If I create teacher supported learning opportunities for Nursery and Reception children looking, doing, and discussing through Science type activities, their speaking skills will then increase to produce longer and more complex phrases specific to expressing their thinking

Introduction/Context:

Highfield is an average sized primary school in Trafford on the borders of Stretford and Urmston. It has 320 children on role including a part-time 52 place nursery. It is a one and half form entry school, which means some split year groups for teaching. The proportion of pupils known to be eligible for the pupil premium is below average. The proportion of pupils supported at school action is broadly average. The proportion at school action plus or with a statement of special educational needs is also broadly average. There is ample outdoors area including a large field, with wooded area for KS1 and KS2. The nursery has a separate building with an enclosed outdoor play area providing grassed and hard paved areas for exploration. Reception has a smaller enclosed play area with easy fall and grassed areas with access to the large back field.

The 'problem' or issue we have addressed

Improving scientific enquiry in the EYFS is the next step for our school as it will underpin present practice. Over the last 18 month we have focused on improving scientific enquiry in KS1 and 2 setting out 6 key science principles for enquiry within school. We have found that children entering KS1 were challenged expressing their thinking and observations which is key to enquiry. We have focused on 2 points from our key science principles:

- Children can ask questions and make decisions.
- Children talk about heir findings using scientific vocabulary

We also recognized some gaps within our EYFS of teaching 'science' and giving appropriate 'scientific enquiry' skills . Our aim is to promote teachers using the correct science language and vocabulary through play to support children making sense of the world.
Communication & Language is an area for development in the EYFS in our SDP and outcomes of our research could have an impact for future outcomes.

Review of current practice and literature

Research states the importance of teacher modelling thinking and talking aloud to support young child being able to express themselves using their developing language. (Siraj-Blatchford et al., 2002)

The role of talk and discussion is key to developing science language. The means of learning science is through the increasingly specialised use of specific language and terminologies. *Wellington and Osbourne (2001)* suggest that the teacher should model and practise this language and *De Boo (1999) says that when* adults think aloud modelling science ideas, letting *children play with this language helps them to take ownership of it.*

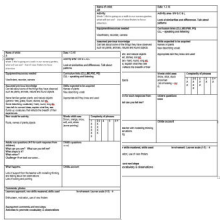
Children should learn new words in a context that is relevant through their supported play to develop the capability of argumentation. (*McGuigan, 2016)*

Research methods:

A sample of 5 reception and 6 nursery age children were used in the research. The sample did not include EAL or SEN children. In choosing the sample we looked for an equal mix of male and females assessed at working at age related expectations (ARE) for communication and language.

We chose children meeting year group expectations (ARE) for speaking and listening using school assessment data & be native English speakers. We constructed a checklist to decide criteria for language analysis.

We recorded what children said and transcribed the discourse to give rich qualitative data . We used 2 versions* of an adapted Myers Grid to compare before and after intervention language for the children to give more rigorous quantitative data.



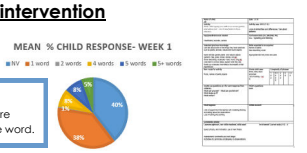
We took photographs and made field notes to support our findings.

We reviewed post intervention UW & C & L school data to see if it would corroborate our results.

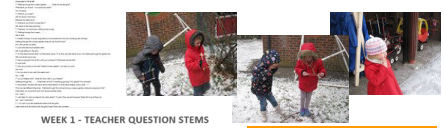
*We needed to further adapt our Myers grid to analyse reception language – using headings related to type of response rather than the number of words used.

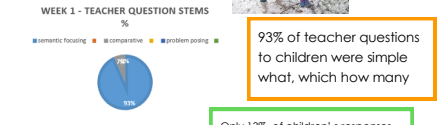
Findings before intervention

Nursery



78% child responses to teacher questioning were either non-verbal or one word.

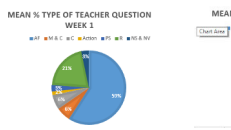


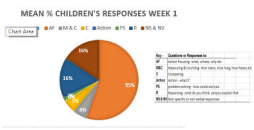


93% of teacher questions to children were simple what, which how many

Only 13% of children' s responses to teacher questioning were 5 or more words

Reception





59% of teacher questions to reception children were simple attention focusing ones and 21% were reasoning ones.

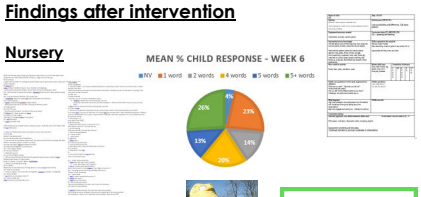
55% of reception children's responses were simple statements to the 59% what, which why questions.

16% of reception children's responses were reasoning statements to the 21% reasoning teacher questions.

We introduced the **'4C's'** as a talking tool to facilitate good listening skills in reception children, so they had opportunity to learn from each other.

Findings after intervention

Nursery



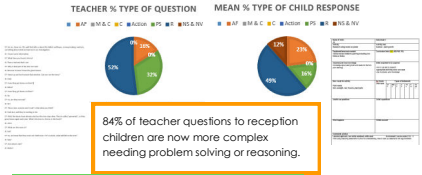
14% child responses to teacher questioning were either non-verbal or one word.

Now 39% of child responses to teacher questioning were 5 or more words

There is a definite shift in question type; an indication of children's communication

Children are now sharing their thinking freely about their findings in play

Reception



84% of teacher questions to reception children are now more complex needing problem solving or reasoning.

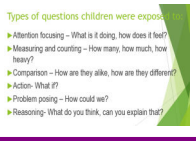
65.5% of reception children's responses were either problem solving or reasoning based reflecting their ability to use language to engage

Note: In the final unrecorded reception session using field notes. The children initiated the enquiry. All the questions came from them with no prompting.
Their question: "*If we water the dead one (plant) will it come back alive? "*

We found indication, though not conclusive due to limitations of the intervention, that teacher support using a story or 'problem to solve' is a strategy to engage children in science in a way that promotes spoken language and communication. We found a trend towards a positive impact on the complexity of children's speech including readiness to share thinking. We noted reception children came up with their own ideas and were self initiating argumentation.

Intervention:

Reception: Weekly small adult led focus group of 5 children
Nursery: Weekly paired 'talk partner' activities to promote scientific enquiry and language.
These weekly 'talking' opportunities involved teachers using a variety of question stems including: attention focusing, comparing, rephrasing, problem solving and reasoning to support then promote children's science language and enquiry skills. In nursery this included games (e.g. what's in the bag, where is Wonder Cat, and blindfold feely games).
To promote 'child led' enquiry skills we used a class puppet (Wonder Cat in nursery & Discovery Dog in reception), who has a question for the children to give them a reason for their enquiry about plants and growth. (This approach was adapted from our key principles for scientific enquiry in KS1 & 2)
The enquiry ran over 6 weeks in March and April. We collected data using voice recordings, photographs , participant observations and field notes.
We compared child and teacher initial and end of intervention language for complexity of child language and support given through teacher questioning.



Implications for future Practice & Lessons Learned

'Doing Science' has given the children a reason to discuss and compare ideas. By so doing building on their language and communication skills with each other.

Every child has ideas and we should seek to build a supportive and encouraging environment and curriculum in which expression of ideas and reasoning is nurtured in developmentally appropriate activities. This will be foundational to further science learning through school and should be built upon.

Children found the play and learning activities motivating and interesting and were always willing to take part. The use of games, the view finder, puppets and story problem were a real hook to focus and motivate the children. Nursery children especially responded well to the puppet as it took on 'a role' on the journey of discovery and talked to Wonder Cat about their ideas.

We intend to present the findings to SMT with a view to inset with the EYFS team in September to put an adapted programme into practise.

We are looking to share the outcomes with local schools to show how science can encourage can promote language in the EYFS.

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