GUIDELINES ON PARTICIPANT INFORMATION SHEET & CONSENT FORM

(For Social, Behavioural and Educational Research studies)

1. Protocol title

Quantifying the Impact of Virtual Reality on Problem-Solving Skills in Medical Education

2. Principal Investigator and co-investigator(s), if any, with the contact number and organization:

PI: Associate Professor Khoo Eng Tat
Contact number: 6601 1203
Organization: Engineering Design and Innovation Centre, College of Design and Engineering, National University of Singapore

Co-PI: Kirsten Clare M. Negapatan
Contact number: 9776 4056
Organization: Engineering Design and Innovation Centre, College of Design and Engineering, National University of Singapore

Co-PI: Tristan Tan Tng En
Contact number: 9111 3429
Organization: Engineering Design and Innovation Centre, College of Design and Engineering, National University of Singapore

3. What is the purpose of this research?

You are invited to participate in a research study. This information sheet provides you with information about the research study. The Principal Investigator (the person in charge of this research) or his/her representative will also describe this research to you and answer all of your questions. Read the information below and ask questions about anything you don't understand before deciding whether or not to take part.

This research aims to evaluate the effectiveness of Virtual Reality (VR) in enhancing problem-solving skills among medical students, focusing on postpartum haemorrhage (PPH) management—a critical yet challenging condition to teach through traditional methods. Using immersive simulations, this study compares VR-based learning with lecture-based instruction to assess improvements in cognitive and procedural competencies.

4. Who can participate in the research? What is the expected duration of my participation? What is the duration of this research?

Inclusion Criteria:

- Currently enrolled in an undergraduate or postgraduate medical program.
- Proficiency in English to understand instructions and complete assessments.
- Available and willing to participate for the full study duration (2 hours).

Exclusion Criteria:

- Significant prior experience with VR or immersive simulations.
- Physical or sensory impairments affecting interaction with the VR system.
- Pregnant individuals or those with medical conditions contraindicated for VR use (e.g., epilepsy).
- Participants undergoing intensive emergency medicine training in postpartum haemorrhage management.

5. What is the approximate number of research participants involved?

50 participants.

6. What will be done if I take part in this research study?

Participants will complete pre- and post-assessments designed around Polya's Problem-Solving Framework. They will be assigned to either:

- The VR Group: Engages in interactive VR simulations of PPH scenarios.
- The Control Group: Receives traditional lecture-based instruction on PPH management.

Each session includes structured exercises to understand, plan, execute, and evaluate solutions to simulated medical scenarios.

7. How will my privacy and the confidentiality of my research records be protected?

No personal data is collected in the survey. All data collected will be kept in accordance to the University's Research Data Management Policy. Research data used in any publication will be kept for a minimum of 10 years before being discarded.

8. What are the possible discomforts and risks for participants?

Minimal risks are anticipated, though participants may experience slight discomfort such as motion sickness during VR sessions. Facilitators will be available to provide immediate support if needed.

9. What is the compensation for any injury?

If you follow the directions of the PI in charge of this research study and you are injured, the NUS will pay the medical expenses for the treatment of that injury. By giving your consent, you will not waive any of your legal rights or release the parties involved in this study from liability for negligence.

10. Will there be reimbursement for participation?

There is no reimbursement for participating in the anonymous survey.

11. What are the possible benefits to me and to others?

While there is no direct benefit, participants may gain valuable insights into emergency medical management. The findings will contribute to improving medical education practices, benefiting the healthcare sector.

12. Can I refuse to participate in this research?

Yes, you can. Your decision to participate in this research study is voluntary and completely up to you. You can also withdraw from the research at any time without giving any reasons, by informing the principal investigator and all your data collected will be discarded.

13. Whom should I call if I have any questions or problems?

Please contact the Co-Principal Investigator, Kirsten Clare M. Negapatan or Attn: Kirsten Clare M. Negapatan at telephone 9776 4056 and email kirsten@nus.edu.sg for all research-related matters and in the event of research-related injuries.

For an independent opinion specifically regarding the rights and welfare of research participants, you may contact a staff member of the College of Design and Engineering Ethics Review Committee (CDE ERC) at cdebox5@nus.edu.sg.

Online Consent Form

(Please make the necessary research-specific amendments.)

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I hereby acknowledge that:

1. I have agreed to take part in the above research.

2. I have received a copy of this information sheet that explains the use of my data in this research. I understand its contents and agree to donate my data for the use of this research.

3. I can withdraw from the research at any point of time by informing the Principal Investigator and all my data will be discarded. However, for online anonymous surveys, I understand that once I have clicked "Submit", it is not possible to withdraw as responses cannot be linked back to me.

4. I will not have any financial benefits that result from the commercial development of this research.

5. I consent / do not consent* to have the coded data made available for future research studies. This will be subject to an Institutional Review Board's approval.

6. I *agree / do not agree** to be re-contacted for future related studies. I understand that future studies will be subject to an Institutional Review Board's approval.

7. I *agree / do not agree** to the photo-taking/ audio-recording / video-recording of my participation in the research. I understand that although my name will be not associated with the photographs/video-recordings used in publication/presentation, I may still be identified.

   ☐ I agree to the information provided in the Participation Information Sheet and consent to participate.

   ☐ Disagree. Exit survey.