Questionnaire for the evaluation of the experiment

Unless otherwise indicated, please use the following scale to indicate the extent to which you agree with each statement: -- = strongly disagree, - = disagree, o = I do not disagree or agree, + = agree, ++ = strongly agree.

Personal Information:

What is your major field of studies?

What is your year of study?

Please list all lab courses you have finished during your studies:

	--	-	o	+	++
In general, I am interested in digital technologies.					
In general, I am interested in physics.					

In general, where would you put doing lab experiments on the following scales of opposites? Tick the statement that applies to you on the line below.

1 boring	2	3	4	5 interesting

1 useless	2	3	4	5 useful

1 hard	2	3	4	5 easy

1 stressful	2	3	4	5 fun

Efficacy/perceived learning gains

After completing the task…

	--	-	o	+	++
… I could explain the physical concepts in this task to someone else.					
…. I could explain what I have done in this task to someone else.					
… I feel more confident in conducting physics experiments.					
… I am more interested in conducting physics experiments.					

… I have a better insight into what research in experimental physics looks like.					
… I feel like I learned something new.					
… I feel more confident in using digital technologies in the lab.					

Adequacy of the task

	--	-	o	+	++
The learning objectives of the task were clear to me.					
The task instructions were easy to understand.					
The task instructions had a clear layout.					
Instructions on how to use the digital technologies in this task were sufficient for me.					
It is clear to me how this task is related to my field of study.					
I have the conditions (e.g., necessary equipment) to conduct this experimental task at home.					
I feel confident that I could do the experiment on my own at home.					

Please mark the answer that applies to you:

- This experimental task was
    - **too easy**
    - **adequately challenging**
    - **too difficult**

  for my level of study.
- Task instructions and supportive materials were
    - **too detailed.**
    - **sufficient.**
    - **insufficient**.
- How much time would you need to complete this experimental task without any pressure?
- I would prefer to do this task
    - **on campus.**
    - **synchronously (e.g., during a web-conference) at home.**
    - **asynchronously (e.g., support only via e-mail) at home.**
    - **no preference**
- For this task, I would prefer to work
    - **alone**
    - **in pairs**
    - **in small groups.**

Which task instructions were confusing?

Students' experience during the task

	--	-	o	+	++
During this task I felt skilled at what I was doing.					
During this task, I was interested in what I was doing.					
I understood this task as a challenge.					
During this task, I felt surprised.					
During this task, I felt curious.					
During this task, I felt excited.					
During this task, I felt confused.					
During this task, I felt anxious.					
During this task, I felt frustrated.					
During this task, I felt bored.					
I had opportunities to use my creativity in designing and conducting experiments.					
I had opportunities to make my own decisions about the experiment.					

Experimental activities in focus:

In this task I had to:

	No	Somewhat	Yes
Formulate or identify the research question.			
Formulate my own hypothesis.			
Assemble the experimental setup.			
Decide what physical quantities I need to measure in the experiment.			
Decide how to measure physical quantities in the experiment.			
Collect reliable data.			
Debug/solve apparatus-related difficulties.			
Document the experimental process.			
Analyze the experimental data.			
Determine the uncertainty of the experimental data.			
Evaluate the results by comparing them with the hypotheses/predictions/known theory.			

Discuss the limitations of the experiment.			
Draw my own conclusions of the experiment.			
Use different representations for data visualization (graphs, tables, …).			
Present and discuss the results of the experiment using scientific terminology (e.g., in a lab report or an oral presentation).			

Use of digital technology in the task

	--	-	o	+	++
The use of digital technologies made this task difficult.					
Digital technologies made this task interesting.					
The digital technologies helped me to develop further my experimental skills.					
The digital technologies helped me get a better understanding of the physical concepts.					
The effort to learn how to use digital technologies in this task was worthwhile.					
I prefer to use standard lab equipment instead of digital technologies like smartphones/simulations.					
Digital technologies made performing the task easier.					

In what way did the use of digital technologies impact your learning process?

Final open questions:

Rate this task based on your overall impression (regardless of your own performance) on a scale of 1 (worst) to 10 (best).

What did you like about the task? And why?

What did you dislike about the task? And why?

What would you change in this task? And why?