



# welcome to locispace

FINALIZED PROJECT

01.02.2023



1

**overview**

2

**user study**

3

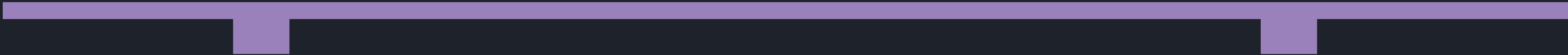
**changes**

4

**future**

1

2



overview

study



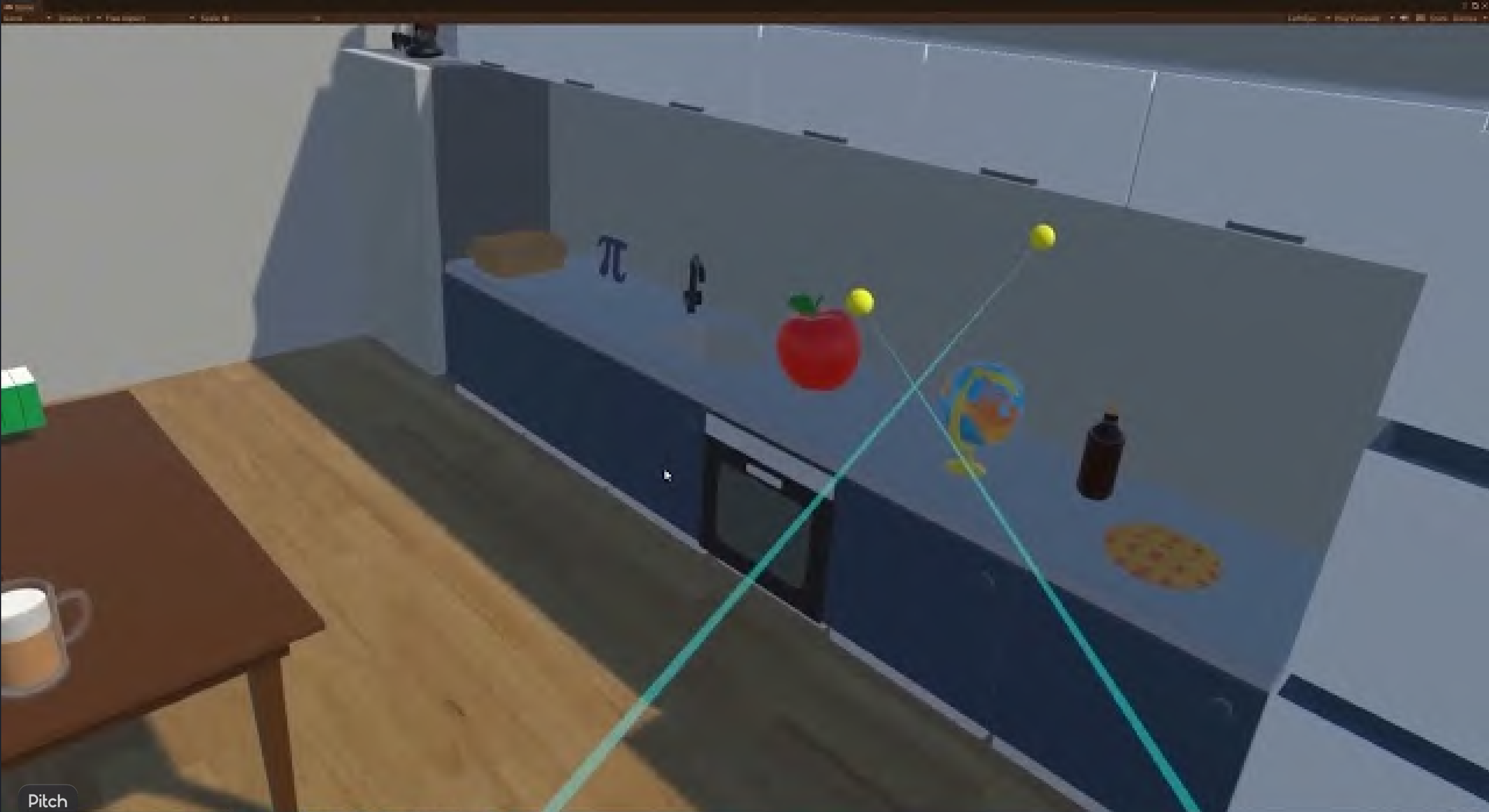


Pupils and students typically struggle when they have to **memorize large amounts of knowledge**. This skill is necessary in a **wide variety of fields** like languages, history, medicine or physics.



What are **our goals** with this project?

- **facilitate learning memory heavy topics**
- **adaptable** solution (multiple subjects)
- build on **proven** learning concepts
- support students with a **tool**
- gain insights into VR



Pitch

2

3

view

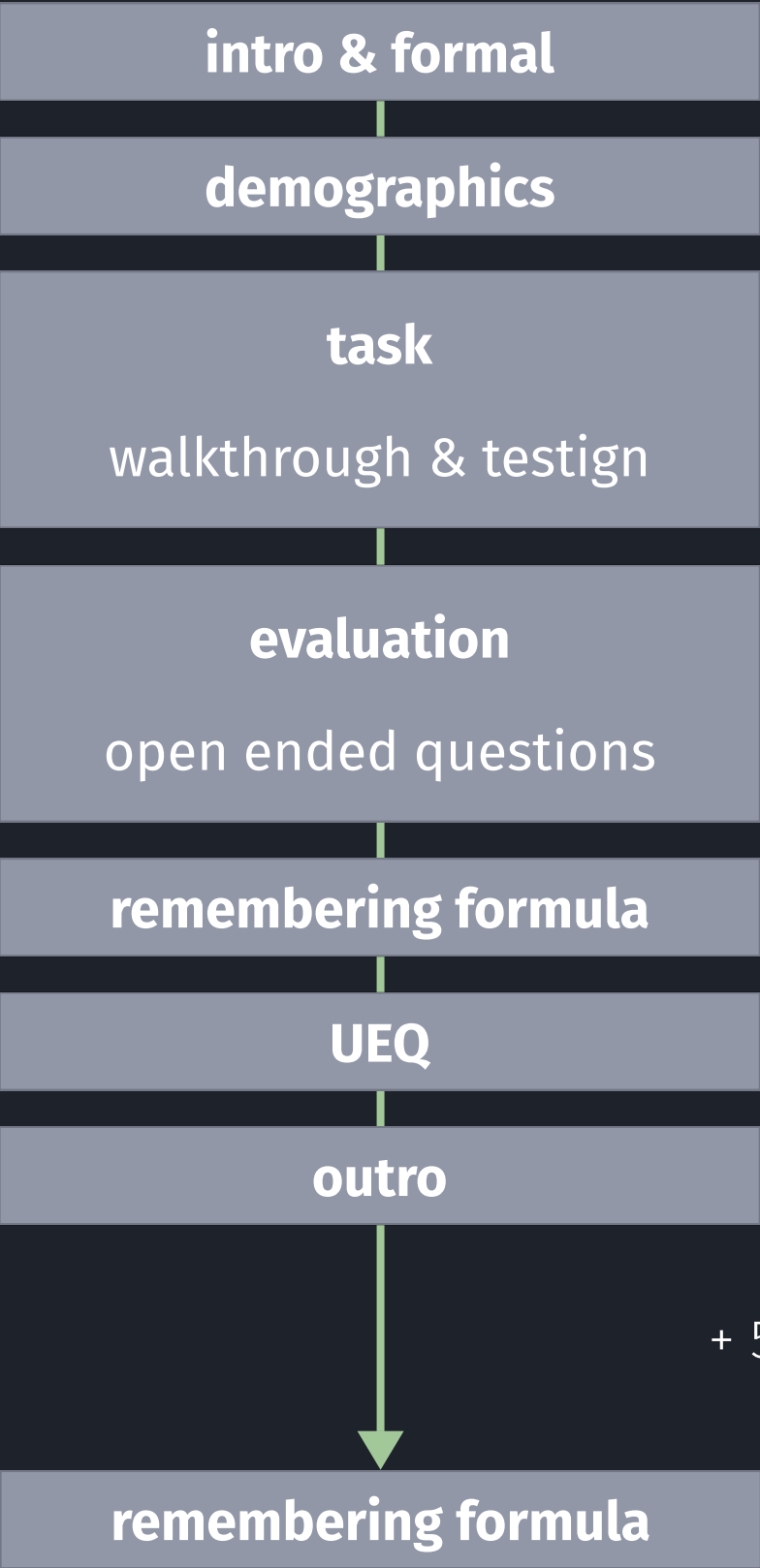
study

chang

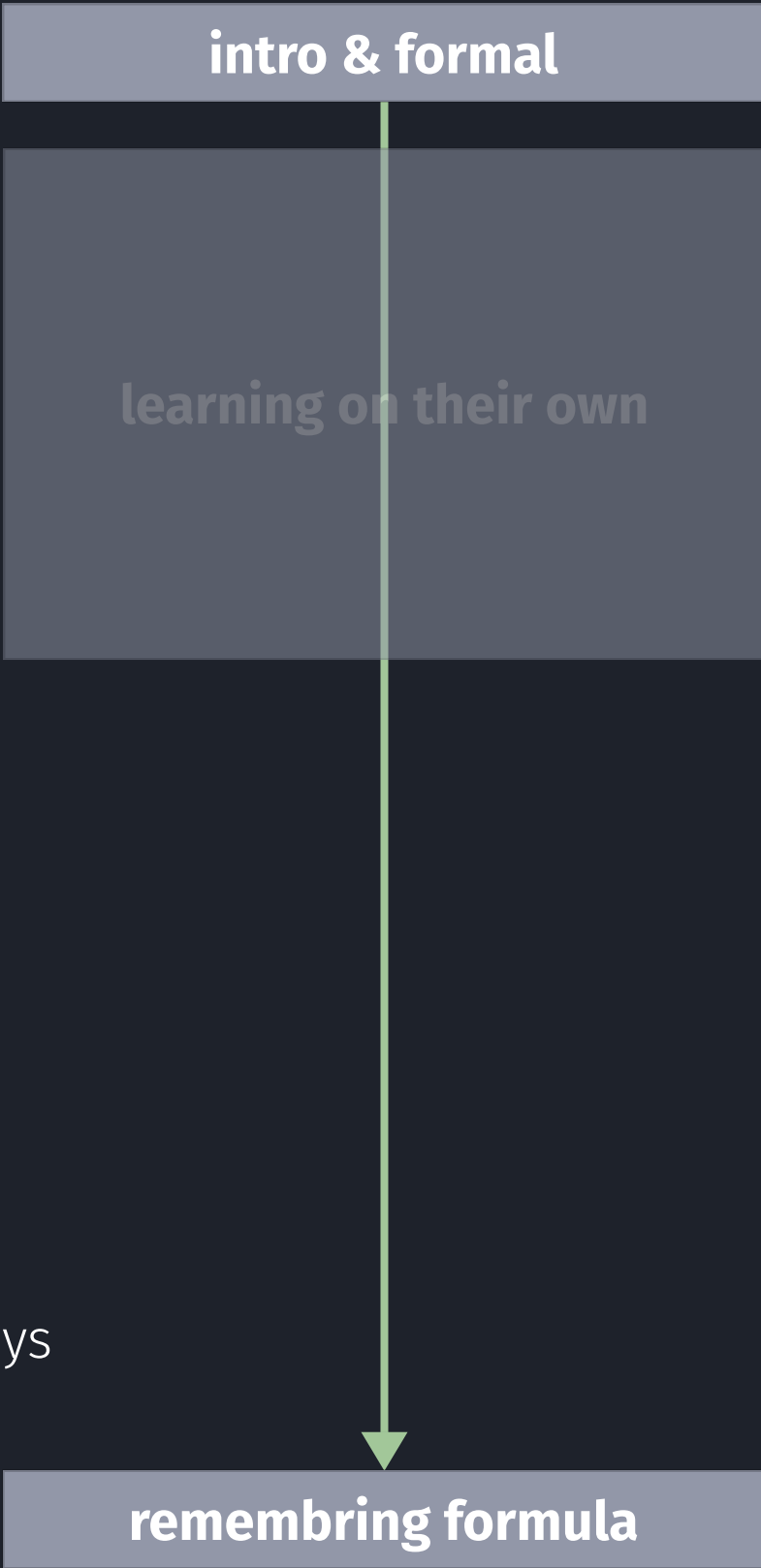




test group



control group



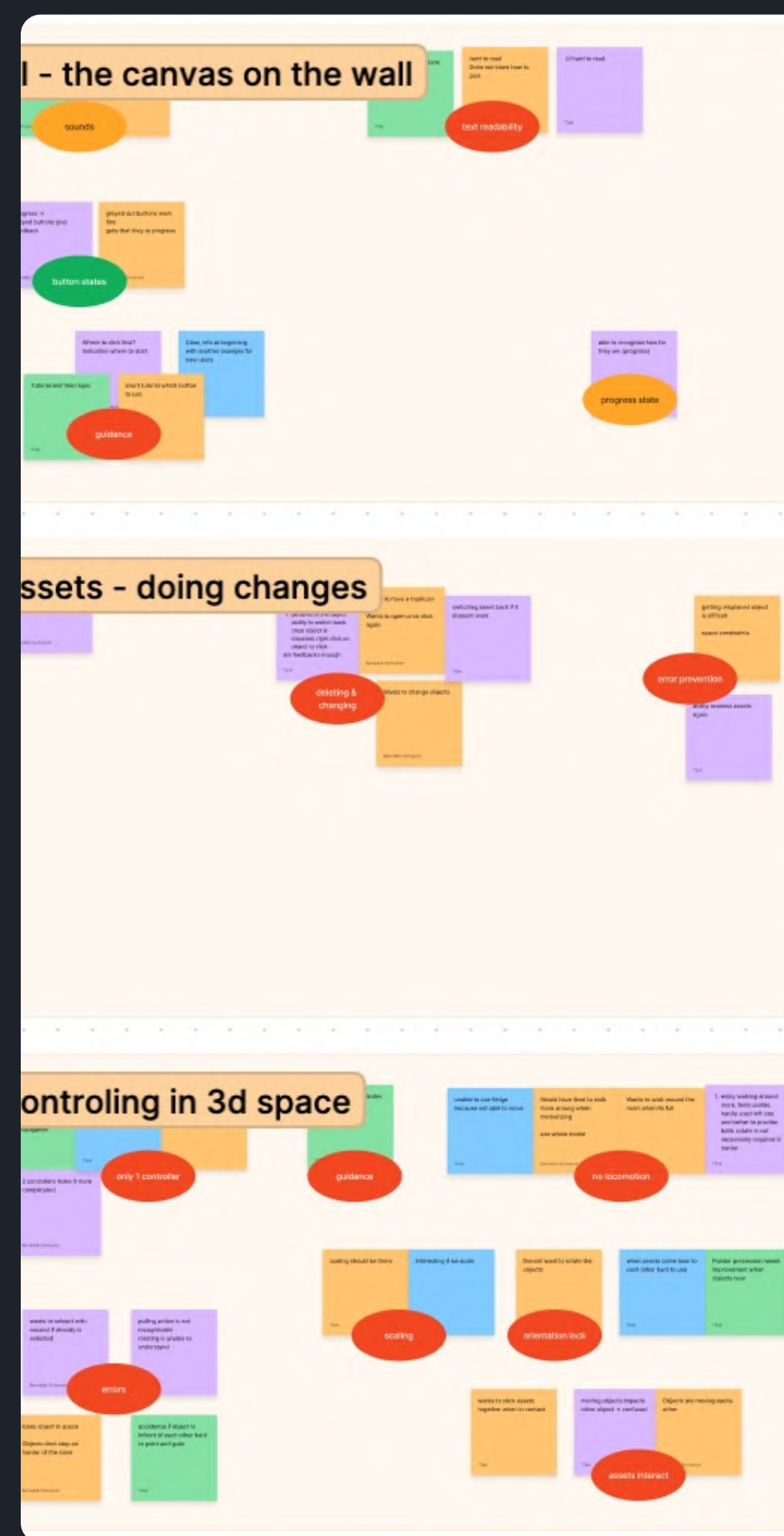
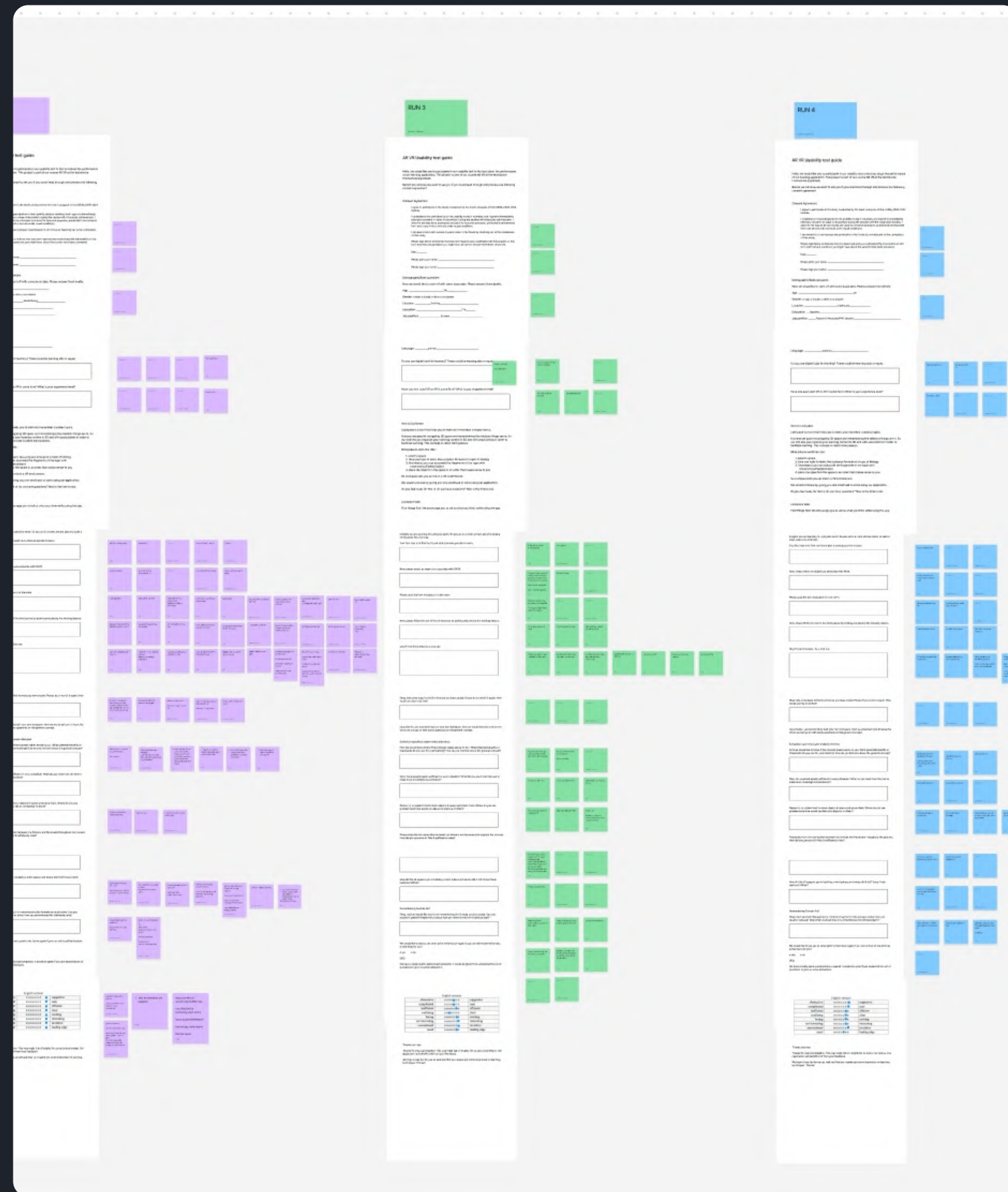
+ 5-7 days







## RESULTS





## Top insights

- all participants completed successfully → **no major flaws**
- between groups → **indicates improvement** over normal
- improve in some **details**
- ready to **add more** content



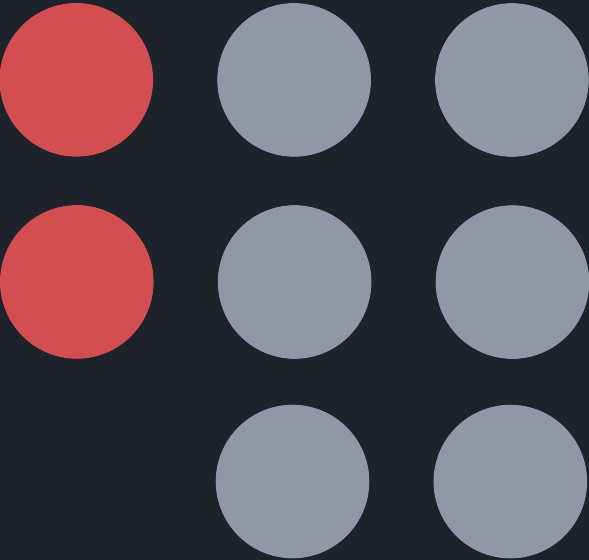
Room



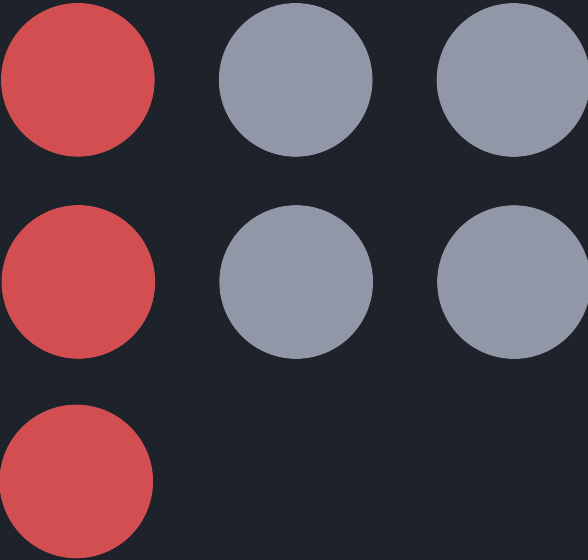
UI



Assets



Controls



3

4

changes

future



# CHANGES IN ROOM AND EXTERIOR

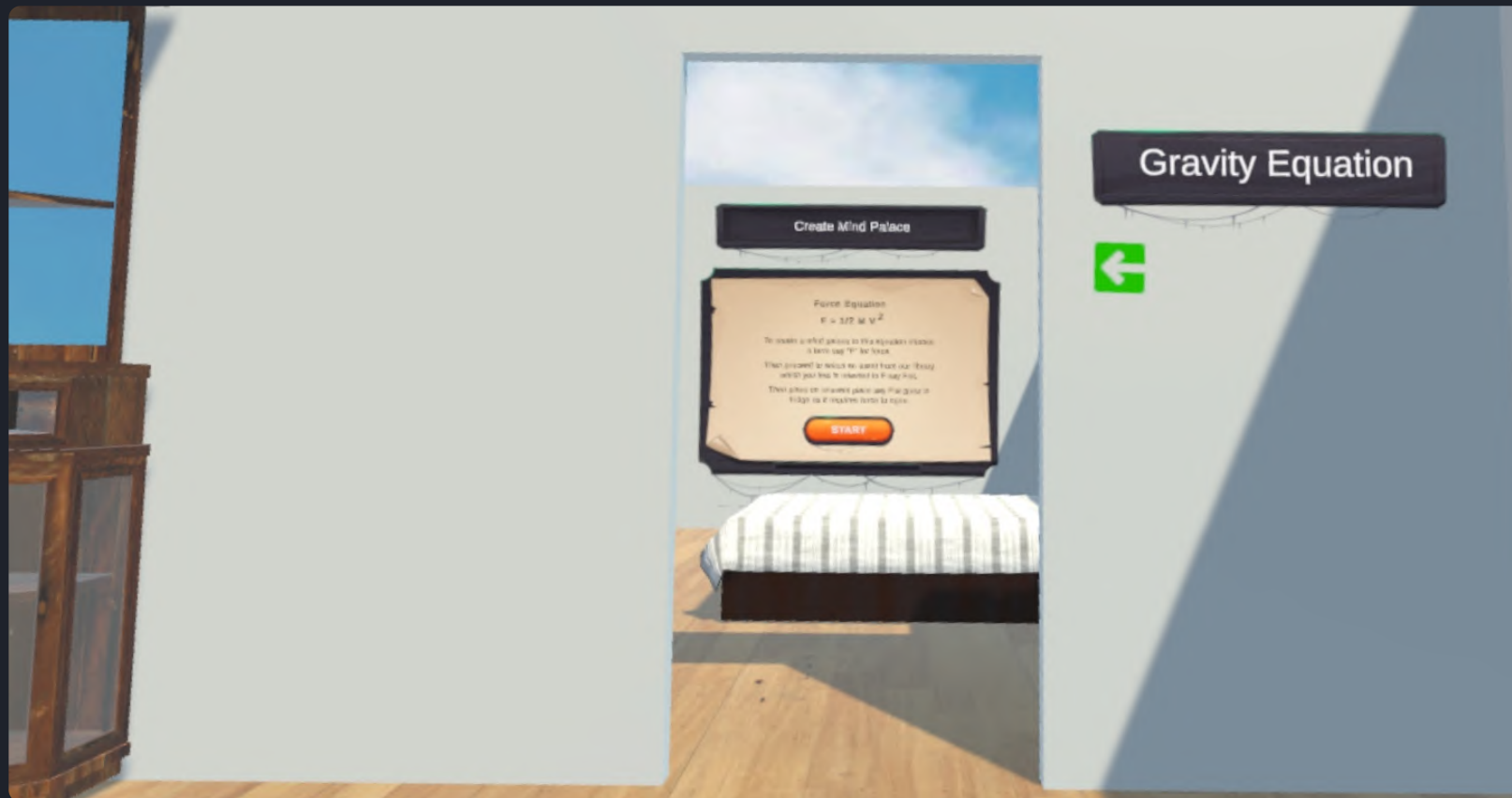


Larger Environment

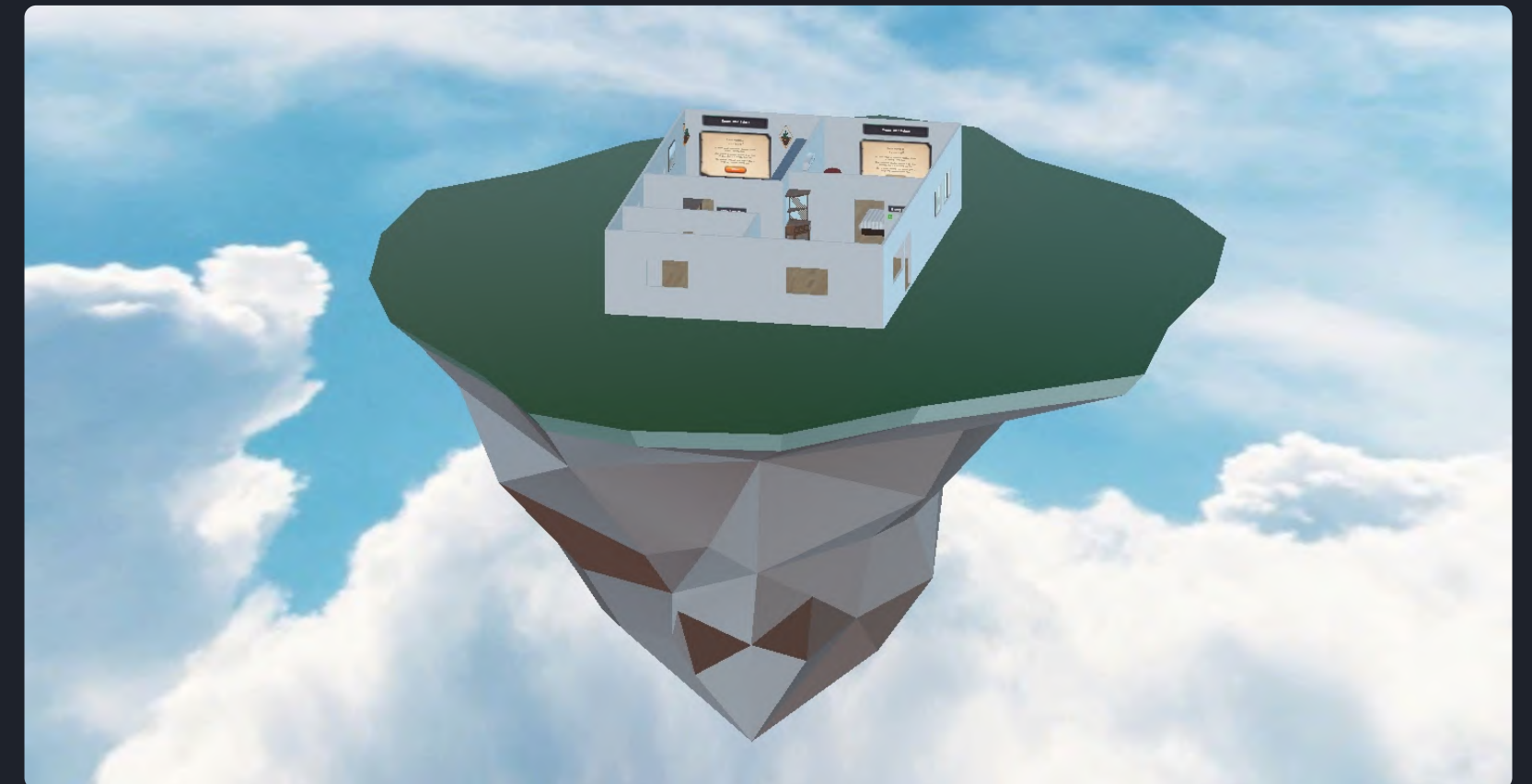


New Room

# CHANGES IN ROOM AND EXTERIOR

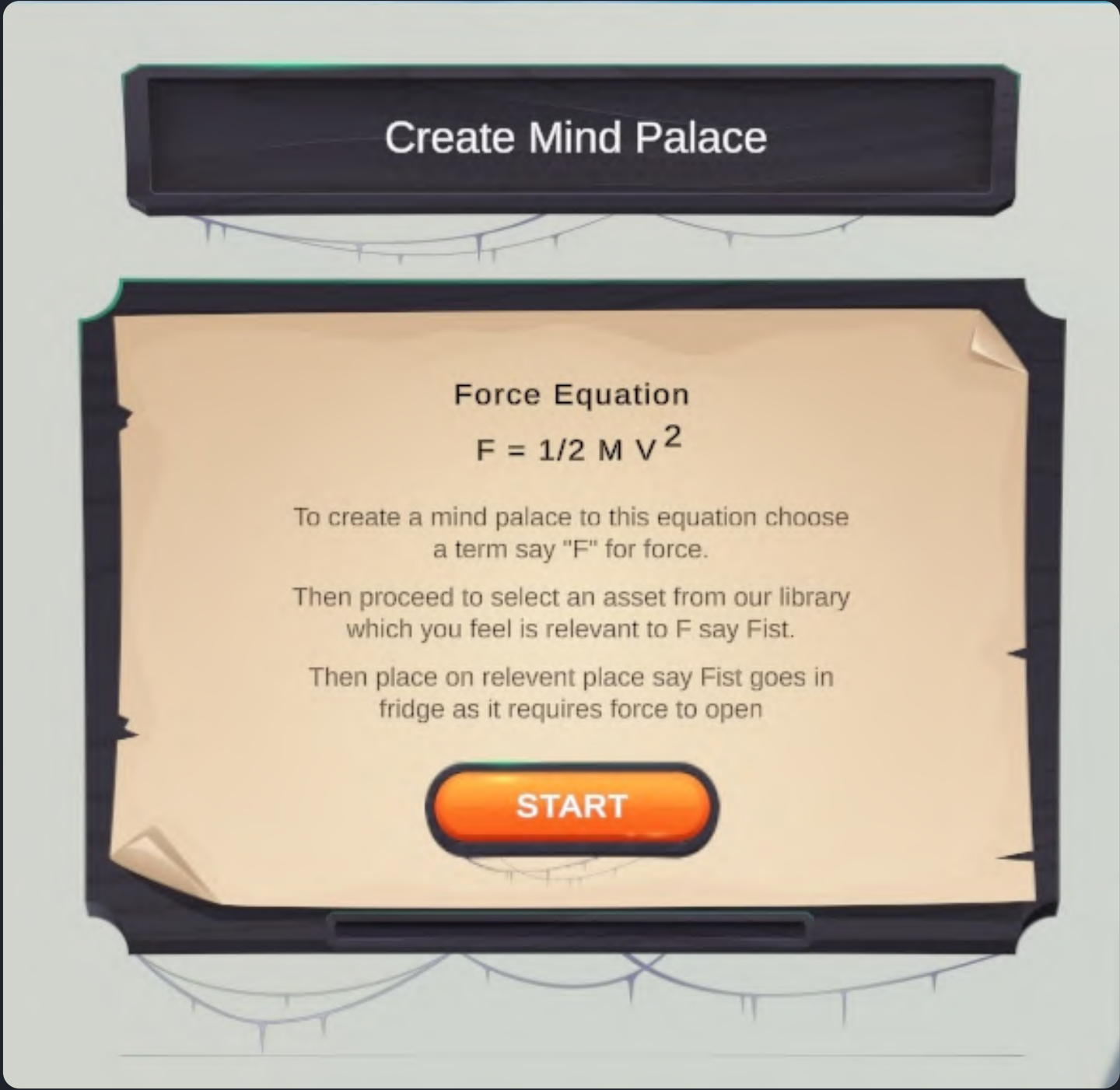


One Equation Per Room



New Exterior

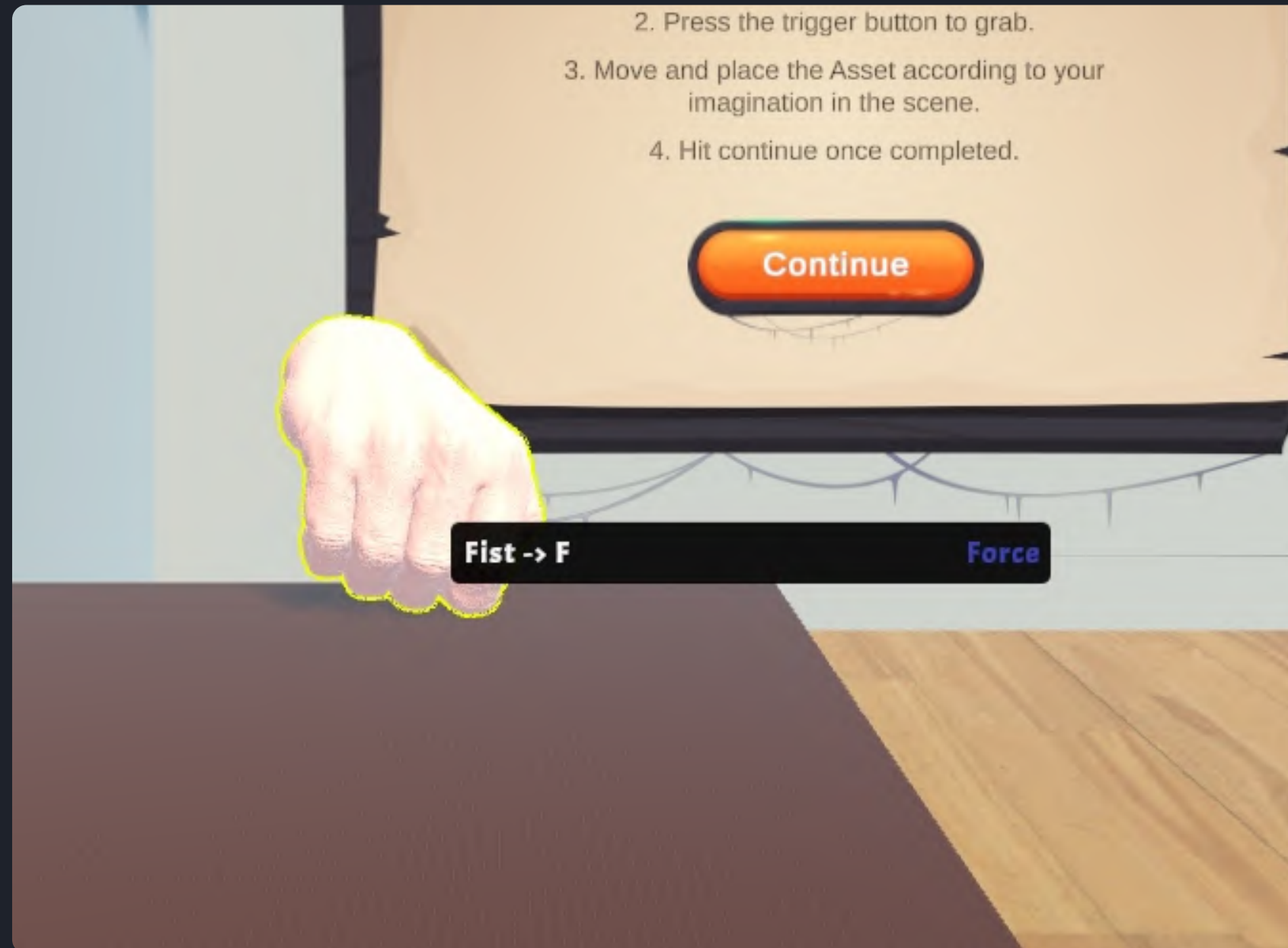




More Appealing



High Visibility



Hints for selected assets



Modifier Assets



## CHANGES FOR CONTROLS



Multi User Interaction



locomotion within the environment





4



ges

future



## What are our **future ideas**?

- City of Knowledge
- Customizable assets
- In-game points system
- Co-learning



TANMESH SHAH

BENEDIKT SCHRAMM

TILAK KAMKAR



open to answer your **questions!**





# backup slides



# LEARNINGS

## Room

**table position** ✓

**workflow freedom** ✓

**more rooms**

**assets need to fit to  
shelves**

**ordering assets freely** ✓

UI

readability

multistate buttons



asset thumbnails

users miss formula

sounds on click



select assets in UI

progress state

## Assets

**delete & change**

**modifier assets**

**outlines/colors**

**directly edit**

**hints / labels what it is**

**own assets**

**correlations**

**physics properties**

## Controllers

**using only 1 controller**

**hints/tutorial on  
controllers**

**option: scale**

**controls buggy**

**users want to walk  
with controller**

**lock orientation  
upwards**

**assets interact by  
accident**

# comprehensive test guide

## AR VR Usability test guide

Hello, we would like you to participate in our usability test to find out about the performance of our learning application. This project is part of our course AR VR at the technische Hochschule Ingolstadt.

Before we continue we want to ask you if you could read through and process the following consent agreement

### Consent Agreement

I agree to participate in the study conducted by the team Locispace of the UXDM\_ARVR 2022 module.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator. I allow for my data to be processed and used for research purposes, published in anonymized form and shared with externals under equal conditions.

I am aware that I can revoke my permission in the future by reaching out to the conductors of this study.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

Date: \_\_\_\_\_

Please print your name: \_\_\_\_\_

your name: \_\_\_\_\_


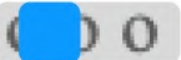
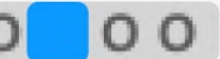

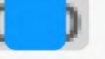
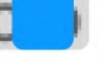

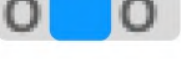


## conducting studys

- 5 participants (+ 4 for controll group)
- sessions à 25-60 min
- Monday - Thursday - Monday



UEQ results

English version		
obstructive	o o o o 	supportive
complicated	o o o o 	easy
inefficient	o o o 	efficient
confusing	o o 	clear
boring	o o o o o 	exciting
not interesting	o o o o o 	interesting
conventional	o o o o o o 	inventive
usual	o o o o 	leading edge

→ locispace is good at sparking interest but the usability can still be improved

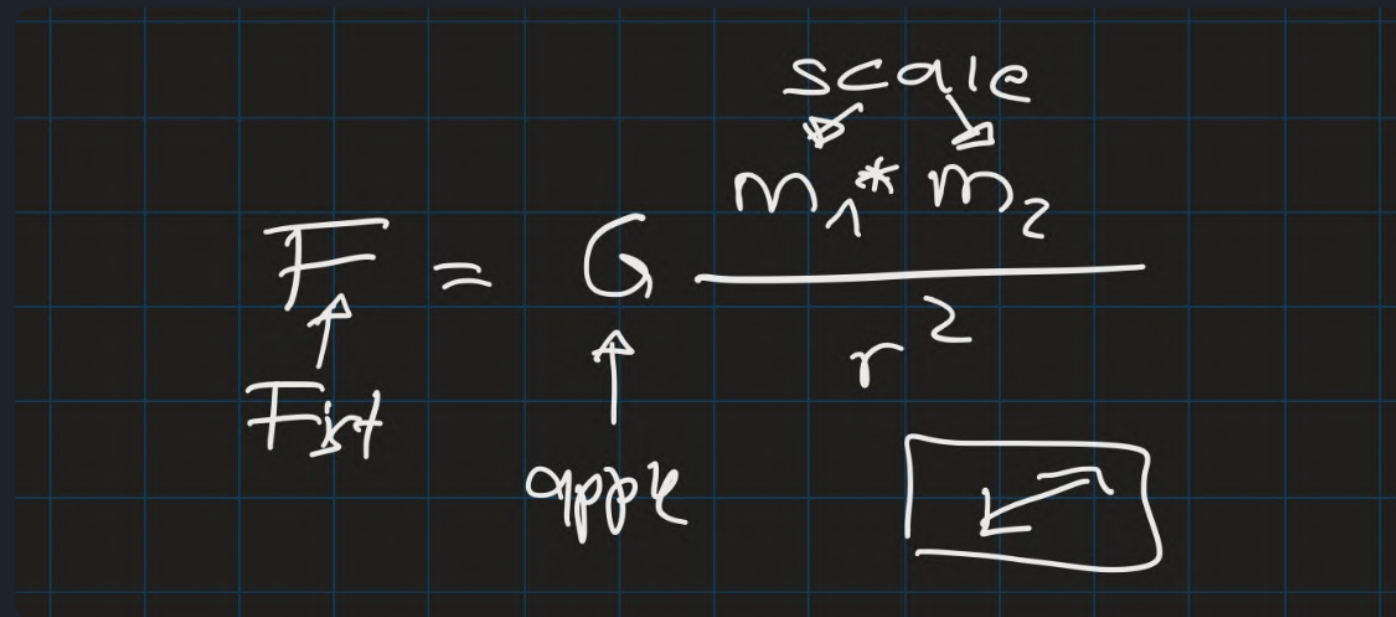
+ 5-7 days ...



## RESULTS

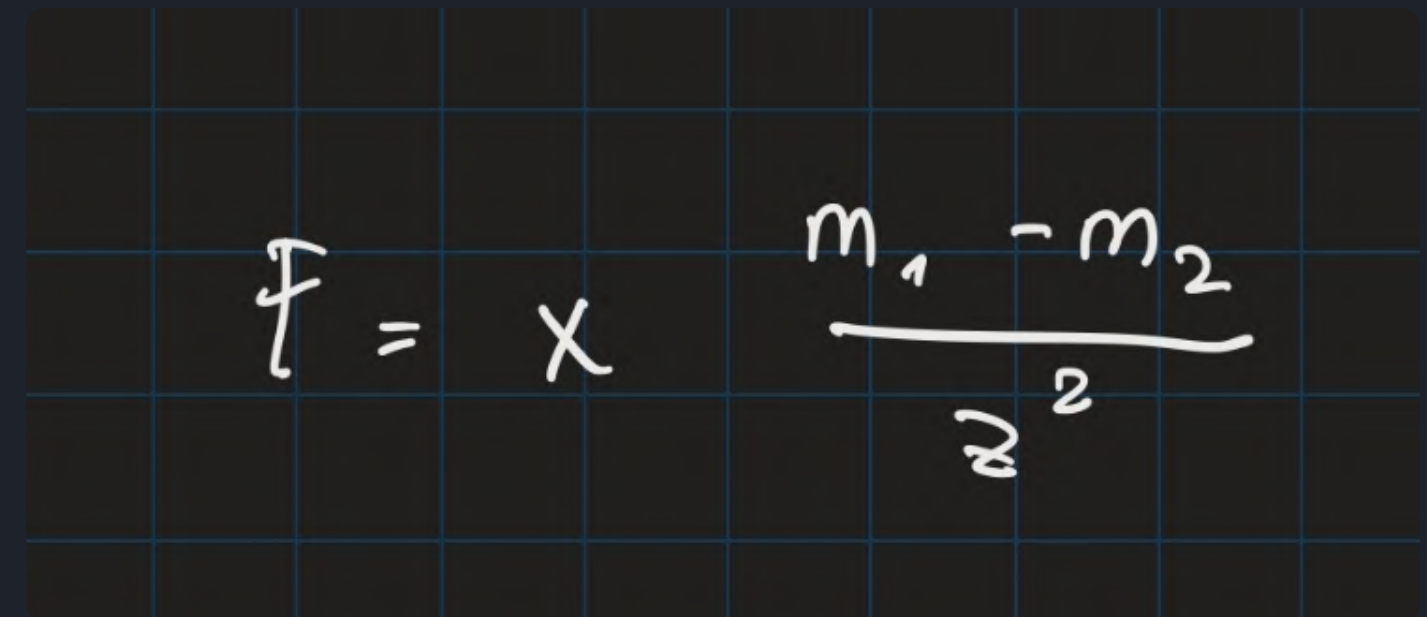
$$F = G \frac{m_1 m_2}{r^2}$$

original



A handwritten version of the gravitational force equation on a grid background. The equation is  $F = G \frac{m_1 m_2}{r^2}$ . Annotations include: an arrow pointing from  $F$  to  $F_{\text{int}}$ , an arrow pointing from  $G$  to the word "apple", an arrow pointing from  $m_1$  to the word "scale", and a box containing a double-headed arrow below the denominator  $r^2$ .

with locispace



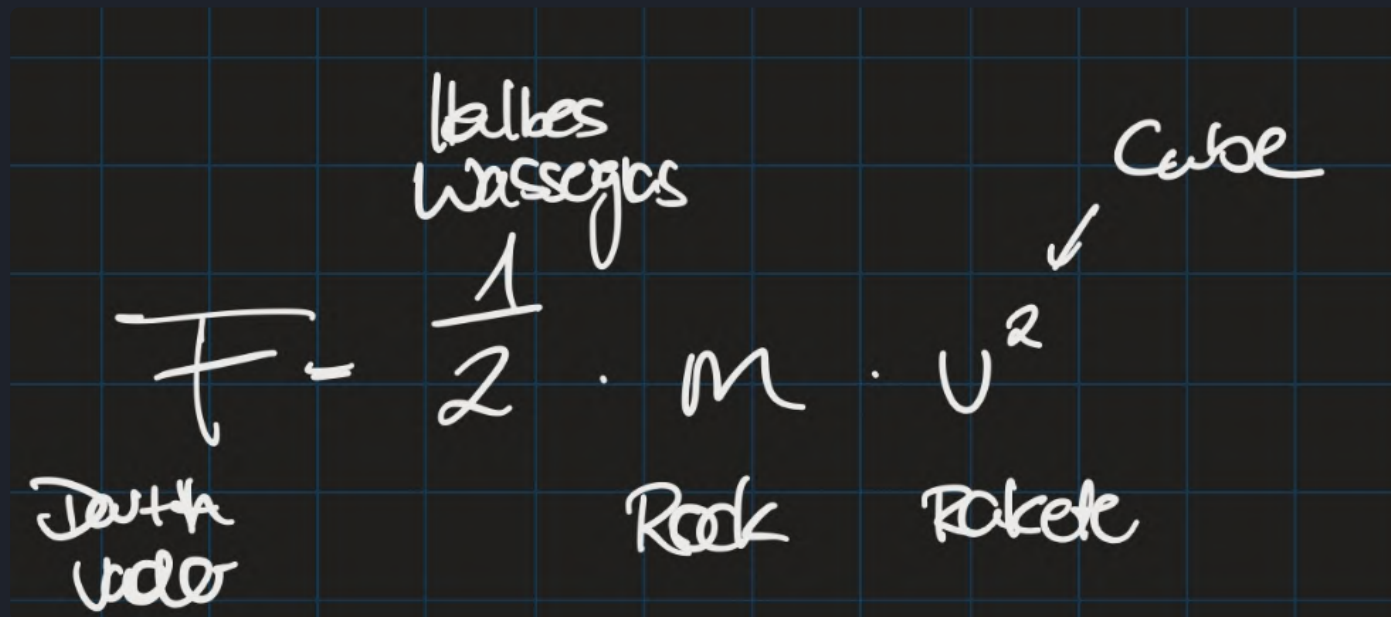
A handwritten version of the gravitational force equation on a grid background. The equation is  $F = x \frac{m_1 - m_2}{r^2}$ , where  $x$  is a placeholder for the gravitational constant.

traditional

## RESULTS

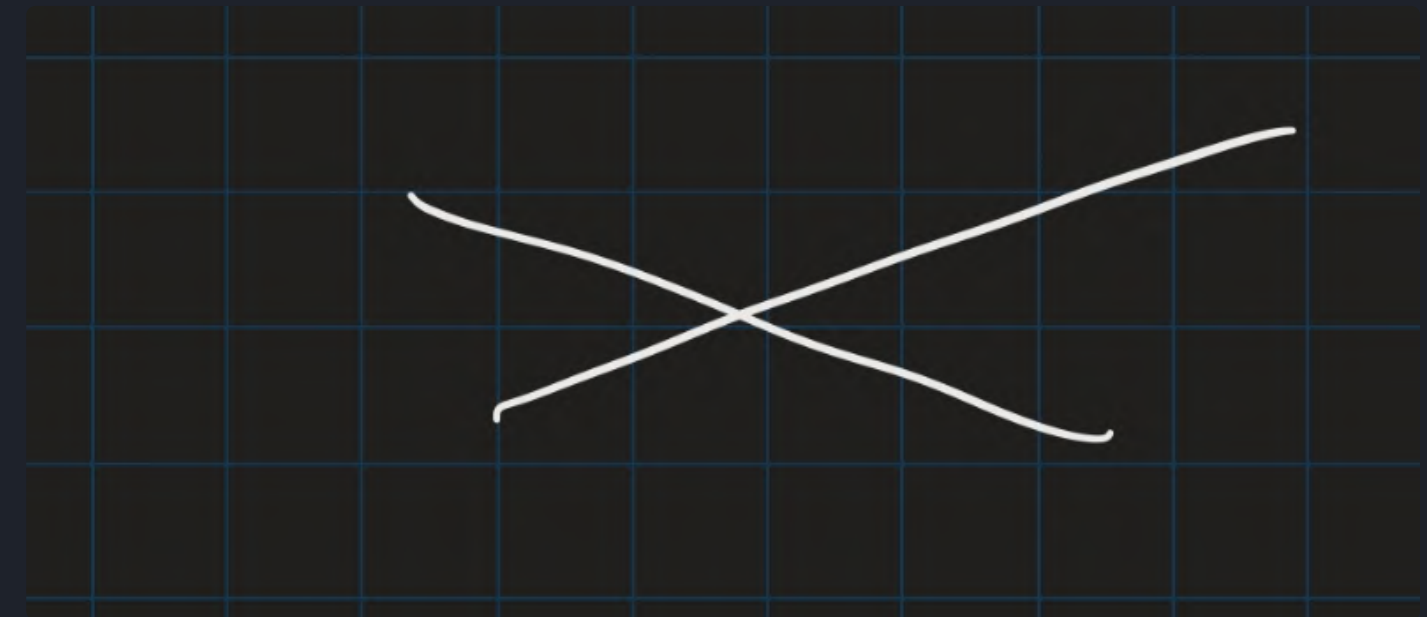
$$K = \frac{1}{2}mv^2$$

original



A handwritten equation  $F = \frac{1}{2} \cdot m \cdot v^2$  on a grid background. The equation is annotated with locispace: 'F' is labeled 'Death video' below it; '1/2' is labeled 'Halbes Wasserjoch' above it; 'm' is labeled 'Rock' below it; and 'v^2' is labeled 'Rakete' below it, with an arrow pointing from 'Cube' above to the '2' in the exponent.

with locispace



traditional