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| **PID** | Do you think the AR arms were helpful for your controlling of the robot arm?  Why? | Do you feel that you’ve learned how to control the robot arm from seeing the virtual arm?  Why? | How did you feel when you were controlling the robot arm? Was it responsive enough? | What do you think is the most challenging part? | Which posture was the most difficult? | Any comments or generic feedback? (Open interview question) |
| 1 | I think it helped a bit, but actually after practicing the first time with it, like the second time that was without the overlaying arm was pretty easy. So I think it's more about the practice. | Yeah, yeah, actually, yeah, from the start, yeah, it helps you. But then it's not needed, of course. | It was a bit slow, but yeah, I think it pretty much, yeah, like mimics in the same movements from my answer. | I think the fact that the arm is, the robot arm is rotated like you have to. It's flipped from a different perspective. | The one that you have your arm in front of your eyes like, okay, the second one.  **[Q1down]** | No, maybe I think like if the robot arm wouldn't be rotated. For me, that was the most challenging part. Maybe it would be like the normal angle from my arm. It would be much easier. |
| 2 | You help me with the position of the arm to have a reference. Without that, in the second time, the second test, I couldn't imagine what was that best position to meet the final destination. Okay, so yeah, definitely help me a lot. | Yeah, it was very intuitive, actually. I didn't have to learn anything beforehand, just having that reference, it was enough for me to do the task. | Yes, that's weird because even though the position and everything was very similar, then in the second time I thought it was a bit slower and unresponsive. |  | The one that was up.  **[Q1up]?** | Yeah, it was very easy to use when you have the hologram displaying overlay in the robot |
| 3 | It can help me to get the directions. Gives me a sense of space. | Yeah, I can learn something. Learn how to control my arm. | Oh yes. | Well, I think the most difficult time is to control my elbow. | Okay, the second one.  **[Q3up]** | No |
| 4 | Yeah, a little bit. Because like, when your arms move and the different, the virtual arm shows a different direction. It's a little bit hard to control. But when you like practice some and you will like easier, much easier for control the visual arms. | It's like when I check the dots, because it goes the different direction. Yeah, I will check like I will remember like when you go right, it will be up. When you left, it will be down. And that same as up and down, it sounds like is that without arm, you cannot understand what your arm still when you shows the different post, but much more easier to with a visual arm. | It was responsive enough like just to come, I know that different direction I would like to imagine where the dots will be and where the arms will be. | The dots come together, the like, like same as the one line. I will try to put my arm without the put stripes. | The second one.  **[Q1up]** | Very interesting. Okay. Yeah, because it's my first time to like to have a touch with the visual arm and even the hollow hat. Yeah, it's very interesting, like to control with my arms and use the visual cross to see the dots and to put the arms into the like that, the post. |
| 5 | I think it's really important that you have that at first time to get the dot. But after the first time you got the dot, you will know how it works. | Yeah, for the first time, very much so. Like when I see the robots only and see the dots only, I just not feel like I can control it. It's so different from the arms that I'm waving. And when I saw it on that, I know somehow it's just like the to the similar one that we actually move in our life and it's getting close to the reality with the arms. | Yeah. | Like, I think like it goes like it's not the opposite way, but it's just different. And even though I try to reach one, like I'm reaching left, but it's not that I reach left to get that direction, but it's going up or down. | (didn’t realize it was the same 4 postures repeated) | No |
| 6 | It was not helpful because it was kind of distraction because with the arm appearing in my vision, I got distracted from that arm. Okay, I was trying to match my arm with that arm. So it's not really helpful. | It was helpful for learning, but it was not helpful for controlling. | There was a little bit lag. |  | The first posture. In that posture, I need to put my arm in a really weird position.  **[Q1down]** | No |
| 7 | The human arm, in my experience, not really, because it didn't really overlap properly sometimes. | It's, it makes me more confuse because there's a time when the robot going here and it's just like getting to have a bigger gap in the world. So it's sometimes getting confuse more confusing. That's why I then try to focus on the robot. | In the first time, yes. And then sometimes it responds, but not always. | When it doesn't move as what I instructed, like, you know, it, that it didn't follow my arm. So it's it make myself more confuse if you should, to where to the direct direction I have to because I was sure about the direction, but it didn't follow. So I get confused. | The third one.  **[Q1down]** |  |
| 8 | Yeah, I definitely think that it helped me help remind me about the orientation of my reference to the robot so that I could moving to the correct position. | Yeah, definitely. Just, you know, moving my arm and then waiting for response definitely help me map out. | Yeah, it is responsive. But if it was more responsive, then I feel like my performance would definitely be better because I'd be able to map out. | Yeah, so when the elbows bent and definitely as well when had the overlay because they over the arm struggle to like that the overlay couldn't render my bent arm very well. | Yeah, definitely the bent arm. Yeah, downwards.  **[Q1down]?** | If the overlay was more accurate and the response speed was faster, would allow to me quickly map it out. |
| 9 | Not much, because the position of my wrist did not match. Sometimes it was near. It was not like a fixed distance. | It is helpful for learning because of the hologram. Like I knew like where's the elbow. Where's the wrist. | It was lagging sometimes. | The challenging part was trying to coordinate the flip condition. | The second one, the one with the elbow up and wrist down.  **[Q1down]** | Some people have issues raising the elbow. |
| 10 | Help me learn what angle I should rotate to get to the point because as the direction the robot will, it doesn't match the direction of my arm. | Yeah, but I think it's okay for me to learn. |  | The angle, the flip condition, the rotated condition. | The one with the elbow up and the wrist down.  **[Q1down]** |  |
| 11 | I thought initially it was helpful. Actually, I think like it help me and adapting to the rotation of the robot. But then after I did the second one, I think it sort of distracted me. | Yeah, definitely. | It was pretty responsive, but I do have to like watch my hand and do it slowly. Cuz then it will, like there was some delay. Like sudden, make sudden movement if I go too fast. | The one with the overlay circles? Yeah, I wasn’t sure about the direction. | Was elbow down and wrist down.  **[Q3down]** | I feel like using the hologram would be beneficial in getting familiar at the beginning when you're learning. |
| 12 | Yeah, I think it was like a very training background for me. |  | Yeah, it was responsive, you know, but in some cases I saw a little bit delay. | The most difficult one is like in the second condition with no hologram. I felt like I had to figure it out everything again. I forget it in the last task, how the hand was supposed to move. I reorient everything, and like had to do another calibration inside my head. | The one with the elbow up and everything.  **[Q3up]?** | If I had another board in the back of the hand like this part, yes, it would be, it would have like motion much easier. it might tell you maybe the direction were. |
| 13 | Yeah, without your hologram is a little bit difficult to control, but with the hologram, it makes it easy to control the robot. | It helped me to control the robot. |  |  | The one with the elbow up and.  **[Q3up]?** | No |
| 14 | Yeah, it was helpful. it's kind of perfect to like to trace the to tell you the direction or like space direction. | Yeah | It was pretty hard, it didn’t follow my arm properly. |  | The first posture.  **[Q1down]** | The virtual reality was helpful in general. |
| 15 | So we'll basically, it creates some like an illusion in, well, create, it helps you visualize where to go, especially with the hand. Like since I have a hand, like I can imagine better then when it was just a robot. | Yes | it was responsive enough, but as expected, it was of course, some still something not super fast. |  | The second one.  **[Q3up]** | I think this experiment will be useful full in, yeah, people with or without limbs, really. So I'm not sure if that's the intent of. No, yeah, in developing a product that could help people. |
| 16 | it is more easier to for me to think about, okay, so what my arm is doing, it just makes everything easy. | Yeah, definitely. | Yes, I think it is actually looks more better than what I thought. | The orientation of the robot arm is not the same as my arm. | one where your elbow is on front up and you wrist down.  **[Q1down]** | Not really. |
| 17 | Yeah, it's like a bit better to understand like the movement. Okay, right. The difficulty only changes because of more of the depth understanding. And also it's just like mentally. | It's like when the arm is there, you kind of make like more connection with all this. | I think it's very good. | You have to like rotate your right hand, then depth perception because that does, you don't know which way to turn. | the bend one when the elbow on top and the wrist down is the most difficulty.  **[Q1down]** |  |
| 18 | Partially it was helpful at the beginning, but once I think I was in the third task, it was more about the muscle memory. | Similar like it gives it gave me a little bit of an idea, but I think I Learned by practice. The hologram gave me a sense of space and orientation. | Yes, he was responsive enough. I feel like it could get a bit like clunky to control. Like at some sometimes I felt like I was close, but actually I was not close to complete the goal. So I, I like to, I had to like go around ideas like how to do it. But so in general terms, I think it was, it was very responsive. | The fact that the axis in my brain and how I move my arm are different from the axis of the robot. | The first and second were the hardest.  **[Q1down, Q2up]** | Maybe a minor detail, like as soon as I hit the correct space like that, I'm sure, I mean, when I hit the correct, when I reach the goal. Maybe something that shows me that I, yeah, feedback, a little bit of feedback, but it's not so necessary because actually you turn off, |
| 19 | Yeah, the alignment is not perfect. Yeah, I know in the human arm is a bit complex. And even though you move like this, your skin moves slightly and then the marker just track something else. | Yeah | Yeah, I think it's responsive enough. |  | the elbow up and raise down.  **[Q1down]** |  |
| 20 | I think not much. | Yeah, I think if you help me a bit. Yeah, I can imagine the orientation. So movement of my arm better. | I think it was a bit slow. Sometime maybe due to the direction, the reserve direction. So I feel that it, it, I cannot control it. |  | The second one  **[Q1up]** | Yeah, I think it can be better if we can have the direction of the robot the same as the human. |
| 21 | Part, actually, give me some inspirations or let me have more patience to do the task. But it was not so helpful as I saw before it started, I started to work to complete the task. I thought it was not so helpful as I saw before. | Yeah, a little bit. Cuz in the second part of the task, I move quickly to find the, though the directions where the in blue and the red buttons. Yeah, where but it's still hard for me to accurate put them 1 to 1. | It's faster than me. | It’s hard to find the orientation. | The elbow up and the wrist.  **[Q1down]?** | No |
| 22 | Yeah, it is. Cuz like it's, it's visualize. It's not only two points, but the whole arm. So you can see. | Yeah, I think so. | Yes, it is. But yeah, it's just like hard to adjust my mind to control it. | Most challenging part is like, it's not the same as what we do in real life. And you, we don't know how to control. | The first one. It's hard to like think of that position.  **[Q1down]** | I would prefer to use the hologram for learning. |
| 23 | I think that I didn't use that. I'm, I was just wanted to match the balls like going in different direction to see which one works. |  | The robot was responsive enough. | Most challenging ones is because the direction that are I was moving my arm inside the opposite, I mean. | the elbow up and the wrist down.  **[Q1down]** | The, I mean, the technology is fine. It's interesting and fun. |
| 24 | It was helpful, because I can know which direction to move. | Yeah, it's like, cuz the arm just looks basically like mine. Yeah, so you can see if you're wrong. | Very. | The elbow part is more difficult. | The last one.  **[Q1down]** | No |