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Enhancing students' emotional skills with virtual reality games: a study plan for Hong Kong primary school

Submission date
31/10/2025

Recruitment status
Not yet recruiting

Registration date
19/11/2025

Overall study status
Ongoing

Last Edited
16/10/2026

Condition category
Other

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Primary school students in Hong Kong often face intense academic pressure, which can lead to negative emotions like stress, frustration, and boredom. These emotions can harm their mental health and learning. Emotional intelligence (EI)—the ability to understand and manage emotions—can help students cope better. However, current EI programs are often not designed for Hong Kong's culture and are hard to scale in schools.
This study aims to develop and test a new virtual reality (VR) game that helps children practice emotional skills in realistic school-like scenarios. The goal is to improve their emotional intelligence and reduce negative academic emotions in a fun, engaging, and culturally relevant way.

Who can participate?
Primary school students aged 6–12 years attending public primary schools in Hong Kong from middle-income families. They must not have neurodevelopmental conditions (like autism or ADHD) or severe physical or vision impairments that could prevent safe VR use. Both parents and the child need to provide informed consent, in line with local ethical guidelines.

What does the study involve?
This 18-month mixed-methods study follows a five-phase plan to create and test a VR game for building kids' emotional skills: (1) building the game as a tool to measure emotions during learning activities; (2) checking if the game accurately assesses emotional intelligence; (3) designing an 8-week program using the game in a class-randomized trial; (4) running the program in school classrooms; and (5) measuring if it improves emotional intelligence. Whole classes will be randomly assigned to either the intervention group, which plays the VR game (two 30-45 minute supervised sessions per week, starting easy and getting harder as kids succeed, focusing on emotions like enjoyment or frustration) or a wait-list control group that follows normal school routines. All kids will take emotional intelligence tests at the start, right after the program, and at 3 later. The research team also interviews teachers and students for deeper insights into how it works in real classrooms.

What are the possible benefits and risks of participating?
Students may benefit by learning how to better understand and manage their emotions, which could help them feel less stressed and more confident at school. The VR game is designed to be fun, safe, and age-appropriate. While the risks are very low, some students might feel mild dizziness or discomfort from using the VR headset. To reduce this, we will keep sessions short, include regular breaks, and closely monitor students during use. If any student feels unwell or upset, they can stop at any time and will be offered support from school counselors.

Where is the study run from?
The study is run by a research team from the Department of Psychology at The Education University of Hong Kong and will take place in primary schools in Hong Kong.

When is the study starting and how long is it expected to run for?
March 2027 to December 2027.

Who is funding the study?
No external grant funding was received.

Who is the main contact?
The main contact for the study is Prof. Susanna Siu-sze Yeung (email: siusze@eduhk.hk)

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
Development and evaluation of a virtual reality game-based intervention for enhancing emotional intelligence in Hong Kong primary school: study protocol

Acronym
VRGBIEEIHKPS

Study objectives
A culturally tailored virtual reality (VR) game-based intervention enhances Emotional Intelligence and mitigates negative academic emotions among Hong Kong primary students.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 10/06/2025, The Human Research Ethics Committee (HREC) (The Education University of Hong Kong c/o Research and Development Office, 10 Lo Ping Road, Tai Po, -, Hong Kong; +852 2948 8058; rdo@eduhk.hk), ref: 2024-2025-0579

Primary study design
Interventional

Study design
Multicentre class-randomized controlled trial

Study type(s)
Other

Health condition(s) or problem(s) studied
Emotional intelligence, academic emotions

Interventions
Current interventions as of 16/10/2026:

Intervention Group:
Prior to intervention, participants will complete baseline assessment of their emotional intelligence using the Mayer-Caruso-Salovey Emotional Intelligence Test (MSCEIT) test.
The eight-week intervention will consist of two 30-45 minute virtual reality game-based sessions per week (16 total sessions). Each session focuses on two academic emotions (e.g., enjoyment, frustration, etc.), and employs an error-reduced learning approach that gradually increases task difficulty once participants achieve ≥75% success. All sessions will be structured and supervised

by the research team to ensure consistency and protocol adherence.
Following the intervention period, assessments will be conducted immediately post-intervention, at the 3-month follow-up.

Control Group:
No intervention will be provided to control group participants during the study period. They will complete assessments at baseline, immediately after the intervention period and at the 3-month follow-up.

Our study will employ a cluster-randomized controlled trial design, with classes serving as the unit of randomization to prevent inter-group contamination. The process will be conducted as follows:
1. Random Sequence Generation: The random sequence will be generated using the recognized online randomization service, 'Randomizer.org'. A research assistant will input a list of the unique identification numbers for all eligible classes (not class names) into the tool.
2. Allocation Ratio: The allocation ratio will be set at 1:1 (intervention group vs. wait-list control group).
3. Allocation Concealment Mechanism: To ensure robust allocation concealment, the entire process will be managed by an independent research staff member who will not be involved in subsequent participant recruitment, intervention delivery, or data collection.
4. Implementation: Only after all participating classes have completed the baseline assessments will the principal researchers obtain the final allocation list from the independent staff member and commence the intervention sessions with the classes assigned to the intervention group.

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Previous interventions as of 15/10/2026:

Intervention Group:
Prior to intervention, participants will complete baseline assessment of their emotional intelligence using the Mayer-Caruso-Salovey Emotional Intelligence Test (MSCEIT) test.
The eight-week intervention will consist of two 30-45 minute virtual reality game-based sessions per week (16 total sessions). Each session focuses on two academic emotions (e.g., enjoyment, frustration, etc.), and employs an error-reduced learning approach that gradually increases task difficulty once participants achieve ≥75% success. All sessions will be structured and supervised by the research team to ensure consistency and protocol adherence.
Following the intervention period, assessments will be conducted immediately post-intervention, at the 3-month follow-up.

Control Group:
No intervention will be provided to control group participants during the study period. They will complete assessments at baseline, immediately after the intervention period, at the 3-month follow-up and 6-month follow-up.

Our study will employ a cluster-randomized controlled trial design, with classes serving as the unit of randomization to prevent inter-group contamination. The process will be conducted as follows:
1. Random Sequence Generation: The random sequence will be generated using the recognized online randomization service, 'Randomizer.org'. A research assistant will input a list of the unique identification numbers for all eligible classes (not class names) into the tool.
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Previous interventions:

Intervention Group:
Prior to intervention, participants will complete baseline assessment of their emotional intelligence using the Mayer-Caruso-Salovey Emotional Intelligence Test (MSCEIT) test.
The eight-week intervention will consist of two 30-45 minute virtual reality game-based sessions per week (16 total sessions). Each session focuses on two academic emotions (e.g., enjoyment, frustration, etc.), and employs an error-reduced learning approach that gradually increases task difficulty once participants achieve ≥75% success. All sessions will be structured and supervised by the research team to ensure consistency and protocol adherence.
Following the intervention period, assessments will be conducted immediately post-intervention, at the 3-month follow-up, and at the 6-month follow-up.

Control Group:
No intervention will be provided to control group participants during the study period. They will complete assessments at baseline, immediately after the intervention period, at the 3-month follow-up and 6-month follow-up.

Our study will employ a cluster-randomized controlled trial design, with classes serving as the unit of randomization to prevent inter-group contamination. The process will be conducted as follows:
1. Random Sequence Generation: The random sequence will be generated using the recognized online randomization service, 'Randomizer.org'. A research assistant will input a list of the unique identification numbers for all eligible classes (not class names) into the tool.
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4. Implementation: Only after all participating classes have completed the baseline assessments will the principal researchers obtain the final allocation list from the independent staff member and commence the intervention sessions with the classes assigned to the intervention group.

Intervention Type
Behavioural

Primary outcome(s)
1. Emotional intelligence measured using Mayer-Caruso-Salovey Emotional Intelligence Test (MSCEIT) test at baseline, immediately post-intervention and at the 3-month follow-up

2. Academic Emotions measured using the Achievement Emotions Questionnaire-Elementary School (AEQ-ES) at baseline, immediately post-intervention, and at the 3-month follow-up

3. Social Competence measured using the Social Competence and Behavior Evaluation Short Form (SCBE-30) at baseline, immediately post-intervention and at the 3-month follow-up

Previous Primary outcomes as of 15/10/2026:
1. Emotional intelligence is measured using Mayer-Caruso-Salovey Emotional Intelligence Test (MSCEIT) test at baseline, immediately post-intervention, at the 3-month follow-up, and at the 6-month follow-up
2. Academic Emotions is measured using the Achievement Emotions Questionnaire-Elementary School (AEQ-ES) at baseline, immediately post-intervention, at the 3-month follow-up, and at the 6-month follow-up
3. Social Competence is measured using the Social Competence and Behavior Evaluation Short Form (SCBE-30) at baseline, immediately post-intervention, at the 3-month follow-up, and at the 6-month follow-up

Key secondary outcome(s)
1. In-Game Performance measured using back-end data capturing the behavioral measures of emotional intelligence, including emotion recognition accuracy, response time to emotional stimuli, and decision patterns in emotionally challenging scenarios at end of the intervention at baseline, immediately post-intervention and at the 3-month follow-up

Previous key secondary outcome as of 15/10/2026:
In-Game Performance is measured through back-end data capturing the behavioral measures of emotional intelligence, including emotion recognition accuracy, response time to emotional stimuli, and decision patterns in emotionally challenging scenarios after the intervention at baseline, immediately post-intervention, at the 3-month follow-up, and at the 6-month follow-up

Completion date
31/12/2027

Eligibility

Key inclusion criteria
1. Primary school students aged 6-12 years
2. Enrolled in public primary schools within Hong Kong with middle socioeconomic backgrounds to control for potential confounding effects of family income and educational resources
3. No neurodevelopmental disorders (e.g., autism, ADHD) or severe physical/visual conditions that would prevent normal participation in VR activities
4. Both parents and students provide informed consent, in accordance with local ethical guidelines

Participant type(s)
Learner/student, Other

Healthy volunteers allowed
No

Age group
Child

Lower age limit
6 Years

Upper age limit
12 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
Does not meet inclusion criteria

Date of first enrolment
01/03/2027

Date of final enrolment
31/07/2027

Locations

Countries of recruitment
Hong Kong

Study participating centre
Primary School
Hong Kong
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Sponsor information

Organisation
The Education University of Hong Kong

Funder(s)

Funder type
University/education

Funder Name
No external grant funding was received

Results and Publications

Individual participant data (IPD) sharing plan

The final de-identified dataset generated from this trial (including EI and academic emotion scores), the statistical analysis code, and the study protocol will be made publicly available in a recognized data repository (e.g., Open Science Framework) upon study completion. The VR game materials will not be publicly available due to intellectual property considerations but can be made available to qualified researchers for non-commercial, academic purposes upon reasonable request to the corresponding author and with a completed data sharing agreement.

IPD sharing plan summary

Available on request, Stored in publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet			07/11/2025	No	Yes
Participant information sheet			07/11/2025	No	Yes