

## Survey findings – Back to School

In 2016, a standardised online survey was employed to explore the PSTs' experience with the Back to School activity. The survey consisted of five sections (17 questions in total): overall experience, knowledge change, attitude change, capacity change, and students' engagement. The survey was administered to 13 PSTs who participated in the activity, with 3 returned useable responses. The responding rate was 23.08 per cent, which is considered to be relatively low.

### Overall experience with the activity

Almost all participants responded positively in relation to their overall experience with the activity. Specifically, two-thirds respondents reported that this activity worked and all respondents enjoyed the process of participating in the activity. Also, all responding PSTs agreed that the process has been effective in supporting their learning/professional development, and the activity has been a valuable part of their teacher education. According to the responses, the activity was less effective in terms of interacting PSTs and science students since only one respondent strongly agreed that he/she gained a lot by collaborating with the partner science students. Table 1 shows the responses to the five questions in relation to participants' overall experiences.

**Table 1. Responses from PSTs to their overall experiences with the activity**

Question	2	1	0	-1	-2	N/A
13. I felt the ReMSTEP activity worked well	33.33%	33.33%	33.33%	0.00%	0.00%	0.00%
14. I enjoyed the process of participating in this project	66.67%	33.33	0.00%	0.00%	0.00%	0.00%
15. The process was effective in supporting my learning/professional development	33.33%	66.67%	0.00%	0.00%	0.00%	0.00%
16. I gained a lot by interacting with science students in the project	33.33%	0.00%	3.33%	0.00%	0.00%	33.33%
17. This has been a valuable part of my teacher education/professional development experience	33.33%	66.67%	0.00%	0.00%	0.00%	0.00%

2=Strongly Agree, 1=Somewhat Agree, 0=Neither Agree nor Disagree, -1=Somewhat Disagree, -2=Strongly Disagree

### Knowledge change

The main aim of the activity was not to infuse the participating PSTs with new science/mathematics knowledge; as a result, no respondents reported they learn useful and interesting science concepts through the activity. However, being exposed to the real classroom teaching allowed the PSTs to learn about science/mathematics practices and how these might be represented in the curriculum. All the respondents noticed their gaining in this respect. Table 2 presents the details of responses to the two questions in relation to PSTs' knowledge change.

**Table 2. Responses from PSTs to their knowledge change as a result of the activity**

Question	2	1	0	-1	-2	N/A
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1. I learnt some useful and interesting science concepts	0.00%	0.00%	66.67%	0.00%	0.00%	33.33%
4. I have been surprised by what I learnt about science/mathematics practices, and how these might be represented in the curriculum	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%

### Attitude/Identity change

One of the key goal of ReMSTEP was to change the PSTs' mindset, to make them feel more positive towards science and science teaching, and to re-understand the role of science teacher. In this respect, the activity did not achieve as well as in other aspects since a considerable part of the respondents reporting neutral or not applicable to the questions related to attitude/identity change. One of the possible explanations could be that they had already developed a positive attitude towards science teaching and then decided to commit to it. Only one respondent claimed moderate change in his/her attitude towards science and/or science teaching. The same happened to the question asking change in one's understanding of the role of science teacher.

**Table 3. Responses from PSTs to their attitude/identity change as a result of the activity**

Question	2	1	0	-1	-2	N/A
2. There has been a positive change in my attitude towards science and/or teaching science	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%
3. There has been a change in my understanding of the role of science teacher	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%

### Capacity/Practice change

Responses to the survey suggest various levels of agreement reported by PSTs to the five aspects of capacity improvement as a result of the activity (see Table 4 for details). The activity performed highly effectively in relation to providing participants with experience in understanding and communicating science/mathematics ideas to students, and to build up their confidence in teaching science/mathematics-related subjects. All respondents reported positively to these two aspects. There is one-third respondent agreed with the benefits of engaging in new and interesting approaches to teaching science, learning things about engaging with contemporary science that will influence their future teaching, and ideas of bringing contemporary science practices into the school curriculum.

**Table 4. Responses from PSTs to their capacity/practice change as a result of the activity**

Question	2	1	0	-1	-2	N/A
5. I was engaged in new and interesting approaches to teaching science	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%
6. I have learnt things about engaging with contemporary science that will influence my teaching in the future	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%

7. I gained ideas for how to bring contemporary science practices into the school curriculum	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%
8. I have gained experience in understanding and communicating science/mathematics ideas to students	33.33%	66.67%	0.00%	0.00%	0.00%	0.00%
9. I feel more confident in teaching science/mathematics-related subjects at school	33.33%	66.67%	0.00%	0.00%	0.00%	0.00%

Students' engagement

The impacts of ReMSTEP are expected to transform from the PSTs to the school students ultimately. The participating PSTs are expected to pass on their learning to their future students. This particular activity included two-day placement in both the primary and secondary schools, which provided the PSTs with opportunities to interact with school students. According to the survey response, no impact was observed by respondents on students' engagement. The reason for this result could be that the two classes were both about mathematics rather than science. It might make the respondents feel the questions less relevant to their experiences. Table 5 presents the results of the answers to the three questions investigating the impacts on students' engagement.

**Table 5 Responses from PSTs to the impact on students' engagement as a result of the activity**

Question	2	1	0	-1	-2	N/A
10. Students developed new understanding of the nature of scientific practices	0.00%	0.00%	33.33%	0.00%	0.00%	66.67%
11. Students were productively engaged with learning science	0.00%	0.00%	33.33%	0.00%	0.00%	66.67%
12. These activities featuring contemporary scientific practices positively impact on students' engagement with science	0.00%	0.00%	33.33%	0.00%	0.00%	66.67%