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Dear Principal,

You are invited to take part in the research project: Secondary mathematics teachers' alternative designs for assessing problem-solving in grades 11 and 12 mathematics

The research is being conducted by the chief investigator, Professor Jim Tognolini and PhD student Miss Kelly Padayachee. The following information is provided as part of the University of Sydney Human Ethics approval process. Involvement of your school in the project is subject to approval from this body.

The nature of the research:

This mixed methods study is intended to explore how senior mathematics teachers interpret and implement NESA's alternative assessment (assignment) requirements in Years 11 and 12, explore what types of tasks teachers design to satisfy NESA's requirement, and what factors/issues impact teachers' decisions whilst creating such alternative tasks.

Teachers' beliefs impact their practice therefore, this research will also look at teachers' beliefs about mathematics learning and teaching and investigate whether their beliefs influence the types of tasks that teachers design and use to assess their senior students learning particularly focusing on the validity and effectiveness of using these alternative tasks to assess students problem-solving skills.

The participation of senior mathematics teachers in your school is very important. The information they provide will offer a descriptive picture of the ways in which senior mathematics teachers use these alternative assessments tasks to assess their senior students learning.

The information provided by teachers as confidential survey respondents will remain confidential and will be aggregated with responses of teachers from other schools. It will be shared in summary form only. If teachers wish to also participate in the interview their responses will be anonymous. Any detail that may reveal the school will also be removed. The focus is specifically on the types of alternative assessment tasks senior mathematics

teachers are using in order to understand their student's knowledge and problem-solving skills.

Research Question and Methods

This study aims to answer the following research question:

1. How do secondary mathematics teachers interpret NESA's requirement to develop 'assignments or investigation-style tasks'?
 2. What types of tasks do secondary mathematics teachers design in response to NESA's requirement to develop 'assignments or investigation-style tasks'?
 3. How valid are the tasks for assessing problem-solving that secondary mathematics teachers design in response to NESA's requirement?
 4. What factors/dilemmas influence teachers' designs of 'assignments or investigation-style tasks'?
- 4a. What relationship (if any) is there between secondary mathematics teachers' beliefs about mathematics learning and teaching, and the type of 'assignments or investigation-style tasks' that they design?

The research involves a survey (to answer the first two research questions) and individual semi-structured interviews with senior mathematics teachers (to answer the third and fourth research question).

Teachers may wish to **only** do the survey which is fine, **or they may choose to do both** the survey and the interview. The survey should not take more than 8-10 minutes, an email with the survey link will be sent out to the school administration to be forwarded to the teachers, and the interview will take around 50 minutes. If teachers are willing to participate in the interview a suitable time that will not in any way interfere with their workload or teaching hours will be set up by them and the school administration. If for any reason the teachers cannot find suitable timing during their school hours the researcher will be happy to send out a secured password one time only zoom link for the participants at their desired time.

If you are happy for your school and teachers to participate, more information about the project, including timelines and participant information and consent forms can be sent to you.

Please note that you, as the principal have the right to withdraw from part, or all of the project at any time, as do any of the participants. Any information collected will be immediately deleted upon your decision to resign from this project.

If you are happy to confirm your involvement with the project, subject to University of Sydney Human Ethics approval, please provide a formal letter or email stating your consent.

Yours Sincerely

Professor Jim Tognolini

Director, Centre for Measurement and Assessment | Faculty of Education & Social Work

Ms Kelly Padayachee

PhD Student