In 2012-13, the University of York’s Centre for Lifelong Learning ran a course for parents to teach them the science that their primary school-aged children were learning. This was funded by the Wellcome Trust and run at the National Science Learning Centre (NSLC) in York. After the success of this course, further courses were run in 2013-14. This document reports on the evaluation of the latest provision. It summarises the key findings, describes the methods used for the evaluation, gives detailed findings and makes suggestions for improving the course if funding is awarded for future provision.

Key Findings

- Parents reported positive changes in views or attitudes towards science as a result of doing the course, and increased confidence in talking about science with their children, whether taught face-to-face or online
- After the course, all parents said they felt they understood the science taught in primary schools
- The majority of parents, regardless of which course they attended, said they had spoken about what they had learnt on the course with their children.
- Children whose parents attended the courses showed an increase in scientific knowledge throughout the course, with a control group showing no increase in knowledge over the same period.
- All the courses are increasing children’s enthusiasm for science and are encouraging children to think about careers in science.
Introduction
Following the success of the Key Stage 2 (KS2) course in 2013, in 2013-14 two 20-week KS2 courses was run at the National Science Learning Centre (NSLC) (see Figure 1), and two ‘community’ courses were held at venues in York: Poppleton Road Primary School (10 weeks) and Carr Children’s Centre (5 weeks). In order to expand the reach of the course, an online KS2 course was also run for six weeks. In response to demand from parents attending courses in 2013, a 20-week Key Stage 3 (KS3) course was also run at the NSLC.

All courses aimed to teach parents the science that their children learn at school, and were particularly aimed at parents who had limited scientific education. The courses used a variety of different methods for teaching in order to ensure the course was appropriate for different learning styles. These included watching experiments, YouTube videos, and presentations. The face-to-face courses also involved parents conducting experiments themselves, field trips, talks from scientists, and a course handbook with extensive notes.

The objectives of the course were to:
1. Increase the scientific knowledge of parents and encourage them to share this learning with their family
2. Create a range of learning materials suitable for a range of abilities, which could be used in other locations
3. Raise the aspirations of parents by bringing them onto the university campus.

Building on lessons learned from the previous project, advertising was undertaken through ‘taster sessions’ in schools, through leaflets sent via school ‘book-bags’, posters in schools and libraries, and through word of mouth from City of York Council Adult learning staff. The course was also advertised on the Centre for Lifelong Learning’s website.

Methods
Based on our experiences evaluating the course in 2013, we used several methods to evaluate the impacts of the project on pupils and parents. No formative evaluation took place during the course, because in 2013 this only yielded relatively small numbers of short comments which were not felt to be particularly useful. However, Alex (the course tutor) did give parents time to raise questions throughout the course, and this interaction was praised by several parents in the evaluation at the end of the courses.

Summative evaluation, which usually takes place at the end of the project, was used to assess the impact of the project on participants and pupils from all classes and online. A control group of children whose parents were not participating in the project was used. Three methods were used in this evaluation: pre- and post- knowledge and attitude questionnaire with children of attending parents and a control group, questionnaires with parents, and focus groups. In addition, email correspondence was had with the Community Engagement and Development Worker at City of York Council who was tasked with recruiting parents for the community course. Participants were encouraged to be as honest as possible in their responses.
**Pupil questionnaire**
The child questionnaire consisted of five multiple-choice questions designed to assess scientific knowledge, and 14 five-point Likert scale questions designed to assess attitudes towards science. These attitudinal questions were a sub-set of those used by Pell and Jarvis (2001) which had been developed for use by primary school aged children. Sixteen children whose parents attended the course completed the questionnaire before the start of the course and 23 when it finished, and children whose parents did not attend the course acted as a control group from St Wilfred’s primary school (ranked Outstanding in Ofsted 2009), with 58 completing the questionnaire before the course and 53 afterwards.

Appendix 1 shows the questions included on the questionnaire for pupils.

**Parent questionnaires**
Two types of questionnaire were used, quantitative questionnaires and a mainly open-ended questionnaire. These were designed in conjunction with the Centre for Lifelong Learning to ensure they were relevant for both their and their participants’ needs.

**Pre- post- questionnaire**
A seven item questionnaire was designed to be administered before and after the online course and the courses held at the NSLC, with 5-point Likert scale response options (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree and Strongly Disagree). This had the following questions:

1. I understand the science that is taught in primary schools
2. I like to watch science programmes on TV
3. I can understand basic scientific ideas
4. I can talk about science with confidence
5. I read science news stories
6. I am confident helping my children with science homework
7. I have a good general level of self-confidence

**Community questionnaire**
Due to the shorter duration of the community course, there was no pre- test questionnaire. An eleven item questionnaire was designed to be completed after the course. The questions aimed to be quick to complete whilst giving useful information. It had the following questions:

1. I understand more of the science that is taught in primary schools
2. I understand more science than before the course started
3. I’m more confident helping my children with science homework
4. I have spoken to my children about what I’ve learnt on the course
5. I’m more confident talking about science with others
6. My children are interested in what I’ve studied on the course
7. I will (or have) showed my children the experiments from the course
8. The course has been useful
9. The course has changed my attitude towards science
10. I have enjoyed the course
11. I would recommend the course to a friend

**Qualitative questionnaire**
This longer questionnaire for parents attending the face-to-face courses at the NSLC had 14 open questions which focused on whether the course met parents’ expectations, whether it had changed their views or habits in any way, and also gave them an opportunity to make any further comments. It was handed out at the end of the course with 15 minutes time given for completion. The same questionnaire was also circulated via email for parents to complete if they did not have time in the session. The questionnaire had the following questions:

1. Where did you first hear about the course?
2. What made you want to come on the course?
3. Overall, was the course what you expected? Please explain why / why not.
4. Do you think you have benefited from taking part in the course? If so, please list as many benefits as can think of.
5. Has the course changed your views or attitude towards science in any way? If so, how?
6. Have you spoken to your children about what you’ve learnt on the course? Please give details.
7. Are your children interested in what you’ve studied on the course? Please give details.
8. Since the course started, do you feel more or less confident helping your children with science homework?
9. Since the course started, do you feel more or less confident talking about science with others?
10. Would you recommend the course to a friend?
11. What do you think we should change for future courses?
12. Is there anything else you’d like to say about the course?
13. Would you like to do a more advanced science course at the Centre?
14. Would you be interested in attending similar courses on other topics? Please give details.

Focus groups
Focus groups lasting 45 minutes were held at the end of the NLSC courses. The focus group questions were developed in conjunction with Alex, to ensure it gave useful feedback for future courses. There were four parents in the Key Stage 2 group and three in the Key Stage 3 group, all women. The focus groups allowed me to gain a deeper understanding of the influence that the course had on participants, which gave parents enough time to discuss their motivations for attending the course, whether it was what they expected, whether they had talked about the course with their families, and whether the course had changed their attitudes towards science in any way. It also gave an opportunity to discuss any recommendations parents had for changes to the course. Anonymised quotations from these parents are used throughout this report to give examples of how the course has influenced participants.

Limitations
There were a number of limitations to this evaluation, which need to be considered when reading this report.

The focus group respondents were self-selecting. Unfortunately there were not sufficient numbers of participants able to attend the focus group time, and therefore we had to select based on availability, rather than randomly. This may have biased the participants towards those who felt particularly positive or negative about the course and wanted to give feedback about it, but close match between questionnaire and focus group responses suggests that this is not the case.

There were a very small number of responses to the questionnaires after the online course compared to the one conducted before the course. For parents the number of respondents reduced from 71 to 12, and for their children this went from 56 to 7. This is partly due to a problem with the current web platform, which does not allow surveys to be conducted more than once (causing problems for multi-child families), but also due to a reduction in active participants over the course.

There were also inconsistencies in the numbers of children completing the pre- and post-questionnaires, with some children only completing the post-questionnaire whilst others only completed the pre-questionnaire.

Findings

Children

16 pupils from the test group (whose parents attended a face-to-face course) completed the initial questionnaire and 23 the final questionnaire, and 58 pupils from the control group completed the initial questionnaire and 51 the final questionnaire.

Knowledge and attitudes
Five questions designed to test KS2 children’s scientific knowledge were asked before and after the course. Figure 2 shows that the percentage of children getting the correct answer varied depending on the question asked. Questions 1, 2 and 3 were based on experiments carried out in the class. Questions 4 and 5 were based on knowledge covered during the course.
Question 2 showed a large increase in the percentage of children getting the correct answer for the test group, with smaller increases for questions 1 and 4. The control groups did not show much difference over the time period. The increase in correct responses to question 2 indicates that this experiment may have been taken home and conducted with children.

Most of the questions designed to assess children’s attitudes towards science showed little discernible trend over the period of the course but there were five that did show some interesting patterns. These are shown in Figures 4-9. When interpreting these graphs, it is important to note that the online group ‘after’ response rate was low.

All course formats increased the percentage of children responding that they would like to be a scientist (Figure 4) and think that science is fun (Figure 5), compared to the control group which saw a drop in the percentage of children responding positively to this question. This indicates that all the courses, in the short term, are increasing enthusiasm for science and are encouraging children to think about careers in science.
There was a marked increase in the percentage of children whose parents had been on the face-to-face courses responding that they often do experiments at home, compared to both the control group and the online group (Figure 6). This may indicate that the online course is less successful at inspiring parents to conduct experiments at home than the face-to-face courses.

Similarly, responses to “I like science more than any other school work” were more positive after the course for the children whose parents had been on the face-to-face course than the online group or the control group, which saw a decrease in the percentage of positive responses to this question (Figure 7). As the online group sample size is so small, we should not read too much into this, but the control group response reduction suggests that over this six month period, the children whose parents had not been on the course showed a decrease in enthusiasm for science at school, whereas the enthusiasm for the test children was increased over the period.
Interestingly, only the KS2 children whose parents had done the face-to-face course showed an increase in positive responses to “I like to watch science programmes on TV” (Figure 8), but further research would be needed to discover why this is only the case for this age group.

Parents

Responses to the quantitative questionnaires give an overview of the outcomes of the courses, whilst the open-ended questionnaire and the focus groups give a richer picture of the outcomes.

Knowledge and attitudes – quantitative questionnaires

Online course

Although 71 parents completed the online questionnaire before the course, only 12 completed it afterwards. However, it does show that after the course parents understood the science taught in primary schools more, felt more confident talking about science and helping their children with science homework. There was also an increase in the percentage of people reading science news stories and watching science programmes on TV.
During the online course, there was a decline in the number of participants. A limitation of the current online system is that parents cannot progress through the course at their own pace, and this may have put some people off if they could not keep up (see Box 1).

**Face-to-face courses**

Parents participating in the face-to-face courses were asked to complete the same questionnaire as the online course parents, both before and after the course. As for the online course, there was a drop-off in response rates after the course, with 28 completing it before the course and only 15 completing it afterwards. Nonetheless, the results do show that after the course, all parents felt they understood the science taught in primary schools, and there was also a large increase in the percentage of parents responding that they felt confident talking about science and helping their children with science homework. Interestingly, after the course there were no parents disagreeing with the statement “I have...”
a good general level of self-confidence”, down from 20% before the course, which could indicate that the course not only increased parents confidence in science, but their self-confidence in other areas too. However, this result may also have occurred if the parents with low levels of self-confidence did not complete the second questionnaire.

![Figure 10 Responses of parents attending the face-to-face course at the NSLC to the questionnaire before and after the course. Note that the response rate after the course was small.](image)

Community course

Eight parents completed the community course questionnaire, which was a shorter version of the one issued for the more sustained initiatives. The results are shown in Figure 11. All eight enjoyed the course, would recommend it to a friend, and found it useful (strongly agree or agree). No responses were negative about the course.

All but one parent agreed that they understood more science than before the course started, and most said that they had spoken to their children about what they had learnt on the course and showed them experiments, see Figure 11.

Box 2: Feedback from Julia, who promoted the community courses on behalf of City of York Council

“The parents found the content fascinating and loved the practical demonstrations, it triggered many questions that they wanted to know the answer to.

They really enjoyed the course - the Poppleton Road course was extended and the learners at Carr wanted it to be longer!

The attendance was good and the people who completed were telling friends and spreading a positive message to others!”
Six of the parents agreed that they felt more confident helping their children with science homework, but only half agreed that they felt more confident talking about science with others. However, seven out of eight agreed that the course had changed their attitude towards science in some way.

As part of the course, a crèche was paid for to allow parents with childcare responsibilities to attend. Julia, from City of York Council’s Adult Learning team, said that this was very important for some of the parents: “If there was not childcare the parents using this facility could not come. At Poppleton Road Primary 3 parents could not have attended without childcare and at Carr Children’s Centre 6 parents. When all children are at school many parents try to find work, so it is usually the parents with younger siblings who are free to attend these courses”. She went on to say that “2 year old funding is reducing the need for childcare in some cases”. One of the parents attending the KS 2 focus group talked about this barrier to attending courses when asked what made her want to attend: “Because of my children, I wanted to do it for them. Alex came to our school the year before last, and told us about the course but I couldn’t do it the first year because I had the younger one at home, but when she went to school I could do it and wanted to do it, to get the information for them.”

Figure 11 Responses from the parents who attended the community courses. No respondents ticked ‘Disagree’ or ‘Strongly disagree’ and therefore these options are not shown.

**Knowledge and attitudes – qualitative questionnaire and focus groups**

Sixteen parents completed the qualitative questionnaire. Their responses give more detailed insight into some of their motivations for attending, changes in their knowledge and attitudes throughout the course, and their suggestions for future changes. All parents said that they would recommend the course, with a typical response being “Indeed and I have done so many, many times”.

Parents responding to the questionnaire had heard about the course from a variety of sources, but through school (6 parents) and word of mouth (4 parents) were the most common. One focus group parent highlighted the value of word-of-mouth advertising “A friend was doing the daytime course, and she made it sound very good”. Four parents said that they were not sure what to expect from the course, so in light of this, improved ways of explaining the format of the course when advertising might
be advantageous. When asked whether the course was what they expected, one of the focus group parents said “No, it was better. I was a bit worried about it, it was all very relaxed, it was an informal nature, it was lovely. I thought it might be too advanced, or maybe not advanced enough, but it certainly pitched it just right for me.”

The most commonly mentioned motivation for wanting to attend the course was, unsurprisingly, the desire to learn science (mentioned by 6 parents), followed by wanting to help children with homework (5) and wanting to understand what their children were learning at school.

Parents were asked if they felt they had benefited from taking part in the course. All said yes, and their responses are summarised in the figure below.

Figure 12 Wordle showing the coded responses to “Do you think you have benefited from taking part in the course? If so, please list as many benefits as you can think of”. The larger the phrase, the more times it was mentioned. ‘Learnt new things’ was mentioned by 11 people, whilst ‘team work’ and ‘had fun’ were both mentioned only once.

As well as learning about science and being able to help children more with their homework, there are other unanticipated benefits, including “Meeting interesting people (other parents) with different backgrounds / interests”.

The majority (12) of questionnaire respondents felt that the course had changed their views or attitude towards science, for example, “Yes, I can see the science as part of our daily life”, “Yes, in a positive way. Watching TV programmes with science in them, are not daunting.”, “Yes it seems much more ‘down to earth’ than it had before.” One of the KS 3 focus group parents said “I listen to things like the Life Scientific on the radio now, which I didn’t use to, I wouldn’t have gone anywhere near it, I was probably more ‘I won’t bother with that because I won’t understand what is going on’, so this has sparked more interest.”. Another KS 3 focus group parent felt that the course had really increased her enthusiasm for science, as she had previously dismissed science, feeling she was an “arts person”: “It’s like anything you learn, the more you learn, the more excited you are by it, and the more enthusiastic you are. And that has been the biggest bonus of this course, to ignite that enthusiasm”.

One parent attending the focus group gave a nice example of how she was now more aware of science on a daily basis: “I’m also more aware of things. I watch out for the rainbow and the double rainbow, is it really mirrored, things like that. And then of course I talk about it and everyone is looking out for them.”

One of the other parents responded by saying: “I think that’s the key thing, it’s not just about science as a topic, suddenly it’s all part of your life. And it does feel more part of it, I make up some of my own cleaning things, rather than spending silly money on stuff.”

Three questionnaire respondents felt that it hadn’t really changed their views or attitudes and one did not answer. It may be that these parents already had positive attitudes towards science, as one put it “I’ve taught at a very basic level some of curricular areas but the course offered more in-depth and detailed analysis.” A focus group parent demonstrated the value of small change: “I don’t think I’ve changed greatly, that’s why I did the course, because I was interested in science, but I’d always felt a bit lacking confidence. Still do, but that’s just me, but I feel a bit more confident now, so I can talk about it with my husband and things.”
All parents who responded said that they had spoken to their children about what they had learnt on the course: “I used some of what I’ve learnt to help with homework. They ask what I’ve done each week. We’ve tried some of the experiments”. Most reported that their children were interested in what they had learnt, but with varying degrees of interest, for example: “Absolutely! They waited for updates each week” and “They are very interested and always ask me questions. In fact, each time we try the experiments (of their own accord) they like to record the requirements and results in their own log-books” through to “Vaguely” with one parent explaining that their children were “interested in anything I can show them. Talking, not so much”. This highlights the appeal of the experiments, which were frequently praised by parents.

Confidence

Fourteen (of 16) parents said they felt more confident helping their children with science homework, with one not responding and one saying they felt about the same “as I studied the KS2 module, and my child in KS2 is not given Science homework.” One parent who said they felt more confident wrote “Having written and practical advice has been fantastic to refer to from time to time. The whole family’s involved.” One of the KS 3 focus group parents said:

“My daughter was doing some geology homework last night and I thought ‘ooh I know a bit about this’ because I’d done the course, whereas previously I wouldn’t have known. And I know where to look for things, I have a better idea of where to look around.”

A KS 2 parent said that the course “has given me more confidence to talk about some of the things that she is doing at school, and rather than thinking ‘ooh, she needs help with homework’, it’s given me the confidence to look at what she is doing and help where possible.”

One of the KS 2 parents attending the focus group described how the course had increased her confidence and transformed the way she thought about science:

“And actually I left school thinking I was stupid, because I just couldn’t do things. And this has definitely given me a lot of confidence. I’ve also just passed a course to do teaching assistant work. So I thought this would link in nicely, not only with my daughter and her homework, but if I was going into schools and classes, and understanding things. Because I thought, this was my biggest hang up, the thing I thought I wouldn’t be able to do and it’s really given me so much confidence in doing it, and I feel really pleased with myself, that I’m not stupid, I can do it, and yeah, it’s definitely changed my outlook on science as a whole.”

One parent described how her increased confidence has influenced others in her family “I think because I get excited about it and tell my mum, and say ‘mum, guess what, I can do this now’, and my daughter sees that and knows that I am confident and I like it, it is kind of like ‘ooh that must be fun, maybe I’ll like it too’”.

There were slightly fewer parents (12) reporting that they felt more confident talking about science to others, with one noting that “I don’t really talk to people about science (other than my family)”.

Figure 13 Families enjoying the demonstrations at the NSLC for the celebration event. As one parent said "my daughter just really enjoyed coming here and seeing where I’d been and doing grown up science" (Focus group parent)
Further learning
Fourteen parents said they would like to do a more advanced science course, one did not answer, and one said “probably not at the moment due to limited time”, but wanted sessions for the children instead: “Could you do a children’s / teenagers’ after-school activity??”. There was also enthusiasm from parents in the focus group for more advanced courses “I was pushing for them to do a GCSE one.”

Format and resources
Last year, parents said they would benefit from a more structured work book, to reduce the amount of time needed to take notes. This has been changed for 2014 and seems to have been appreciated. One focus group parent said “Alex provided the notes, in advance even, so if I had time, I was skimming through the next lessons just to know what was coming. I think they were very good” and another agreed “I found them very clear and simply written, and a ‘for dummies’ sort of text, even explaining what would be potentially very simple terms, explaining what they meant and things. I don’t think there were any instances when I looked at the text and thought ‘I’m not sure what that means’, which was brilliant”. Another said “I had a moment where I understood something for the very first time, having repeated it about twice at school, and it was the first time I ever understood it, and it was down to the explanation and the notes.”

Parents particularly appreciated the experiments that could be done at home, for example a questionnaire respondent wrote “Helpful, easy experiments to do at home - makes science more ‘alive’ and valuable.” One parent however did struggle with lack of equipment for the experiments, and suggested an alternative approach:

“I have found I haven’t the exact resources at home to do some of the experiments. Maybe we could borrow ‘experiment kits’ of a weekly basis?? I can’t afford Lego for example….we used to borrow toys from the toy bus and still borrow books from the library. The NSLC has all those resources in their library but don’t seem to be used by children. Maybe there could be a day during school term time we could bring the kids in to explore stuff, after school?” (Questionnaire respondent)

However, several parents commented that they found the experiments did use items that they already possessed: “Also using really simple things to do them with, like paper cups and pencils, and water and baking soda, you know, what you’ve got at home anyway.” (Focus group parent)

As suggested by parents last year, participants were able to switch between sessions as Alex taught the content in parallel. This has been positively received, as one focus group parent put it “because things come up at school at short notice, and you can’t go, so it was really helpful”.

Raising aspirations
As well as increasing the confidence of parents, the course aimed to raise awareness of careers in science and to encourage parents to support their children to think about careers in science. As part of this Alex arranged for other scientists to come in to discuss their work. This was positively received by parents, with one saying “When you think of having a career in science, you think of being a scientist, and you are going to do specific experiments and things like that, so it’s been interesting to learn that actually there is a really broad range of careers that involve science”. A discussion in the KS 2 focus group demonstrated the value of bringing masters students in to talk about their work:

Person 1: “it made me think that if you do science there is a lot of jobs that you can go into, but there is also a broad path to getting those jobs”.
Person 2: “yes, because none of them were geniuses were they, they all came in strange ways.”
Person 3: “Yes, normal people”
Person 2: “one said ‘I didn’t get my grades’ but ended up where they are.”

All course formats increased the percentage of children responding that they would like to be a scientist. One of the parents attending the focus group said “It’s given me confidence that my children can do science, and they can achieve more than I did.” Several parents mentioned that they had already attended events run by the University as a result of hearing about them via the courses, when previously they would not have heard about them or not been interested. This demonstrates the wider value to the University of running courses like these.
### Future courses

The questionnaire asked parents to suggest areas for improvement for future courses, these are summarised in the table below, with illustrative quotations.

<table>
<thead>
<tr>
<th>Suggestion for improvement</th>
<th># comments</th>
<th>Example quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>More experiments</td>
<td>5</td>
<td><em>Maybe some more scientific experiments</em></td>
</tr>
<tr>
<td>Improve publicity</td>
<td>2</td>
<td><em>I think it should be clearer that the course is actually 20 weeks, not the advertised 10 weeks.</em></td>
</tr>
<tr>
<td>Longer course</td>
<td>2</td>
<td><em>My only change for future courses would be for the course to run for more weeks so that some topics could be covered in greater depth.</em></td>
</tr>
<tr>
<td>More homework</td>
<td>2</td>
<td><em>More homework to revisit lessons</em></td>
</tr>
<tr>
<td>More interaction</td>
<td>2</td>
<td><em>More student centred discussion and feedback.</em></td>
</tr>
<tr>
<td>Different dates/times for family days</td>
<td>1</td>
<td><em>We have not been able to attend any (up until the recent certificate day) as we are often away at half terms.</em></td>
</tr>
<tr>
<td>Higher KS</td>
<td>1</td>
<td><em>Any other topics that children will cover up to GCSE.</em></td>
</tr>
<tr>
<td>Learning summary</td>
<td>1</td>
<td><em>Summary of learning at the end of each session and the course</em></td>
</tr>
<tr>
<td>More sections of curriculum</td>
<td>1</td>
<td><em>More sections of the curriculum, time permitting</em></td>
</tr>
<tr>
<td>More time per session</td>
<td>1</td>
<td><em>We sometimes ran out of time to complete the experiments, they felt a little rushed, so maybe an extra half hour on each session?</em></td>
</tr>
<tr>
<td>Copy of national curriculum</td>
<td>1</td>
<td><em>Only thing I can think of is maybe it would be interesting to have a copy of the National Curriculum for Science for us to have a look at to see how much we covered. Don’t need a copy per person, just a reference one.</em></td>
</tr>
</tbody>
</table>

One of the parents in the KS 2 focus group also raised the point about advertising 10 weeks as opposed to 20 weeks: “there were some people there that didn’t actually carry on, because in their mind, they thought they were finishing then, and they thought, ‘another 10 weeks’. I would have preferred to know it was 20 weeks straight off, but then Alex said, and I can understand this, ‘if you said it was a 20 week course then people would say ‘oh no, I haven’t got 20 weeks’, and if you advertise as 10 weeks, more people would come, than if you extended it’…I was happy for it to carry on, but some people dropped out. I don’t know if they’d known from the beginning that it was 20 weeks then they might have carried on.” The decision was made to advertise 10 weeks and then give people the opportunity to extend to 20 weeks because previous experience suggested that parents were ‘put off’ by a 20 week course, because they felt they could not dedicate the time to it.

Parents in the focus group were also asked to suggest any improvements. One KS 3 parent said “it would have been nice to extend the course with some more sessions, with speakers coming in.” The KS 3 course seemed to be more rushed than the KS 2 course, with less time for experiments and interaction, for the proposed extension award, this will be addressed with a longer course (25 weeks) to encompass the full curriculum and take on-board student feedback. One KS 3 focus group parent said “possibly that is a slight criticism of it, it is a lot of listening, it’s a lot of giving from Alex, and well, learning you can switch off if there is too much listening, so some more experiments or interaction would help.”

Attendance on the online course, like many online courses where high attrition rates are expected, fell over the duration of the course. Just over 150 people started the course, but only 12 completed the questionnaire at the end, although there were more people undertaking the exercises.

For evaluation of future courses, we need to emphasise to parents the importance that their children complete the questionnaire, so we can assess the impact of the course on them. We also need to ensure that there is consistency across the questionnaires for different methods of delivery so that we can directly compare them.
Replicating the course
When thinking about replicating the course in new areas, it is important to note that the choice of
teacher is very important. Parents were unanimous in their praise for Alex, for example “Alex really was
an excellent teacher. He always made it fun and interesting - such a departure from the teachers most
of us mums were used to in school.” (questionnaire respondent) The dialogues between parents at the
focus groups below illustrate the feelings of these parents towards Alex:

Person 1: “The other thing is, I think Alex made the course. With his enthusiasm. If we had had some
dour professor with a tweed jacket and leather patches, it might not have been as much fun.
Sorry that was my science teacher at school, who was just not inspiring at all. And I think
coming to a University, there was just that little element of ‘hmm, maybe it’s going to be some
stuffy professor who is going to be a bit hard to understand’, and actually getting Alex was really
refreshing. I think he made the course with his enthusiasm and his dedicated personality.”
Person 2: “He is just so friendly and approachable, even after the first session you felt like you could
ask him anything.” (KS 2 Focus group parents)

Person 1: “he is an excellent tutor, very positive and enthusiastic. That’s half the battle really, he’s got
very infectious enthusiastic love of his subject matter, he’s what, an astrophysicist I think, but
generally an enthusiasm about science, he’s very stimulating.”
Person 2: “He pitches it at the right level. It could be quite daunting, facing a room of middle aged
women, or it could be really patronising to us, but he’s got just the right level. And we wouldn’t
be coming back if it wasn’t, well if it wasn’t for Alex really, he’s a really good teacher.” (KS 3
Focus group parents)

Summary
All those who attended the courses gave positive feedback about them. From the evidence collated,
the course appears to have increased not only parents’ enthusiasm for science, but also the
enthusiasm of their children for science. Parents felt that the course had increased their confidence in
talking about science with their children and in helping them with their homework. The interactive
elements of the courses were particularly highly praised, as were the course notes, which several
parents said they were showing to their children. There does seem to be intergenerational knowledge
exchange taking place, with more children whose parents had attended the course showing an
increase in scientific knowledge over the period of the course than the control group.

As well as feeling more confident talking to their children about science, the majority said that they felt
more confident talking about science with others, suggesting that the course has influenced them more
widely. The majority of parents were keen to undertake further courses at the University, which perhaps
suggests that the course has sparked off enthusiasm for learning more widely, with a particular focus
on science. It should be noted that Lifelong Learning is introducing a new accredited undergraduate
programme of study in 2014/15 entitled Science Principles to cater for this, and this will be advertised
to parents who have attended the Science is for Parents Too courses
(http://www.york.ac.uk/lifelonglearning/credit/scienceprinciples/).

The importance of the tutor, Alex, to the project was also a recurrent theme in student feedback, and it
would therefore seem imperative that the essence of the teaching materials are captured and
manualised for future delivery, i.e. a teaching manual is created that can be used by similarly
enthusiastic teachers elsewhere. The appetite for science which this project has brought forward from
parents is something which could be replicated elsewhere, and a broader comparative study of the
outcomes of delivery elsewhere would be a true test of the wider deployment of ‘Science is for Parents
Too’.

References
Pell, T., & Jarvis, T. (2001). Developing attitude to science scales for use with children of ages from five
to eleven years. International Journal of Science Education, 23(8), 847–862.