

Study 3 Scripts: Examining the Design Process

Introduction (2 mins)

- [clean hand]
- Before we begin, I have some information for you. The purpose of this study is to understand how you will use deformable materials in digital musical instruments design.
- This whole session should take around 90 minutes. And if you need to take a break at any point, please let me know.
- For the first 10 minutes, I am going to introduce you to the materials and tools (which in front of you here), and you will have some time to explore them. Then, I am going to give you one design task, you will design a rapid prototype.
- When you finish each the task, I would invite you to do a short performance.
- Then, there will be a short interview and a survey.
- Your design process, the performance and the interview will be video and audio recorded.
- Does that sound ok?
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- Do you have Paypal Account? Send me your account, I will transfer the 25 pounds compensation of your time via PayPal.
- [Hand over the pre-survey on iPad]
- Please fill this survey, which contains the information sheet, consent form and some information about your background.
- [When participants finish] Do you have any questions so far?

Demonstrate and Introduce the Tools (5 mins)

- [Bringing attention to the objects]
- OK. Before we start the design task, I'll brief introduce all of the sensors materials and give you some time to practice with them.
- As you can see here, there are different types of sensors made in different materials.
- There are pressure sensors, bend sensors and stretch sensors. All the sensors are detecting analog input.
- Later in the design task, you could simply connect the sensors with the jumper wires for rapid prototyping. I'll show you later.
- [Bringing attention to the software]
- In the design tasks, I would like to invite you design the physical interfaces of a sound synthesiser, you will be work with Pure Date on Bela (Have you used Bela before?).
- You do not need to make any changes for PD patches, everything is pre-setted there. (No need to design the sound)
- **All you need to do is building the physical interface for the synthesiser.**
- I know it's a big challenge to design such prototype with limited time. Please don't worry about that.
- Because I am interested in the design process, such as how you chose the sensors and materials, how you combined them and make them into a prototype, and what kind of musical gestures you want to perform with the sensors, etc.
- Does everything make sense so far? Do you have any questions?

Practice (10 mins)

- We are going to have a quick practice now.

- Each sensor could sense one type of input, for example, the pressure sensor detect how much you press it, and it cannot sense the location of the pressing. Which means press here and here is the same (demo).
- [Open the demo patch]
- Here is an example patch which has two analog input and triggering different sound.
- As you can see here (Pd patch), you could listen to the sound effect by moving the sliders there.
- **In this practice example, what you need to do is build a physical interface to control these two parameter.**
- Each of the sensor labelled with its resistance. For example, if I feel like I want to use press as the gesture to control the amplitude, I would take this one for example.
- Then you need to check the resistance of the sensor, for example this one is 1k ohm. Now find the 1k ohm resistor which is here, and it's analog 0, then connect here the board and test it. (Longer wires)
- There are sensors in different material also, you could make your own choice then. I just picked one randomly.
- So that's how it works.
- Now, it's time for you to practice.
- Could you please try to pick a sensor and test it with the other analog input (analog 1).
- [Great now you have got how it works]
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- The design process is totally free to you.
- But as I said before, you will have a limited time and there will be a performance task then. Please keep that in mind.
- Any questions so far?

Main Design Task B (50 min)

Introduction (1 min)

- You should now be getting a better idea of how to use the tools and how to approach the task of designing your own 'instruments'.
- I will introduce you the design task now.
- [Open the demo patch, open Task B in Bela]
- The task is to design a physical interfaces for the frequency modulation synthesis with three analog input.
- As I showed you, you could listen to the effect by moving the sliders there.
- Please do think of the 'instrument' as a whole, a combination of the object you interact with and the sound that comes from the speaker.

Design Activity (50 min)

- You have maximum 45 minutes for this task.
- In this folder you could find the backing track you are going to perform with.
- The nature of the performance is totally up to you. You can rehearse, prepare, or improvise.
- The backing track is about 1 min, you could also perform for 30 sec, that's fine.
- Say again, I wish there is no pressure for the performance, I just want to see how you play your instrument, the types of gesture you use, what types of sensors you choose, and the sounds they make.
- Do you have any questions? Are you ready for the task to begin?
- [Start timer and recording]
- [25 minutes pass]. You have 20 minutes left.

- [35 minutes pass]. You have 10 minutes left.
- [45 minutes pass]. Ok, time's up.

Performance and Short Interview (10 min)

- Thank you for the hardworking. Are you ready for the performance?
- Please feel free to start when you are ready.
- Thanks for your performance.
- Now could you please fill out this survey for Task B.
- [Hand-over the post-activity survey]

Post-activity Questions

I have some questions for you which are most similar as the last interview session. You are welcome to compared the two instruments you've built.

1. Could you please introduce (explain) how your instrument works?
 2. How did you design your prototype? Could you talk a bit about your process or how you were thinking during the design?
 3. Why you chose these materials? (if it is not mentioned)
 4. What did you think of the relation between sound and material? (if it is not mentioned)
 5. Suppose if you had to give someone to play with your prototype, what would you tell them?
 6. How did you design the gesture? (if it is not mentioned)
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7. What were some of the things that worked really well? (Why, and how did you know?)
 8. What were some of the things you tried that did not really work? (Why didn't they work, or how did you know?)
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9. If you had all the time in the world to work on this, what would you do next?
 10. If I asked you to do it all again from scratch, would you do anything differently?
 11. At any point, did you feel limited by the pre-settings of software (Pd), or as if it got in your way?
 12. If you could change anything or add any functionality that you wanted, that you can imagine, how would you improve the settings of sound/hardware?
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- Could you talk about your overall feelings about this activity?
 - Do you think the provided materials are enough? What other materials or tools that you wanted to use but I didn't provide?
 - For the overall of the study, was everything clear and straightforward?
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- Do you have any questions and suggestions about the study?