aims to tailor the professional development framework to meet the unique needs of both early-career (graduate) teachers and experienced (highly accomplished) teachers. This approach aligns with the Australian Institute for Teaching and

School Leadership (AITSL) standards and ensures that teachers receive the support and intervention necessary to implement new pedagogical approaches effectively.

Moreover, the research will employ a theoretical framework that recognises the significance of teachers' self-efficacy in STEM education. By enhancing teachers' confidence and self-efficacy through mentoring, observation, and collaboration, the research aims to improve instructional practices and the quality of learning experiences provided to students.

### **General Outline of the Project**

The research will primarily aim to uncover and define the essential elements of a professional development framework designed to assist primary school teachers in effectively integrating STEM education into their classrooms. This will involve an in-depth examination of teacher self-efficacy, interdisciplinary approaches, and student-centered teaching practices.

The insights and findings from the research will provide valuable guidance for enhancing teacher competence and confidence in teaching STEM subjects, fostering increased student engagement, and ultimately raising the overall quality of STEM education in Australian primary schools. This information will lay the groundwork for the development of practical strategies and interventions that can positively impact STEM education at the primary school level.

### **Participant Involvement: Phase 1 Study**

**Upon receiving consent from participants, the following involvement will take place:**

The Phase 1 study participants will be invited to complete a 30-40-minute questionnaire, online. Based on the Pre-Phase 1: Pilot study responses, the researcher has modified the wording of questions, ensuring clarity and comprehensiveness to improve the reliability and validity of the collected data for Phase 1 of the research study. Collected data from the Pilot study of 10 participants was analysed to inform refinements to the Phase 1 questionnaire, ensuring its effectiveness for the subsequent main research study.

Participation in the research is completely voluntary and participants may, without any penalty, decline to take part or withdraw at any time without providing an explanation or refuse to answer a question.

### **Benefits of Participation**

Phase 1 of the research study, scheduled for Term 2, 2024, following the NAPLAN Testing and administration in Term 1, 2024, represents a significant progression in advancing understanding of STEM education among graduate and highly accomplished teachers in Australia. Building upon the insights gained from the pilot study, where feedback from 10 participants was carefully reviewed and incorporated, the questionnaire for Phase 1 has been refined to ensure its effectiveness. Participating in Phase 1 holds significant benefits for educators. By engaging with a larger pool of participants, the researcher aims to recruit 500 teachers Australia wide to contribute their valuable perspectives. The participants involvement in a 30–40-minute questionnaire will play a pivotal role in shaping the research outcomes and fostering improvements in STEM education practices within primary schools across Australia. Phase 1 of the research study will not only allow the researcher to delve deeper into the challenges and strengths faced by teachers across Australia but will also ensure the reliability and comprehensiveness of the data collected. The input of the participants will directly influence the development of strategies and support systems for educators, contributing to the advancement of STEM education in Australian primary schools.

The data collated throughout this research study may be used for Post-Doctoral Research following the completion of the PhD.

### **Risks of Participation**

The research study presents minimal risk to the teacher participants.

### **Confidentiality**

Only the researcher/s will have access to the individual information provided by participants. Privacy and confidentiality will be assured at all times. The research outcomes may be presented at conferences and written up for publication. However, in all these publications, the privacy and confidentiality of individuals will be protected.

### **Anonymity**

All reports and publications of the research will contain no information that can identify any individual and all information will be kept in the strictest confidence.

### **Data Storage**

The information collected will be stored securely on a password protected computer throughout the project and then stored at the University of Canberra for the required five-year period after which it will be destroyed according to university protocols.

### Future Research

As the researcher, I agree to having the information collected during the conduct of this research to be used in future research projects on related research areas. Any future use of the data will comply with any conditions imposed by the Human Research Ethics Committee of the University of Canberra.

Upon completion of this research, future research avenues may explore the long-term impacts of the implemented professional development framework on teachers' self-efficacy, student engagement, and STEM learning outcomes. Additionally, post-doctorate research could focus on the scalability and sustainability of the framework in diverse educational contexts and its adaptation to other subject areas.

### Ethics Committee Clearance

Pilot phase (Pre-Phase I) of the project: Approved by HREC on 31/01/24 (HREC –13636).

Phase 1 (Post Pilot phase) of the project: Approved by HREC on 16/04/24 (HREC –13858).

### Queries and Concerns

Queries or concerns regarding the research can be directed to the researcher and/or supervisor. Contact details are at the top of this form.

If you have any complaints or reservations about the ethical conduct of this research, you may contact the University of Canberra's Research Ethics & Integrity Unit team via telephone 02 6206 3916 or email [humanethicscommittee@canberra.edu.au](mailto:humanethicscommittee@canberra.edu.au) or [researchethicsandintegrity@canberra.edu.au](mailto:researchethicsandintegrity@canberra.edu.au)

If you would like some guidance on the questions you could ask about your participation please refer to the Participants' Guide located at <https://www.canberra.edu.au/research/graduate-research/current-research-students/study/research-project-management/integrity-and-ethics/ethics/accordion/human-ethics/human-ethics-documents/Agreeing-to-participate-in-research.pdf>