# UNIVERSITY OF PENNSYLVANIA RESEARCH PARTICIPANT INFORMED CONSENT FORM

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| **Protocol Title:** | Collaborative Research: Advancing the science of STEM interest development with machine learning and Data-Driven Interviews |
| **Principal Investigator:** | Jaclyn Ocumpaugh, Ph.D.<br>Grad Sch of Education<br>3700 Walnut St<br>Philadelphia, PA 19104-6216<br>517-449-1504 |
| **Emergency Contact:** | Amanda Barany, Ph.D.<br>262-339-2515 |

## Research Study Summary for Potential Participants

You are being invited to participate in a research study. Participation is voluntary, and you should only participate if you completely understand what the study requires and what the risks of participation are. You should ask the study team any questions you have related to participating before agreeing to join the study. If you have any questions about rights as a human research participant at any time before, during or after participation, please contact the Institutional Review Board (IRB) at (215) 898-2614 for assistance.

The research study is being conducted to improve our understanding of how STEM educational simulation games can support enduring STEM interest in middle-school learners. We will do this using the What-If Hypothetical Implementations in Minecraft (WHIMC) learning system.

If you agree to join the study, you will be asked to complete the following research procedures: (1) complete short pre and post-tests and surveys about STEM knowledge and interests. (2) play and engage with the WHIMC learning system with the support of instructors. (3) answer brief in-the-moment interview questions during WHIMC play about goals, strategies, actions, intentions, and affective or motivational states.

Participation will last for the length of the camp, typically one week.

This study provides no direct benefits to participants, although you may gain astronomy knowledge during the camps. The most common risks of participation are discomfort or anxiety during interviews and data collection, but you can request to stop all or part of the study at any time if this occurs.

If you want to be removed from the study after it has started, you can consult with their instructor and withdraw participation. The instructor will find alternate work for you while the rest of the group participates in the intervention.

Please note that there are other factors to consider before agreeing to participate such as additional procedures, use of your personal information, costs, and other possible risks not discussed here. If you are interested in participating, a member of the study team will review the full information with you. You are free to decline or stop participation at any time during or after the initial consenting process.

## Why am I being asked to volunteer?

You are being asked to take part in a research study because they are a middle school student who might benefit from using a STEM educational simulation game. Participation is voluntary which means you can choose whether or not to participate.

If you do not understand what you are reading, do not sign it. Please ask the researcher to explain anything you do not understand, including any language contained in this form. If you decide to participate, you will be asked to sign this form. A copy of the form will be given to you so that you can find contact information and answers to questions about the study. You may ask to have this form read to you.

This consent form is written from the point of view of a research participant. If you are the parent or legal guardian of a minor or a legally authorized representative and will be providing consent on that person's behalf, the words "you" and "your" should be read as "your child" or "the research participant."

## What is the purpose of the study?

The purpose of the study is to learn more about how STEM educational simulation games can support enduring STEM interest in middle-school learners

## How long will I be in the study?

- The expected total during of your participation is 1 week. During that time, you will complete pre and post-tests and surveys (approximately 20 minutes each), play the WHIMC environment (approximately 2 hours each day of the event), and participate in brief interviews (less than 5 minutes each).
- The proposed study will be conducted from 2023-2025.

## What am I being asked to do?

- Complete short pre and post-tests and surveys about STEM knowledge and interests
- Play and engage with the WHIMC learning system with the support of instructors. We will collect screen captures of your computer screen while you play.

- Answer brief in-the-moment interview questions during WHIMC play about goals, strategies, actions, intentions, and affective or motivational states. These interviews will be recorded.

## What are possible risks or discomforts?

- You may experience discomfort or anxiety during interviews and data collection, but you can request to stop all or part of the study at any time if this occurs. To reduce the risks, interviews, tests, and surveys will be brief.
- While we are not collecting personally identifiable information about you, there are risks to confidentiality and privacy in voice recordings. To reduce the risks, we will delete all voice data once we transcribe it, strip any identifying information, and will only share the results in aggregate or as case studies with arbitrarily assigned identifiers.

## How will I benefit from the study?

- This study provides no direct benefits to you, although you may gain some astronomy knowledge by engaging with WHIMC.
- Through this study, we may learn about the best ways to design automated support for learners attempting to complete complex, open-ended learning tasks.

## What other choices do I have if I do not participate?

- If you choose not to participate, the instructor will find alternate work for you while the rest of the group participates in the intervention.

## Will I be paid for being in this study?

- There is no compensation for participation in this study.

## Will I have to pay for anything?

- You will not have to pay for anything to participate in this study.

## When is the Study over? Can I leave the Study before it ends?

- The overall study will take place from 2023-2026.
- You can elect to leave the study at any time. If you want to be removed from the study after it has started, you can consult with their instructor and withdraw participation. The instructor will find alternate work for you while the rest of the group participates in the intervention.
- Data from participants who withdraw will be destroyed.

This study is expected to end after all participants have completed all visits, and all information has been collected. This study may also be stopped at any time because:

- The Primary Investigator feels it is necessary for the welfare, rights, or safety of participants. Such an action would not require your consent, but you will be informed if such a decision is made and the reason for this decision.
- The Sponsor or the study Principal Investigator has decided to stop the study.

If you decide to participate, you are free to leave the study at any time. You may do this by contacting the investigator noted on page one of this form. Withdrawal will not interfere with your participation in the camp or event.

## Could I be withdrawn from the study?

You could be removed from the study if you do not sign the consent/assent form or if you elect to withdraw. The instructor will inform you if this happens and will find alternate work for you while the rest of the group participates in the intervention.

## How will my personal information be protected during the study?

We will do our best to make sure that the personal information obtained during the course of this research study will be kept private. However, we cannot guarantee total privacy. Your personal information may be given out if required by law. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used. The Institutional Review Board (IRB) at the University of Pennsylvania will have access to your records.

- Each participant will be assigned an arbitrary login.
- All data will be stored with reference to these logins, not by name. Teachers at the schools will have a mapping, giving them the ability to re-identify student data for their own grading purposes, but researchers will not have access to this mapping or the ability to re-identify students.
- Student interactions will be directly transmitted to secure servers where they are recorded in secure databases as log data. All paper-based assessments will remain in the possession of researchers until they can be entered into the secure database and stored in locked file storage.
- Screen captures will be removed from the laptops at the end of each day and transferred to a secured data storage device. Screen captures will consist of recordings of movements and actions made in the WHIMC game space; participant faces will not be captured, and associated audio data will be deleted. All screen capture data will be stored on our secure server, with the same protections as our other logged data from the system. Only the research team will have access to the screen capture recordings and analysis will be performed by first coding of relevant events and interactions in the recordings. Once coded, information from screen capture recordings will only be identified by deidentified login for analysis to ensure that any subsequent analysis can be performed without identifying information.
- All data and analysis results employed or generated by this project will be regularly and securely backed up to ensure against data loss due to hardware failures; Access to this data will be restricted to approved accounts held by researchers at Penn and Urbana-Champaign will be password protected.
- Penn and Urbana-Champaign will not retain any records linking subject names to data.
- The raw identifying data collected from the study are kept on a secure server for up to 7 years, after which they are destroyed, and any physical copies will be stored in a secure location for 7 years and then securely destroyed.

- All results made public through publications, or any other means will be stripped of any personally identifying information and provided in aggregate or as case studies with arbitrarily assigned identifiers.

## What may happen, in the future, to my information collected on this study?

Your information will be de-identified prior to storage for future use. De-identified means that all identifiers have been removed. The information could be stored and shared for future research in this de-identified fashion. The information may be shared with other researchers within Penn or other research institutions as well as pharmaceutical, device, or biotechnology companies. It would not be possible for future researchers to identify you as we would not share any identifiable information about you with future researchers. This can be done without again seeking your consent in the future, as permitted by law. The future use of your information only applies to the information collected on this study. If you change your mind, we will not be able to destroy or withdraw your information that was shared because all identifiers would have already been removed.

## Who can I call with questions, complaints or if I'm concerned about my rights as a research participant?

If you have questions, concerns or complaints regarding your participation in this research study or if you have any questions about your rights as a research participant, you should speak with the Principal Investigator listed on page one of this form. If a member of the research team cannot be reached or you want to talk to someone other than those working on the study, you may contact the IRB at the number on page one of this form.

When you sign this form, you are agreeing to take part in this research study. This means that you have read the consent form, your questions have been answered, and you have decided to volunteer. Your signature also means that you are permitting the University of Pennsylvania to use your personal information collected about you for research purposes within our institution. You are also allowing the University of Pennsylvania to disclose that personal information to outside organizations or people involved with the operations of this study.

A copy of this consent form will be given to you.

For participants unable to give authorization, the authorization is given by the following authorized participant representative (parent or guardian):

| _____ | _____ | _____ |
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| _ Authorized participant representative **[print]** | Authorized participant representative Signature | Date |

Provide a brief description of above person's authority to serve as the participant's authorized representative.

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_____
Name of Student **[print]**

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| Name of Person Obtaining Consent **[print]** | Signature | Date |