

RESEARCH PARTICIPANT CONSENT FORM
Mixed Reality Hybrid Classroom
Study IRB number: 2025-157
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Computer Science
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Key Information

Please take time to review this information carefully. This is a research study. Your participation in this study is voluntary which means that you may choose not to participate at any time without penalty or loss of benefits to which you are otherwise entitled. You may ask questions to the researchers about the study whenever you would like. If you decide to take part in the study, you will be asked to sign this form, be sure you understand what you will do and any possible risks or benefits.

We are conducting the study to investigate the effectiveness of a remote lecture attendance approach based on mixed reality (MR). Mixed reality is a technology that allows bridging geographic distance in an effective way, by acquiring the remote sites and integrating them seamlessly into the local site. We are developing a remote lecture attendance system that promises the effective and unobtrusive integration of the remote students into the local classroom. You will serve as an instructor using our system to give a short mock-lecture on solving quadratic equations. You will be given the slides to use for the presentation. The purpose of the study is to collect objective and subjective data regarding your use of our system. Your involvement will not exceed 60 minutes.

What is the purpose of this study?

The purpose of the study is to understand which aspects of our MR remote lecture attendance system work and which do not. Research questions include: can the instructor monitor the local and remote students, noticing when a student raises their hand to ask a question? We will compare our system to conventional video conferencing (like Zoom). Ultimately we hope to build an effective and unobtrusive system for remote lecture attendance.

What will I do if I choose to be in this study?

You will be asked to read the consent form and ask any questions you might have. Should you decide to participate you will have to sign the consent form. Then you will be asked to provide your age, gender, and prior experience with XR applications. You will be asked to teach a 10 minute lecture 2 times. The lecture is on solving quadratic equations (i.e., $ax^2 + bx + c = 0$). You will be given the lecture slides to follow. You will be giving the lecture in a classroom with 10 local students. There will also be 10 remote students. One time you will be using a zoom-like video conferencing system to see the remote student videos on a laptop in front of you. The other two times you will be wearing an MR headset that lets you see the local classroom and local students but also the remote students. Each time you have to acknowledge if one of the local or remote students raises their hand (to ask a question), or looks away from the instructor giving the lecture or their screen (to manifest their disengagement from the lecture). You will be asked to complete a questionnaire after the session. There will be a single session and it will not take more than 30 min of your time. Additionally, we will record the audio and video of the session. The agreement to be recorded is required for participation. All data collected will be securely stored on a computer with password protection, accessible only to the research team members.

How long will I be in the study?

The total time commitment will not exceed 60 minutes.

What are the possible risks or discomforts?

One risk is cybersickness. Another risk is the collision with real world objects whose visibility is reduced by wearing the headset. Since the study employs a mixed reality headset that allows participants to see the real world environment, and not just a virtual world, these risks are very small. Seeing the real world anchors you and prevents cybersickness. Seeing the real world lets you see furniture and real world obstacles, preventing collisions. A third possible risk is neck strain due to the headset. You will be wearing

the headset for up to 40 minutes, i.e., when giving the 10min lecture two times, a short exposure that minimizes the risk of neck strain.

Breach of confidentiality is always a risk with data, but we will take precautions to minimize this risk as described in the confidentiality section.

Under federal law, Purdue researchers must report all incidents of discrimination, harassment, and/or retaliation in the Purdue workplace and/or educational environment to the Title IX Coordinator or Equal Opportunity/Affirmative Action Officer. “Harassment” includes sexual harassment, sexual violence, rape, and any non-consensual sexual act. “If you tell us something that makes us believe that you or others have been or may be physically harmed, we may report that information to the appropriate agencies.”

Are there any potential benefits?

There may be benefits to general knowledge and to society.

Will I receive payment or other incentive?

You will be compensated with a \$30 gift card via email within two months. According to the rules of the Internal Revenue Service (IRS), payments that are made to you as a result of your participation in a study may be considered taxable income.

Are there costs to me for participation?

There are no anticipated costs to participate in this research.

This section provides more information about the study

What happens if I become injured or ill because I took part in this study?

If you feel you have been injured due to participation in this study, please contact:

- **Voicu Popescu, popescu@purdue.edu**

Purdue University will not provide medical treatment or financial compensation if you are injured or become ill as a result of participating in this research project. This does not waive any of your legal rights nor release any claim you might have based on negligence.

The following disclosure(s) is(are) made to give you an opportunity to decide if this(these) relationship(s) will affect your willingness to participate in the research study.

- The data collected will not be used for commercial purposes.

Will information about me and my participation be kept confidential?

The project's research records may be reviewed by departments at Purdue University responsible for regulatory and research oversight.

This study is funded by the National Science Foundation.

The consent forms and questionnaire, printed on paper, will be kept in a secure location in the PIs office. No other identifiable research records will be collected. The consent forms will be destroyed (shredded) after the minimum time allowed by Purdue's IRB.

The study will have identifiable data such as signed consent forms, audio-visual recordings, and contact information. The data will be stored securely using Box, through Purdue's license. We will keep the consent forms at least as long as the minimum requirement of 3 years. We will keep the data on Box for at least three years after the study closure date. Therefore, the research records might be kept past publication. No one else will have access to it. We do not have any other planned uses for the data.

The results will be disseminated through publications in technical journals and conference proceedings.

Data will not be used in the future for additional research studies.

Researchers cannot guarantee full confidentiality as we can't control what subjects might share outside of the research environment.

What are my rights if I take part in this study?

You do not have to participate in this research project. If you agree to participate, you may withdraw your participation at any time without penalty. Simply inform the experimenter that you want to withdraw. After the study you cannot withdraw your data because we do not collect identifiable information, i.e., we would not know which answers are yours. Your decision to participate in the research will have no effect on your relationship with Purdue, the computer science department, or the experiments.

Who can I contact if I have questions about the study?

If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact Voicu Popescu through email at popescu@purdue.edu should you have additional questions.

To report anonymously via Purdue's Hotline see www.purdue.edu/hotline

If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at (765) 494-5942, email (irb@purdue.edu) or write to:

Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1010
155 S. Grant St.
West Lafayette, IN 47907-2114

Documentation of Informed Consent

I have had the opportunity to read this consent form and have the research study explained. I have had the opportunity to ask questions about the research study, and my questions have been answered. I am prepared to participate in the research study described above. I will be offered a copy of this consent form after I sign it.