

FICC 2024

**Understanding the Potential
of Telepresence Robots
in Higher Education Learning:
A Case Study**

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Telepresence robots (TPR)

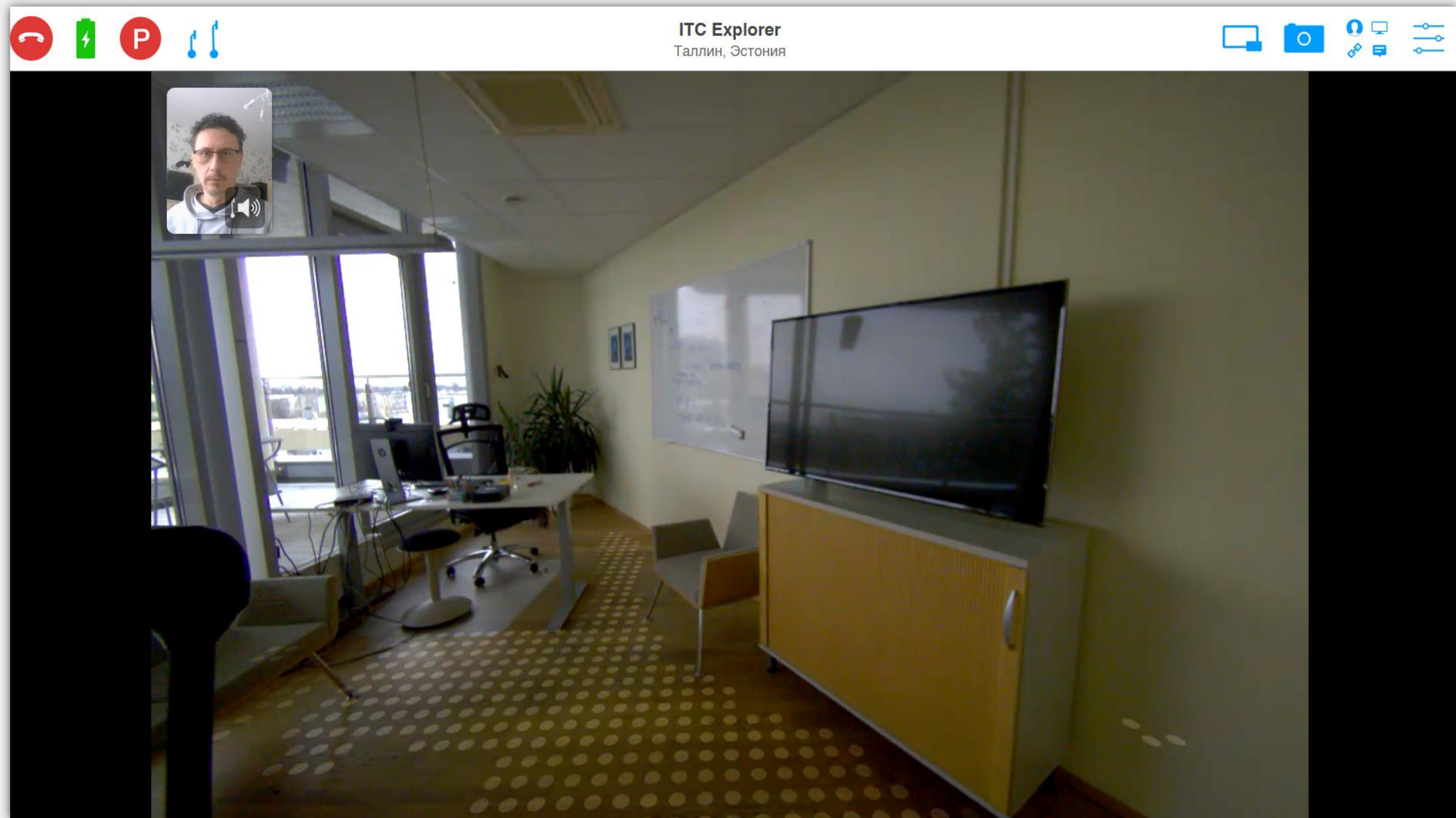


Double 3
by Double Robotics

Ohmni
by OhmniLabs



TPR user interface



Hybrid study

echovideo

Library

Courses

Collections

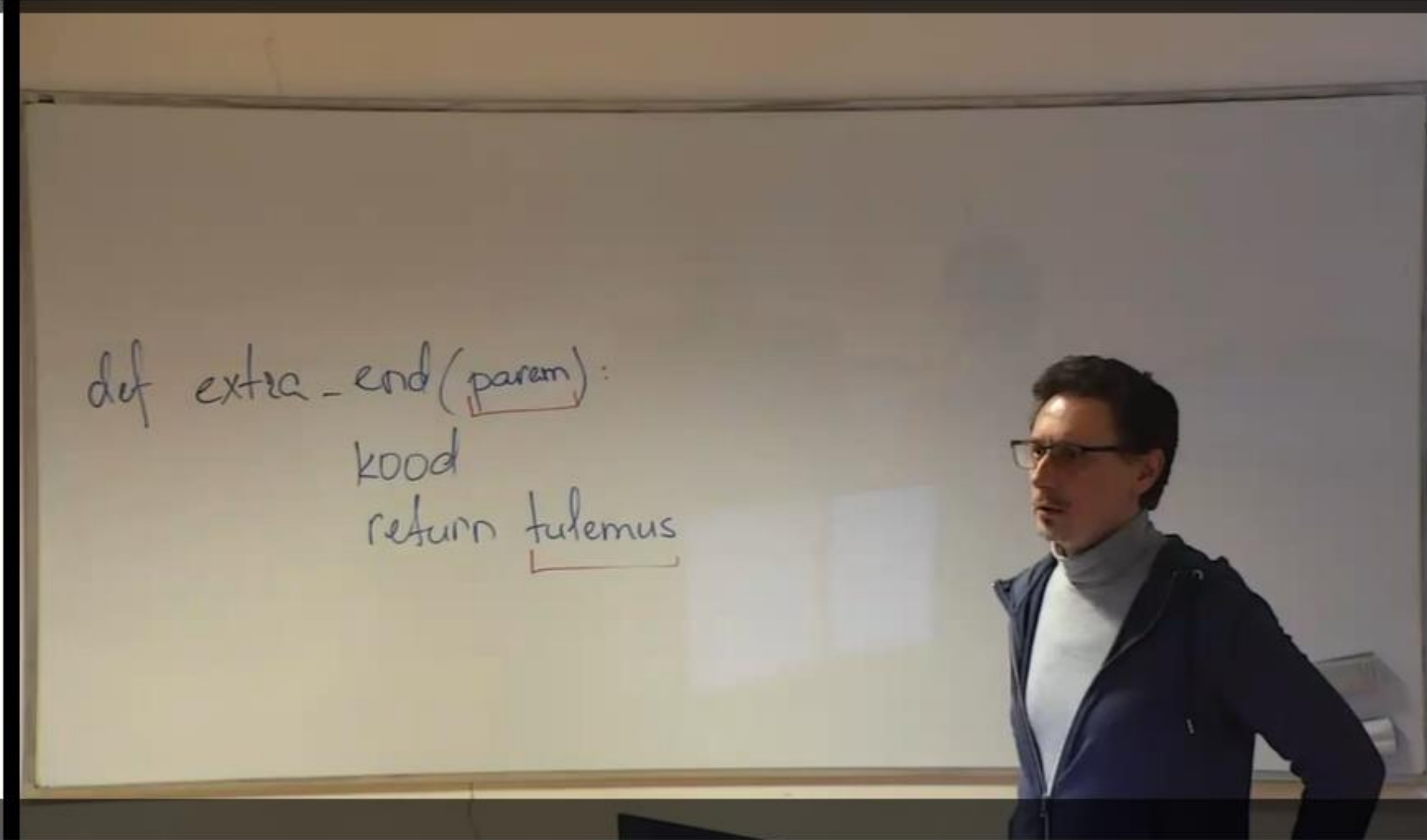
Analytics

Create



ICO-2024-KP-ICM0002 - Programmeerimise algkursus

```
1 Given 2 strings, return their concatenation, except omit the first char of each. The strings will be at least length 1.
2
3 non_start('Hello', 'There') -> 'ellohere'
4 non_start('java', 'code') -> 'avaode'
5 non_start('shotl', 'java') -> 'hotlava'
6
7 Given a string, return a new string made of 3 copies of the last 2 chars of the original string. The string length will be at least 2.
8 extra_end('Hello') -> 'lololo'
9 extra_end('ab') -> 'ababab'
10 extra_end('Hi') -> 'HiHiHi'
11
12 Given a string, return a version without the first and last char, so "Hello" yields "ell". The string length will be at least 2.
13 without_end('Hello') -> 'ell'
14 without_end('java') -> 'av'
15 without_end('coding') -> 'odin'
16
17 Given a string, return a string where for every char in the original, there are two chars.
18 double_char('The') -> 'TThhee'
19 double_char('AAbb') -> 'AAAAbbbb'
20 double_char('Hi-There') -> 'HHii--TThheerree'
21
22 You are asked to square every digit of a number and concatenate them.
23 For example, if we run 9119 through the function, 811181 will come out, because 9 is 81 and 1 is 1.
24 Note: The function accepts an integer and returns an integer
25
26 Given a number, calculate the number of zeros in the end of it. def end_zeros(num: int) -> int:
27 end_zeros(531) -> 0
28 end_zeros(1000) -> 3
```



56:30/2:48:39



Course description

Course name: "Enhancing Social Interaction in Education and Business by using Telepresence Robots", a part of EuroTeQ initiative

Total workload: 156 hours

Course duration: 12 weeks, February-June 2023

Structure: 6 modules covering different aspects of TPR usage

Remote participants: 6 (limited by the number of robots available)

Research questions

- How did the students assess the benefits and challenges of using TPRs in higher education teaching and learning?
- How did the students' assessments change over time regarding the benefits and challenges of using TPRs in higher education teaching and learning?

Assessment criteria

Semi-structured interviews

- First stage: homework submitted in February representing students' initial knowledge level
- Second stage: homework assignments submitted in March and April and representing students' knowledge during transformation phase
- Third stage: homework assignments submitted in May representing the level of knowledge obtained during the course

First stage results

- *One of the robots wasn't very responsive. There was also some latency with movement so that also created some uncertainty when navigating the room*
- *they [TPR] can't walk up and down the stairs, they can't smoothly go through door frames... If the doors are closed then the robot would need assistance with that as well*
- *Based on my current experience, I think that a telepresence robot increases social belonging in a learning environment*

First stage results

- *Having to pay attention to my surroundings when I move would make me less immersed in the fact that I'm at home and more immersed in the fact that I'm in a classroom*
- *I could move around the room and interact with students/colleagues/faculty in a more natural way that could help build stronger relationships and improve collaboration*

Second stage results

- *It is quite hard to hear what goes on in for example a classroom, especially when there are network issues*
- *it was difficult to understand the other person when we were as far away from each other as possible*
- *the smallest texts were difficult to see on the screen even when using the 4K resolution. I think I could have found a better position, I even tried to drive a little closer*
- *there was a fear that I might disturb the student somehow if I accidentally move or talk, even though the robot was muted*

Third stage results

- *since it is a camera with a large field of view, the image is distorted enough during actual use that it cannot accurately predict its maneuvers and estimate distance.*
- *Tend to ... felt safer comparing to being physically present*
- *practical classes have a limited feeling of being in a robot. The limited feeling would disappear if the surrounding environment could be manipulated*

Thank you for your attention



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