Proctor: … a knob that you can... And then you'll see a hologram bounding box around it. Basically, you'll see handles on each side that are the blue highlighted ones here. You can pinch those and they'll do translation, but it won't be correct because, obviously, it's, it's messed up right now. On its- I would set up- And then, it's just- You'll see there's bars that are along each of the edges of the bounding box.

Participant: Does it matter which hand you use?

Proctor: Which hand you use? No.

Participant: Do I have to actually grab it?

Proctor: Yeah, you can pinch those bars that are on the side and it'll do rotation as well. Those will do rotation and then the handles will do translation.

Participant: Can I get it to- Just.. How do I…?

Proctor: So, let go of it, and then pinch. And then, pinch a bar that's on the side of the box.

Participant: Oh, here. Oh, oh, oh. But then, but thats not there then… Oh.

Proctor: There you go. Yeah. It can be a little bit late sometimes. If you see the, if you see the, the bounding box rotate or anything, then the arm will catch up, even if it's a little delayed. And the idea is just for you to try to-

Participant: Pick up a block.

Proctor: Yea, pick up a block and enjoy it.

Participant: I think I'm not video-game-savvy enough to do this. All right, so how do I get it to move…

Proctor: That way?

Participant: So, this rotates…

Proctor: Yeah. So normally, if the box was correctly positioned, you could just pull it in.

Participant: Oh, so I just need to grab it.

Proctor: Yeah, you can grab it and pull over and it's going to be a little bit off because of obviously the bug that we're experiencing.

Participant: So, I need this to go…

Proctor: Yeah, you can let go and, like, grab again as well. Yeah.

Proctor: I think some of the issues you're getting is definitely a little bug.

Participant: I can't get it to go…

Proctor: Over?

Participant: Over.

Participant: So, I got, I got the rotating.

Proctor: I'll just put a block over here for you.

Participant: Oh, so then I drag it?

Proctor: You'll have to grab it on one of the bottom handles.

Participant: That's- Oh, oh, oh; one of the- Got it, got it, got it. This handle, not the edge handle.

Proctor: Yeah, the bottom ones. And, you can bring it down…

Participant: Can I go in from the middle? Or do I have to come in from the bottom?

Participant: I keep, I keep having to look further down. I guess the box-

Proctor: The box…

Participant: ..the box is too tall, so I-

Proctor: The bounding box is too big?

Participant: So when I look up here, then I don't see the box. So like, now I see it from just below the middle... Oh, it may just be that I'm not used to the... Yeah, so I can't see the whole box at the same time.

Proctor: Yeah. One thing you can try to do-

Participant: I feel like there's something- When I go in like this, I lose it. I can't see what I'm trying to grab anymore.

Proctor: Yeah, one thing you can try to do- So another way that you can try is: you'll see if you put like a hand out, you'll see on your pointer finger there's like a laser that shoots out, I guess it's the best [way to describe it], like a vector, and you can use that to point to a thing and then pinch. And that would also- You need to step back and do it.

Participant: So now, it's, like, on the wall.

Participant: I'm like, Oh, here. Oh, wow. Right. So. So how do I. So I see. Okay, there we go.

Proctor: Yeah, you'll see-

Participant: So, how do I make it go forward?

Proctor: If you have that laser on it and then you do your same, like, pinching motion, and you'll see it- I guess, when the laser is on it, you'll know they'll give you, kind of, like, a little thing.

Participant: So it's not- so I've got the laser, but how do I make the end of the laser- Oh! *[Laughter]* I've got two…

Proctor: Yeah.

Participant: That's wild! So, so, how do I make the end of the laser go forward to touch the thing I want?

Participant: Right. So, right. So I got that. All right. Sure, I almost had it. Okay. So, now I pinch. No, it just moved the lazer. It didnt move the thing I thought it was.

Proctor: It didn't move the box.

Participant: No.

Proctor: So do you have some issues? You have issues, like, grabbing it, I guess.

Participant: So, does it have, like, a donut? It's got a donut with arrows. Does that mean I'm moving it?

Proctor: Yeah, so…

Participant: So I pinch that?

Proctor: Yeah. When you have the two arrows that are leaving it, that means that you're on it and then try to- Another issue I think is; because your hands [are] down here, the HoloLens isn't picking it up. So it's kind of…

Participant: Oh, oh, okay.

Proctor: Yeah, it's, it's a lot.

Participant: Like I said, this is where I'm not- I don't play video games, so I think I'm at a disadvantage just from not knowing. You know, just- It's not that I don't have good spatial skills, just not computer spatial skills.

Participant: All right. So. So here. All right, so I got the arrows. And sometimes I go this way, sometimes I go this way.

Proctor: I'm not sure what the difference between that would be. I think it's basically it'd be different if it's a different- Oh, you've got it. …rotating it.

Participant: But it's rotating it-

Proctor: -on a different axis. Yeah. Yeah, super-bugged.

Speaker2: Okay. All right. So now. So now I need to make it go this way. So is that this one?

Speaker1: It would [be].

Participant: Hang on. Almost had it. Alright, there we go. Right. Alright. Thought I had it.

Participant: Just the, the, the I-shaped handle. I'm grabbing and moving [it], but it doesn't go anywhere. Does that make sense, what I'm saying?

Proctor: Yeah, you might. I think you might have issues. You might be having issues like actually grabbing it. That happens. One of the questions I will ask while you're doing it: other than-

Participant: All right, so all right. So I can get this. Alright, so this one... I think. I think.

Participant: Alright, so this is the one. All right, so now how do I get off the laser? Just grab the …?

Proctor: You just- You can just actually just move your fingers to it.

Participant: No! What happens when you get the big red screen?

Proctor: The big red box just means that- It's- There's a set thing of boundaries. Yeah. Outside this stuff.

Participant: How do I get back?

Proctor: Just, just drag the hologram back and it will update. Well, not from back…

Participant: Oh. Still red. I'm really breaking it, aren't I?

Proctor: It just- Yeah.

Participant: Do you know how to-

Proctor: You need me to help?

Proctor: Yeah? Yeah.

Participant: Hmm.

Proctor: Well, also, um …

Participant: I think maybe I'm also impatient.

Proctor: I'll also do this. Activation code: godmode. The person that wrote this code is like super and like, superheroes and stuff.

Proctor: There you go. All right. So now you can just scratch everything about the handles and stuff. You just grab inside the box and manipulate the arm. And so, like, you can just grab anywhere inside the box and just twist your hand and you'll see it.

Participant: All right.

Proctor: Whatever you want.

Participant: Okay, this is good. So, now what am I grabbing?

Proctor: Anywhere. Anywhere on or around the bounding box; Pinch, and then you move your hand. And, as you [will] see, it'll do a motion. And if you want to update the speed of the robot, you can also…

Participant: [It's] just like backing up a truck because I'm not going the way that it was backwards from-

Proctor: From where it wants to be, yeah.

Proctor: You're good.

Participant: What'd I do?

Proctor: I guess it just, uh, came out. I'm gonna do mine. It just- All the motors and stuff inside of it.

(Audio gap as the robot is reset, starts up again at 9:40)

Participant: That actually- But I wasn't kidding when I was saying: since I don't play video games, I'm not- I'm not used to, like using a joystick to move things around, I'm just not. And so I think that's a part of [it].

Proctor: So what did you- What do you think would help you inside this, like be able to easier- Obviously, there's a huge bug that makes it almost impossible to use right now, but what else- What, what might be able to help you better interact with the interface, I guess? When using it.

Participant: Oh, am I in godmode still?

Proctor: Yes.

Participant: I think, practice. I think…

Participant: Do the handles change color when you grab them?

Proctor: They do not in this thing. So, knowing that you have grabbed the handles?

Participant: That, or, um… So,I just grab it? And also, also, it's going the wrong way.

Participant: It is backing up like a truck…

Participant: So, I think: practice. I think, also, um, being able to…

Proctor: So, practice, being able to know that you've actually gripped it, and having it work right.

Participant: And having a- Clearly, I'm not letting go. I think- So, I think you're not- I'm not letting, I'm not letting go.

Proctor: Yes. So with the Hololens, if you- You really want to exaggerate your [fingers] when you're pinching it, and then-

Participant: Oh!

Proctor: You're good. And then, um- Here, I'll take it. You wanna exaggerate when you're pinching it, and then exaggerate when you let it go. So, that, kind of, will help it know that…

Participant: I think it's, it's- I think, partly too, I've just never done any VR, anything of anything; and so, I think maybe even just- Do you want me to hold onto it again?

Proctor: I think it'll be alright. That's good.

Participant: I'm wondering if just- Even just- Let's see. I wonder if even doing it in 2D on a screen just to kind of get the hang of, of grabbing, partly. Like I said, I feel like I'm at a disadvantage.

Proctor: What improvements would you make to it, I guess? If you could change things about what would you, I guess, change?

Participant: I think the color of when, when you, when you grabbed it and when you've let go. I think that would help you know that you have actually let go of it; because, that would keep me from…

Participant: I think it's much like a mouse, which I'm not thinking about where you grab it and move it and then come back. You know what I mean? Like with a mouse when you're trying to go all the way across the screen. You can't do it on one. The mouse pad is too small, so you have to drag it and then drag and drag it.

Participant: And I think, I think practice. But I think, I think, maybe, color-coding. I think, um- It is hard, with the-

Proctor: The being backwards, yeah.

Participant: …being backwards. Yeah; because, I can't back up a truck to save me. I'm not backing up. I mean, not backing up a truck, it's like backing up a trailer. I keep saying "truck". I mean, "trailer". Backing up a trailer. I know you go the opposite way that you think you're supposed to go in, and I do it wrong every time.

Participant: I think it was a little disconcerting to not see the whole box. It's almost like the box was too big. So that- I almost wanted the box to be smaller, so I could see all of it at one time. It. So that- Then, I had a better sense of where the box was moving; because, I looked at it- Because I could only see the top, the middle, or the bottom at a time. I don't know, maybe it was because I was standing not far, like that. Maybe I'm standing farther back with it, and then a laser to grab the thing that had to be right up on, you know maybe that allows- So, I couldn't see the whole box. So, I couldn't- I didn't have a good sense of where I was in space to even know which direction I was moving.

Proctor: And one more question, it's kind of a weird one: what uses do you think this might feel to have in the industry, in the real world? Like, where would it be, like, useful?

Participant: How heavy do you think that one…?

Proctor: Well, there's robots that are…

Participant: Right.

Proctor: … as big as this room, you know. Huge. This one… Felipe. Look, it's- Life's already bad for him. He's one weekend. Felipe, he is a PhD student, and head of all the robots. No, this one, I think, can live pretty heavy. Logan, do you know how heavy this robot can lift? How much weight?

Observer: I think the payload is 5 kilograms. So they're not including the…. I'm just.

Participant: I'm just- I'm thinking about, um, I- I guess, you know, I'm in the middle of- Presently, elder care is kind of in my mind. Taking care of people who need help taking care of themselves. I know they're looking to get robot nannies. They're talking- just it would be interesting to know if this is something where: somebody who didn't have strength, they could use it to grab- I think that would just be- I think you'd have to grow up doing that. That's not something you could teach me. Look at me. I'm 55 and I'm having trouble getting my brain wrapped around it. It's not something you could teach a 75-year-old to do, I don't think. I mean, honestly, I don't think that their frame-of-, frame-of-reference would accommodate that.

Proctor: Okay.

Participant: Yeah. But yeah. So, what kind of things [are] you guys thinking about?

Proctor: The idea of this is eventually going to be- So, we are going to play Operation. Yeah. And this is just kind of- These 3D printed pieces are the final product more likely, but this is just a mockup. But the idea is we're going to- With the final version, you're going to be able to lock axes, and you're going to be able to- It's going to be different than this. Yeah, there actually are different versions of this out, but we're doing this for a

current paper. It's built to send it through precisely without having to touch, and obviously if it touches-

Participant: I would think anything in space. Yeah, right. I mean, that would be where you keep places where you can't go. So having to do things in… Just places where you couldn't go, so anywhere where a person could not safely go, or go at all. Seems like that would be an obvious answer. So, the nuclear reactors, space; maybe the mining, you know, if you could send a robot down into a mine. Particularly, I mean, you know, I assume it's going to be on WiFi, they don't have to be, like, right next to it. Yeah, you can just- I mean, they're already using stuff like this from medicine and surgery.

Participant: And so, I guess the idea that is, that is that: it's easier than a joystick. Is that the [idea]?

Proctor: Yeah.

Participant: Or more various- Or you could do more than with a joystick?

Proctor: Yeah. So, we actually we tested out… So, I think that's the last of my questions.