Evaluation of Outreach Activities: The Art of Asking Questions

Dr Wai Yi Feng
Royal Society Ogden Education Research Fellow
wyf21@cam.ac.uk

Faculty of Education
To keep in mind …

1. What is YOUR purpose for evaluation? What specific questions/issues do YOU want to address?

2. How are you going to use the data in response to each question? How does this link up with your purpose (see 1)?

3. Do a mock run of the WHOLE process if you can. Be prepared to adapt your evaluation approach and questions.

4. Be systematic. Aim for rigorous incremental steps.

5. Be realistic. Accept and work within limits to build wider picture (see 4).

6. For questionnaires: formatting and layout matter. This may have implications for how you phrase questions.
Are you more likely to … ?

Illustrative example: workshop series to increase Y9/Y10 girls’ confidence and resilience, ultimately to increase number of girls taking A-level physics

• Are you more likely to choose to study A-level physics?
  - Yes
  - No

Think 1: Purpose, specific questions/issues

Think 2: Use of data
Are you more likely to … ?

- Are you more or less likely to choose to study A-level physics as a result of attending the workshops?
  - More likely
  - Neither more nor less likely
  - Less likely
  - Don’t know / Not relevant

Think 2: Use of data
Are you more likely to … ?

- Are you more or less likely to choose to study A-level physics as a result of attending the workshops?
  - A lot more likely
  - A bit more likely
  - Neither more nor less likely
  - A bit less likely
  - A lot less likely

- Think 2: Use of data

- Think 1: Purpose, specific questions/issues
Are you more likely to … ?

• Are you more or less likely to choose to study A-level physics as a result of attending the workshops?
  - A lot more likely
  - A bit more likely
  - Neither more nor less likely
  - A bit less likely
  - A lot less likely
Why? (Please explain.)

- [ ] Think 3: Mock run
- [ ] Think 2: Use of data
Are you more likely to … ?

• How likely were you to choose to study A-level physics before the workshops?
  - Very likely
  - Somewhat likely
  - Neither likely nor unlikely
  - Somewhat unlikely
  - Very unlikely

• How likely are you to choose to study A-level physics now?
  - Very likely
  - Somewhat likely
  - Neither likely nor unlikely
  - Somewhat unlikely
  - Very unlikely

Why? (Please explain.)

Think 5: Be realistic
Think 4: Be systematic
Are you more likely to … ?

• Pre:
  How likely are you to choose to study A-level physics?
  Certain ← ———— Not at all likely

• Post:
  How likely are you to choose to study A-level physics?
  If you had not attended the workshops, how likely do you think it would be for you to choose to study A-level physics?
  Certain ← ———— Not at all likely

Think 2: Use of data
Think 3: Mock run
Are you more likely to ...?

As a result of attending the workshops, I am:

More likely to choose to study A-level physics

More confident in my abilities to ...

Less likely to ...

Think 6: Formatting and layout
Illustrative example: workshop series to increase Y9/Y10 girls’ confidence and resilience, ultimately to increase number of girls taking A-level physics

“Why might you want to study A-level physics?”

- **Comments:**
  - simple box
  - before v. after

- **Multiple choice:**
  - choose as many as applies
  - choose top 3
  (+ Other - Please specify.)

- **Interview:**
  - choice cards + “?”
  - diamond or spectrum

- Think 5: Be realistic
- Think 2: Use of data
- Think 4: Be systematic
Words that describe a physicist

- Before v. after workshops
  - free writing
  - choose from a bank of words

- Think 1: Purpose, specific questions/ issues
- Think 2: Use of data
- Think 3: Mock run
Use of common questions

- Advantages:
  - Continuity
  - Comparability

- Common questions from:
  - question bank
  - international study/research
  - colleagues
  - self construct

- Think 1: Purpose, specific questions/ issues
- Think 2: Use of data
- Think 3: Mock run

To what extent has the Engineering Education Scheme (EES) achieved the following?

<table>
<thead>
<tr>
<th>Support for Learning in School</th>
<th>To a very large extent</th>
<th>To a large extent</th>
<th>To a moderate extent</th>
<th>To a small extent</th>
<th>To a very small extent</th>
<th>Not at all / Not relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helped me better understand the things I learn in lessons</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Helped me better understand how the things I learn in lessons can be applied in the real world</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Gave me a better appreciation of how the things I learn in school will be of use to me in the future</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Gave me a different perspective on the things I learn in school</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Made me a more independent learner</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Made me more determined to succeed</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Motivated me to persevere more with school work</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Answered questions I had which my teachers were not able to or did not have time to explain</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Taught me new skills or techniques which I can apply in my school work</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Helped me to review and consolidate what I learn in school</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Better Understanding of Science, Technology, Engineering and Mathematics (STEM)</th>
<th>To a very large extent</th>
<th>To a large extent</th>
<th>To a moderate extent</th>
<th>To a small extent</th>
<th>To a very small extent</th>
<th>Not at all / Not relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gave me insights into aspects of Science, Technology, Engineering or Mathematics I was not aware of</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Gave me experience in Science, Technology, Engineering or Mathematics I would not otherwise have come across</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Comparison based on common questions

Illustrative example:
Students’ experience of EES v. Students’ experience of Go4SET

Go4SET is intended to be a mini-version of EES, targeted at a younger age group.

Similar profiles provide first evidence that vindicates design decisions.

Examination of differences enables better understanding of both schemes.
## Reference to Criteria: Example of EES

### Types of Impact

**Met expectations (90%–100%):**
- Support for Learning in School (91%)
- Better Understanding of STEM (93%)
- Personal and Social Development (100%)

**Working towards expectations (75%–90%):**
- Development of Skills (85%)
- Insights into STEM Related Study / Careers (81%)

**Similar profiles**
- EDT staff have good, shared understanding of EES performance, strengths, weaknesses
- EES performs well relative to EDT expectations

### Indicators

**Exceeded expectation (>100%):**
- Made me like or enjoy STEM more (116%)
- Increased my self-confidence or resilience (102%)

**Met expectation (90%–100%):**
- Deepened my understanding of STEM (96%)
- Gave me experience in STEM I would not otherwise have come across (91%)

**Working towards expectation (75%–90%):**
- Taught me new skills or techniques which I can apply in my school work (87%)

**Falling short of expectation (<75%):**
- Improved my organisational skills (73%)
Thank you!

Wai Yi Feng

wyf21@cam.ac.uk