

Fantastic DNA in a Box! Data Entry Protocol 2022

Introduction to children feedback data entry

Thank you for volunteering to help the Cell EXPLORERS team input feedback data into Microsoft Forms. Each year can receive up to 1000s of children's feedback forms so your help in analysing these questionnaires is an invaluable step in evaluating our activities.

Some important things to note:

- You must have attended the *Data entry and analysis training* with the Cell EXPLORERS coordinators (Muriel, Janic or Sarah) to enter children's feedback into Microsoft Forms. This comprises:
 - Completing the online module data entry training at <https://www.cellexplorers.com/activitymodules> (There may be minor changes since then but the principle is the same)
 - Attending a live practical training session with a CE coordinator
- Once trained, Janic/Sarah will provide you with envelopes of children's feedback to enter into MS Forms. You will enter data one envelope at a time.
- The data contained in the envelopes are **confidential**. Envelopes must remain on the NUI Galway campus unless discussed and agreed in advance with coordinators.
- You **cannot make any copy** of/keep the feedback sheets you are given.

The data entry protocol (summary)

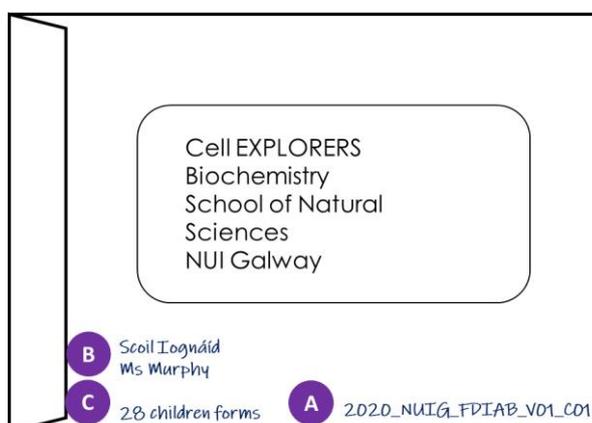
The data entry protocol comprises 6 steps:

1. Familiarise yourself with the feedback envelope
2. Assign each form a unique code
3. Access the Microsoft forms
4. Input the data into Microsoft forms
5. Click submit and start again
6. Tell the coordinator when you are finished

The next page describes each step in detail.

The data entry protocol (detailed)

1. **Familiarise yourself with the feedback envelope:** You will have been provided with a number of A4 envelopes containing children's feedback forms.



Each envelope has the following:

- A. A **unique code** (a.k.a the school visit code) to tell you what year, team and visit number the feedback is from. The code is written in the format: Year.Team.Visit. e.g. 2021NUIGV01 or 2022AITV03
Note: Single digit numbers (1-9) should be written with a 0 preceding it e.g. 01, 02, 03
- B. An indication of **the school name** and the **teacher name** associated with the feedback
- C. The **number of the children feedback** included in the envelope
- D. Which team **delivered the box**
- E. The delivery format of the session: CE online (on Zoom/teams), CE On Campus, CE In-person, Teacher
- F. If the session was delivered by CE online, **which team delivered the session**

2. ****Assign each form a unique code:**** On the back of the form, underneath the drawing of the scientist, write a unique code that includes all the information on the envelope e.g. 2021NUIGV01.01. The following form would have the code 2021NUIGV01.02, followed by 2020NUIGFDIABV01.03 so on so forth. See the example in the photo. *This step may have been done for you already.* **IMPORTANT – DO NOT FORGET.**



Why is this important?

- The code distinguishes each questionnaire from each child
- The code must be placed underneath the drawing, as we often take photos of the drawings to analyse separately. This way, we know which questionnaire the drawing originally came from.

3. **Access the Microsoft Forms to input the data:** To access the Microsoft Forms used to input the data, click on the following link: <https://forms.office.com/r/99y9uHNMsA>
The same link is used for feedback received on FDIAB from primary, secondary schools or youth groups.

4. Input the questionnaire data into Microsoft Forms: Inputting the data involves going through each Microsoft Forms question and answering it relating to the feedback form. There are three aspects to this:

- a) Entering the information associated with the visit details
- b) Entering children's responses to closed-answer questions (E.g. tickboxes, circling answers)
- c) Entering children's responses to open-answer questions (i.e. when children have written sentences)

4a. Entering the information associated with the visit details (Q1-Q10): This tells us information about the visit associated with this feedback forms. This information is provided either on the envelope or communicated to you by a CE coordinator.

4b. Entering children's responses to closed-answer questions

Closed-answer questions are those with a tick box/one word answers e.g. Q11 '*Did you do an experiment with a Cell EXPLORERS scientist?*'

- Answer each Microsoft Forms question as it was answered by the child in the form
- For **multiple-choice** questions, tick all the selected options
- If you come across something unusual that does not fit one of the provided options (e.g. a child has create a new option), make a *data analyst* comment in **Q35**. In addition, make a note of the feedback form code and what you were unsure of, and discuss this with Janic/Sarah.

4c. Entering children's responses to open-answer questions

Open-answer questions are those which comprise a sentence/words written by the child e.g. Q17 '*Was the scientist on Zoom like the words you chose above? Why or why not?*'. There are two in the questionnaire: Q17 and Q25: '*I liked this BEST because...*'

- **Input the response** as written by the child. Do not re-phrase how the child wrote the answer
- In addition to inputting what children wrote in the survey, each answer must also be **coded** by you, the data analyst.
- To code the answer, after writing the original response, you will be asked some questions to help you determine *which category* fits the answer best.

 **What does coding mean?** *Coding* refers to categorising qualitative data (words and sentences) so that they can be grouped together. This allows us to *quantify* the data i.e. put numbers to the words e.g. 50% of children said they liked doing the experiment best because 'it was fun'.

Inputting the questionnaire data into Microsoft Forms: Question by Question

Information associated with the visit:

- **Q1: Assigned feedback number** : done by you in Step 2 e.g. 2021NUIGV01.01
- **Q2: Year of visit** (it's in the feedback number i.e. 2021NUIGV01.01)
- **Q3: Cell EXPLORERS team that delivered the box** (as written on the envelope)
- **Q4: What was the delivery format of the visit?** (as written on the envelope)
- **Q5: CE team that delivered the online session** (as written on the envelope)
- **Q6: Type of visit** (the CE coordinator will tell you beforehand)
- **Q7: School (/youth group) name** (as written on the envelope)
- **Q8: Teacher name** (as written on the envelope)
- **Q9: Date** (as written on the envelope)
- **Q10: Does this questionnaire use the Old or New format?** (as written on the envelope)



It is very important that you write Q6-Q10 exactly as it is written on the envelope for each questionnaire.

Entering children's feedback

- **Q11: Did you do an experiment with a Cell EXPLORERS scientist?** Tick the response indicated on the form. If missing an answer select 'no answer'
- **Q12: Child's gender.** Tick the response indicated on the form
- **Q13: Child's age.** Tick the response indicated on the form.
- **Q14: Class.** Tick the response indicated on the form. If 'other' specify in Q14
- **Q15: What did you think about the Fantastic DNA activity?**
 - This is a Likert-type question: children had to choose their response to 5 statements from a 5-point scale: (1) Strongly disagree (2) Disagree (3) Neither agree nor disagree (4) Agree or (5) Strongly agree
 - For this section, choose the answers in the MS forms exactly as chosen by the child.
 - If there is a statement missing an answer, choose 'no answer'
 - If a child has accidentally ticked 2 boxes for 1 statement, tick the 'ticked more than 1' and make a comment in the analyst box at the end e.g. 'Child ticked 2 boxes for 2nd statement of Q2: boxes 2 and 3'. It is important to be specific so we can decide which answer to take.
- **Q16: Circle the 3 words that you would have used to describe a scientist before FDNA**
 - Tick as many words that have been circle by the child
 - If no words have been circled, tick no answer
- **Q17: Was the scientist on Zoom like the words you chose above? Why/Why not?**
 - Type exactly as was written by the child
 - If there is no response, leave blank
- **Q18: Code Q18 level 1: Was the scientist like the words you chose above?**

This is an example of where you need to *code* the response given i.e. assign it to the category that fits the meaning best. **The code will express whether or not the child expected the scientist to be like that /like they were.**

Table 1 below gives explanations of the coded answer and example.

Table 1. How to answer Question 18: Coder Question 18 Level 1

Coded answer	When to use it	Examples of children answers given
Yes	The answer given states agreement that the scientist were like the words chosen above E.g. I Did, Yes, or a statement that inferred agreement, even is not explicitly stated.	<ul style="list-style-type: none"> ○ yes because they are really smart ○ I did because when I saw them first they looked very nice
No	The answer given states disagreement that the scientists were not like the words chosen above E.g. I Didn't, No, or a statement that inferred disagreement, even is not explicitly stated.	<ul style="list-style-type: none"> ○ I didn't think they would be so friendly. ○ I expected them to be more strict
N/A	The answer does not allow to determine if the child agree or disagree whether the scientists were as expected. Answer could mean 'Yes AND NO' as well as 'Neither yes nor no'	<ul style="list-style-type: none"> ○ Sort of... they were extra nice ○ I thought they would be doing the experiment and we would be watching ○ Not completely, I don't know why

• **Q19 Code Q17 level 2**

This code will categorise the types of explanation is provided to the first part of the question. This is to allow us to focus on the meaningful answers to the questions (the ones that really answer the why/why not questions) as a later stage of analysis.

Table 2 (next page) gives the 4 possible categories the answers are coded into, their meaning and associated example are outlined below.

Table 2. How to answer Question 20: Coder Question 18 Level 2

Coded answer	When to use it	Examples of children answers given
A	When the answer means: I don't know, Not sure, Wasn't expecting anything, I don't understand the question	<ul style="list-style-type: none"> ○ I don't know ○ Like what? ○ Yes I don't know why
B	Agree/disagree but does not give an explanation. E.g. "Yes", "No", "I did", "I didn't"	<ul style="list-style-type: none"> ○ Yes ○ No ○ I did ○ Yes I did expect that
C	State agreement/disagreement and give a relevant explanation as to why/how the scientist met/did not meet the child's expectations. Agreement/disagreement may be inferred (<i>by the use of superlative for example</i>) and not explicitly stated. E.g. "No because they knew so much"	<ul style="list-style-type: none"> ○ No <u>because they knew</u> so much ○ I didn't think they <u>would be so</u> friendly. ○ Yes <u>because he works</u> in a lab ○ No I thought they'd be boring but they were actually helpful and kind ○ I expected them <u>to be more strict</u>
D	Explanation that is not relevant to the child's expectations of the scientist. Gives a statement about anything else other than the expectations relating to specifically the scientist. E.g. "I did because when I saw them first they looked very nice"). May or may not state agreement/disagreement.	<ul style="list-style-type: none"> ○ I thought she wasn't going to be helpful (<i>impossible to know if as expected or not</i>) ○ Yes, I really liked her (<i>not an explanation of expectation</i>) ○ I thought they would look normal (<i>impossible to know if as expected or not</i>)

		<ul style="list-style-type: none"> ○ I expected them to be like that because they either wanted to be like that or were told to be like that (<i>the explanation does not relate to how the scientists were in the child's opinion, but gives a another explanation to why they were like that</i>) ○ I expected them to be sound (<i>impossible to know if as expected or not</i>) ○ I did because when I saw them first they looked very nice (<i>impossible to know if description relate to what happen during the session</i>) ○ Lovely (<i>impossible to know the meaning of this answer</i>)
Unsure	If you are Unsure of the code to select, include the code that you think fit the answer best in this box and explain why you are unsure	

- **Q20: If you chose 'unsure' for Q19:** here you can comment on why you were unsure, and include the code that you think fits the response best. If you did not choose 'unsure' for Q19 you can skip this question.
- **Q21:** Please write any adjectives used to describe the scientist in the explanation separated by a comma e.g. Creative,Mad,Boring. If no adjectives were used, skip

For example: the child wrote in Q17 'No the scientist wasn't mad or crazy they were actually creative and kind' write for Q21: 'mad,crazy,creative,kind'.

- **Q22. Only answer if you met the scientist on Zoom**

This is a Likert-type question: children had to choose their response to 5 statements from a 5-point scale: (1) Strongly disagree (2) Disagree (3) Neither agree nor disagree (4) Agree or (5) Strongly agree (Figure 1).

- For this section, choose the answers in the MS forms exactly as chosen by the child.
- If there is a statement missing an answer, choose 'missing answer'
- If a child has accidentally ticked 2 boxes for 1 statement, tick the 'ticked more than 1' and make a comment in the analyst box at the end e.g. 'Child ticked 2 boxes for 2nd statement of Q2: boxes 2 and 3'. It is important to be specific so we can decide which answer to take.

- **Q23: Why did you add soap to the solution?**

- Tick the response indicated on the form
- If there is no answer tick 'no answer'

- **Q24: Circle one thing you liked best in the session**

- Tick as many options that have been circle by the child

- If no options have been circled, tick none
- **Q25: I liked this BEST because...** Type what the child wrote
- **Q26: Code Q25.**
 - Question 21 of the children’s questionnaire reads “I liked this best because...”. It provides an explanation to a specific part of the session selected by the child in question 20 (**The Fantastic DNA! experiment** - Circle ONE thing you liked best in the session. Please only pick one).
 - The answer to Q21 can be coded with one of the options presented in the table 3 on the next page
 - Use the coded answers (green, blue, red) when the child statement matches the general code ideas or categories.

Table 3. How to answer Question 28

Highlighted in yellow: new 2021

	Coded	When to use it	Examples of children answers given
Describing the session	It was fun/I enjoyed it	Direct reference to positive outlook on doing the session	<i>“it was fun making the DNA”</i>
	It was interesting	Direct reference to expression of interest in the session/the session's contents	<i>“I felt good because I learnt something new and interesting and they were nice”</i>
	It was easy	Direct reference to completing the session with ease/finding the work easy/easy to understand the concepts	<i>“Its easy to understand and enjoyable”</i>
	It was squishy/weird (talking about the banana)	Direct reference to the sensation of working with the banana	<i>“I really liked smashing the banana and taking the DNA”</i>
pedagogical aspects	It was different from usual work	<i>Reference to the session's contents/activities deviating from normal school work</i>	<i>“we don't do this kind of things in school”</i>
	We used lab equipment/lab coats	Direct reference to the use of real-life lab equipment	<i>“it was my first time to use real laboratory equipment”</i>
	I felt independent	Direct reference to working alone/by themselves/independently	<i>“I could do it all by myself”</i>
	Team work	Reference to working with peers/teamwork	<i>“we weren't using stuff that wouldn't usually. I aslo like working a small group”</i>
	I got to take the DNA home	References to bringing the DNA home/showing it to their family	<i>“cool to bring home the DNA”, “I can show it to my family”</i>
How the session impacts the child	I felt like a scientist	Expression of feeling/working as a scientist	<i>“I liked using lab equipement because I felt like a real scientist”</i>
	I learned new things	Direct reference to learning new things/experiencing new content	<i>“It was really interesting and it was new to me to learn DNA”</i>
	I like/love science/I want to be a scientist	Direct reference to science career aspirations/desire to become involved in science/liking or loving science	<i>“because I want to have a Job that uses sicens”</i>
No Answer	No Answer	When the answer is blank or when the child has not answered the question asked.	

		For example, children often restate the answer given in the previous question	
Answer Makes No Sense	Answer Makes No Sense	Select this when you cannot code the answer because you cannot understand what is written or it is not a word, or the response to the question makes no sense to you.	
Other	Other	Use when you believe none of the options given are truly represented by the codes provided. Think carefully about the explanation given by child. This category needs to be minimised.	

Worked Example of coding Q28:

- The child's response to this question is: *"because I want to have a Job that uses sicens"*.
- Enter the child's answer in Q25: *"because I want to have a Job that uses sicens"*
- Answer Q27 to code why the child liked this best by selecting the options that best fit the response given. Use Table 3 to guide you. In this case we consider that the best code would be "I like/love science/I want to be a scientist".

Important to note!

- You are not looking for an exact or literal match of the child's response to the coded answer. An answer may not contain the exact wording of the code but may still fit under its description. For example, an answer such as *"I could do it all by myself"* may be coded under *"I felt independent"* as they express the same idea.
- Multiple codes may be applicable to a single answer e.g. *"It was fun making the DNA all by myself"*. In this case, you could select codes 'It was fun' and 'I felt independent. There is no upper limit to the number of codes you can apply to a response.

- **Q27: Science and you.** This is a Likert-type question: children had to choose their response to 9 statements from a 3-point scale: (1) Less than before (2) same as before (3) More than before
 - For this section, choose the answers in the MS forms exactly as chosen by the child.
 - If there is a statement missing an answer, choose 'missing answer'
 - If a child has accidentally ticked 2 boxes for 1 statement, tick the 'ticked more than 1' and make a comment in the analyst box at the end e.g. 'Child ticked 2 boxes for 2nd statement of Q2: boxes 2 and 3'. It is important to be specific so we can decide which answer to take.
 -

- **Q28: Did they include a drawing?**
 - If they included a drawing tick yes
 - If there is no drawing tick no
- **Q29: Give a title to the drawing**
 - If there is a title type as written
 - If there is no title leave blank
- **Q30: Scientist gender.** Tick the response as indicated in the form
- **Q31: Did you draw yourself?** Tick the response as indicated in the form
- **Q32: In your opinion, is the drawing exceptional?** (e.g. very colourful, draws a CE explorer). This is just to help us find drawings that are good to use in visual infographics!
- **Q33: Data analyst initials:** Type your initials e.g. Sarah Carroll would be SC
- **Q34: If this feedback form contained particularly nice quotes anywhere** - please write them here - this is useful for us!
- **Q35: Data analyst comments.** Here you have space to write any comments that you think would explain that data for the CE research team e.g.:
 - You were not sure of which code fitted the response for some open-answer questions
 - A child ticked multiple boxes for the same likert-type statement: give details of which boxes they ticked
 - There are some particularly nice quotes in some of the responses

5. Click submit and start again:

- Click submit
- Click 'Give another response' and start again from step 2 with new questionnaire

6. After inputting data from an envelope: Congratulations, you completed it! Now this is what you do next:

- Return the feedback envelope(s) to Janic/Sarah
- Provide Janic/Sarah a file containing the list of feedback where a mistake has been made so that he can fix them as soon as possible
- Let Janic/Sarah know of any issues you have encountered.

Finally, thanks for your help! We couldn't do it without you.

Below are examples of output of what your contribution will lead to: Infographics or conference presentation presenting evaluation results.

- Yearly detailed Fantastic DNA visits evaluation for Science Foundation Ireland
- Summary Infographics (on our website) see for example [Infographics Cell EXPLORERS NVRL 2017](#)
- Communication to conference – example [here](#)

