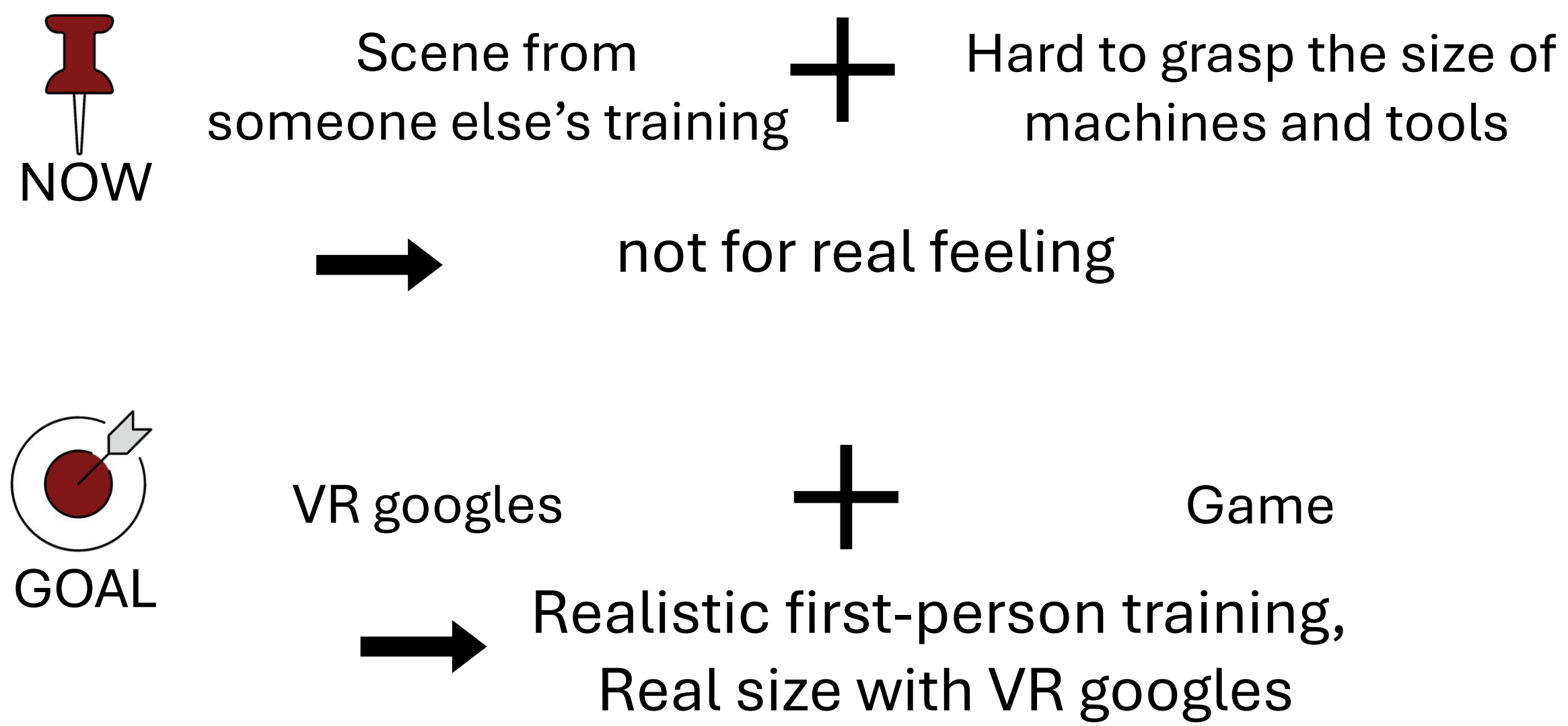# Game format KYT in VR

National Institute of Technology (KOSEN), Akashi College

Nozomi Orikawa, Marika Fujinuma   Advisor : Swe Soe MaungYe, Atsushi Hirota1

PROBLEM

Scene from someone else's training **+** Hard to grasp the size of machines and tools

NOW

→ not for real feeling

VR googles **+** Game

GOAL

→ Realistic first-person training, Real size with VR googles

What is KYT?

K ··· Kiken (dangerous)

Y ··· Yochi (prediction)

T ··· Training

Methods to improve the ability to detect, avoid, and resolve hazards that may be present in factory operations
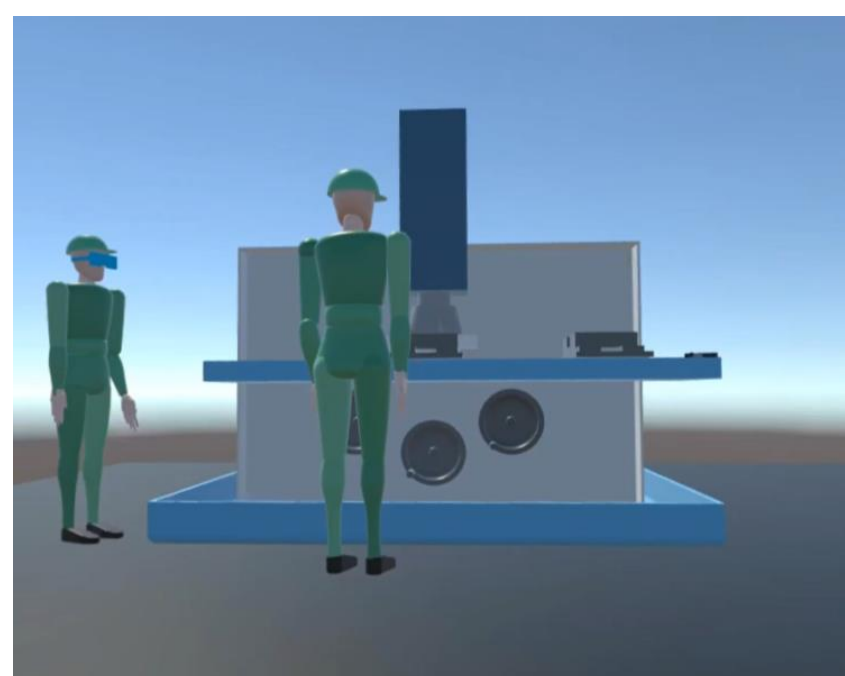
FRAMEWORK

Tool

Solid works **SW**   blender   unity
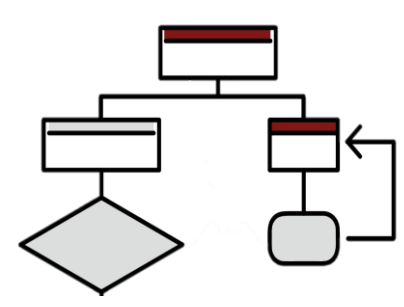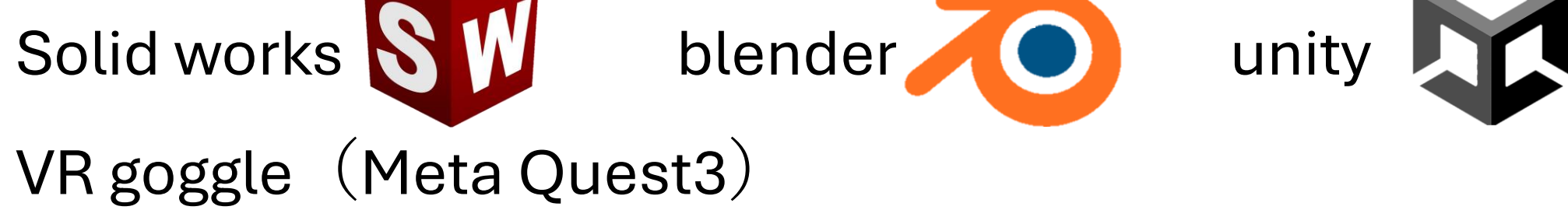
VR goggle （Meta Quest3）

Schedule

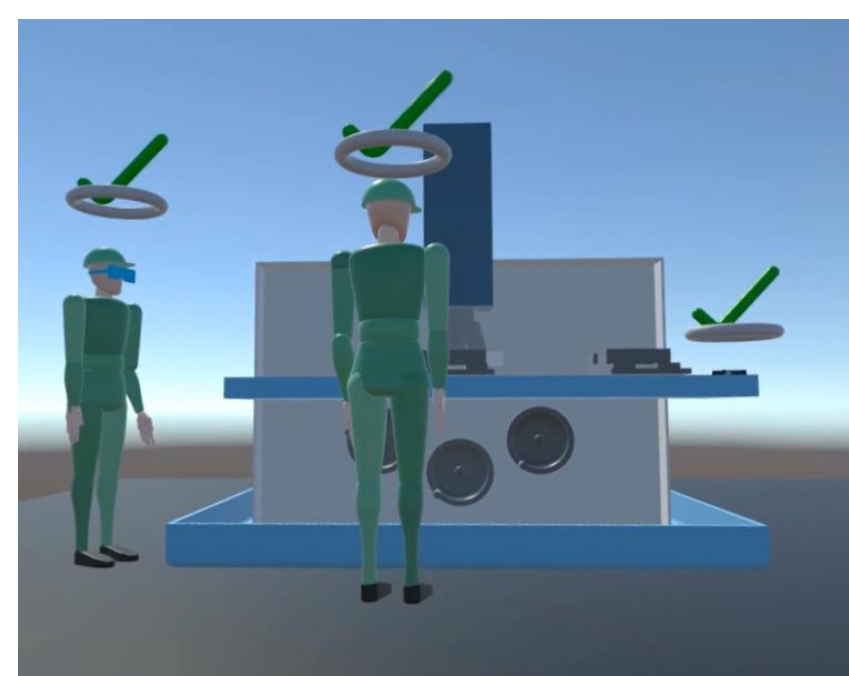| TASK / PROCESS		SEP	OCT	NOV	DEC
Model	VR Space				
	Operator				
	Machines				
Game	Create				
	Linked with model				
	Linked with VR				
Test	Test/Compare				

Game

VR KYT Before Click   **After Click**   Traditional paper type

How to move
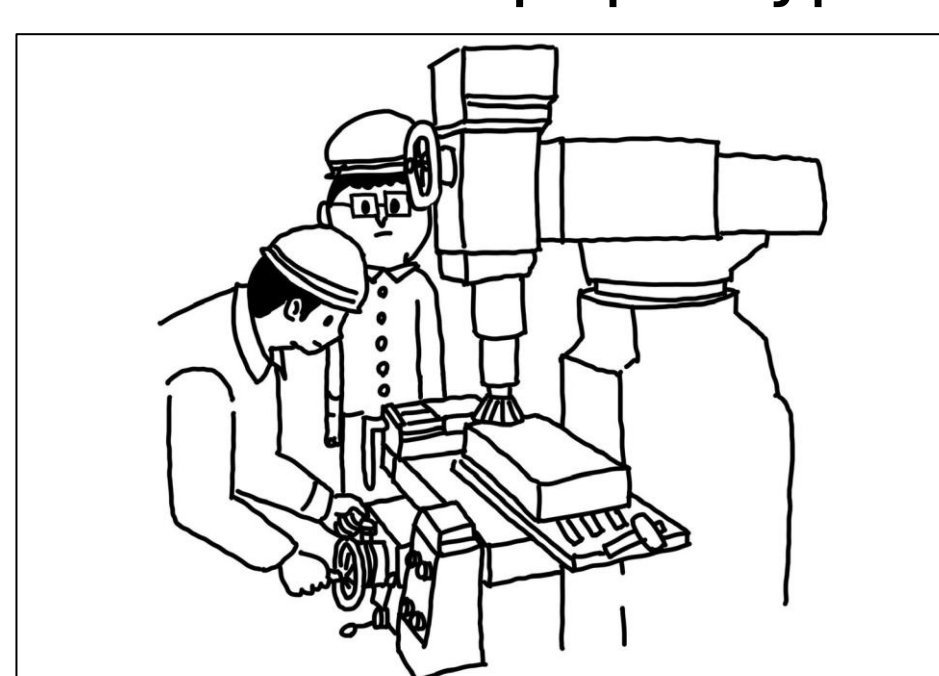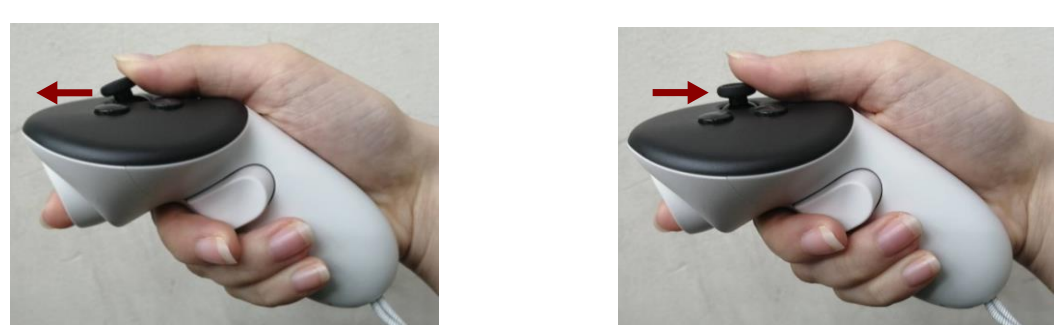
Tilt the thumbstick forward   Return thumbstick

You can point where you want to go   You can jump to the point

How to click

align the pointer   Push trigger   if it is correct…

You can find white pointers   Pointer turns blue   You can see the green check

FINDING

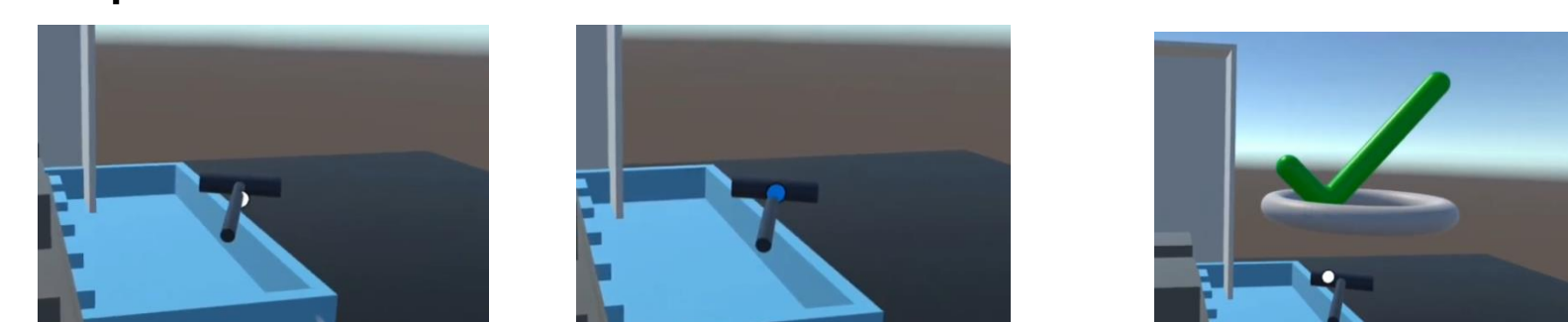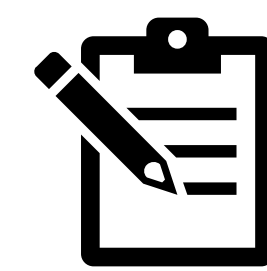Ten people each tried the Conventional KYT and the VR KTY, with the following results.

As for Table 1, it shows the number of responses per person: in VR, the number of correct answers was fixed at three, while in Conventional KYT, subjects were asked to answer as many as they could think of. Partly because of this effect, more risk factors were found when the KYT was administered with conventional KYT than with VR.

Tab.1   Average number of responses per person

Conventional KYT	VR
3.9	3

As for Table 2, it compares the response time per person. we believe that the response time for the Conventional KYT was longer than for the VR, which only requires keystrokes, because of the time it takes to type the letters.

Tab.2   Average response time per person

Conventional KYT	VR
2'21"	1'50"

The items in Table 3 that are not highlighted in red are responses that we, the creators, did not intend.
The fact that as many as five items were listed suggests that the game-style KYT has a predetermined correct answer, while the conventional KYT does not require the respondent to give the correct answer and allows more freedom of thought.

Tab.3   Answers by people who have done Conventional KYT

Answers	Number of responden
Do not wear glasses	10
People in table range of motion	10
Hammer about to fall	8
Material not secured	4
Cap not the right size	2
No one to push the emergency stop button	2
No one wearing work clothes	1
Spindle does not turn	1

In addition, 100% of the people in the conventional KYT were able to detect the presence of a worker in the area of table movement, whereas it took them longer to do so in VR. Conversely, nearly 100% of people in VR were able to quickly detect the hammer hazard, while only 80% of people in conventional KYT were able to do so.

INTERPRETATION AND CONCLUSION

It is necessary to make the best of both, since what Conventional KYT could have noticed and what VR KYT could have noticed more immediately are different from each other.

REFFERENCE

[1] Differences in Educational Effects of Instructional Materials for Traffic Safety Hazard Prediction Training by Media Type. (2021). Search on September 29, 2024 from.
https://scholar.google.com/scholar?hl=ja&as_sdt=0%2C5&q=%E5%8D%B1%E9%99%BA%E4%BA%88%E7%9F%A5%E3%83%88%E3%83%AC%E3%83%BC%E3%83%8B%E3%83%B3%E3%82%B0%E3%80%80VR&btnG=.
[2] Search on October, 2024 from. https://www.youtube.com/watch?v=OaPQPY_wuzk
[3] Search on October, 2024 from. https://tks-yoshinaga.hatenablog.com/entry/quest-dev-ui