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Using puppets to encourage dialogue in the primary classroom: a study of pupils' perspectives on the use of puppets in their lessons

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Abstract

This mixed methods, small-scale study examined the views of 26 pupils aged 7-11 years regarding the effect of the use of puppets during mathematics lessons on their enjoyment, understanding, attention, confidence and contribution. Two, 45cm tall, hand-held human character puppets (one male and one female) were used in both small group lessons and in 10-minute starter sessions as part of 60-minute, whole class lessons. A questionnaire provided quantitative data and semi-structured, individual interviews were undertaken to obtain qualitative data to explore the results from the questionnaire. The majority of children in both year groups indicated that they enjoyed the use of puppets in lessons and that they had a positive effect on their understanding and behaviour, especially their attention. Interview data showed that pupils engaged with and related to the puppets. The study findings have encouraged the researcher to use puppets in future lessons to promote dialogue and engagement.

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Introduction

Classroom talk plays a key role in the development of pupil thinking and learning. Vygotsky's view (1978) that thinking is developed through social interaction, including language, has underpinned empirical research that demonstrates the importance of classroom dialogue (e.g. Mercer, Dawes, Wegerif & Sams, 2004). It has been shown that when children confidently interact and voice their opinions then this can be a strong impetus for learning (Dawes, 2004). Therefore, children should be encouraged to become engaged in effective classroom talk that involves reasoning and argument. One strategy for generating such talk is the use of puppets as a stimulus, which has been shown to be effective in promoting children's engagement and involvement in lessons (e.g., Simon, Naylor, Keogh, Maloney & Downing, 2008).

I am very interested in the use of puppets to promote dialogue and discussion, and I have begun using them in my lessons. I am keen to discover pupils' views on their use, therefore the current study focuses on Year 3 and Year 6 children's perspectives, and poses the broad question:

'What do pupils think about the use of puppets in their lessons?'

The children are initially asked about whether or not they enjoyed having puppets in their lessons. Questioning then progresses to ask them to consider the effect of the use of puppets on their understanding, attention, confidence and contribution. The study also examines if age is a contributory factor to the children's responses.

Literature review

In the introduction to her research paper about the communicative potential of the puppet as a mediating tool in preschool education, Forsberg Ahlcrona (2012) offers some interesting insights

when exploring the question, 'What is a puppet?' She explains that the word puppet comes from the Latin 'pūpa' (girl, doll, small creature), and that it is easy to see it as a "real person, a subject with whom we can communicate" (p.172). Although the puppet is not actually alive, what it says and does at a particular point in time is real. Her research involved using a bumblebee glove puppet to introduce basic mathematical concepts to 20 children (10 boys and 10 girls) aged 3-5 years. An ethnographic approach was taken, which focused on the communication that occurred when the children interacted "...*with* the puppet, *about* the puppet and *because* of the puppet." (p.177).

Data was collected through written observations, photographs, children's drawings and conversations. Results of the study showed that the puppet inspired and motivated the children to communicate in various ways and contexts. They were found to relate to the puppet as a subject, to interact with the puppet (communicating knowledge from different social practices), and to develop three-party relationships (between the teacher, the puppet and themselves). Forsberg Ahlcrona (2012) asserts that the puppet's action-related potential emerging through the development of the three-party relationships, can be described in terms of Vygotsky's 'zone of proximal development (ZPD)'. Vygotsky (1978) described the ZPD as "…the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more able peers." (p.86)**.**

The study expands the view of the puppet's potential to promote communication in the classroom. Whilst it was undertaken with a relatively small number of children, the long study period (11 months) allowed for detailed and extensive data collection and analysis. Although the subjects were very young children, the theoretical perspective on learning and communication proposed could apply to other age groups, as studies have shown the value of puppets in promoting classroom talk in older children (Simon et al., 2008; Keogh & Naylor, 2009).

Coultas (2016) reports a case study about the pedagogy of classroom talk, where a teacher used a puppet to teach a letter reading lesson to a lower set Year 8 English class comprised of pupils with Special Educational needs (SEN) and English as an Additional Language (EAL). He used a puppet that was familiar to the pupils and orchestrated the reading such that the puppet read with difficulties mirroring those of the group. The pupils interacted with the puppet and gave advice to help 'him' as if they were the teacher, thus engaging with the task. Although this was a small case

study the results echo those of other researchers, that children are eager to generate ideas to help the puppet and become engaged with a puppet that is confused or uncertain (Simon et al., 2008; Keogh & Naylor, 2009).

Although the use of puppets in drama and social education is well established (Thorp, 2005), there are few literature reports of research into their use in primary science and mathematics. A group of UK researchers (Simon et al., 2008) examined the impact of puppets on primary children's engagement and talk in science – the PUPPETS (Puppets Promoting Engagement and Talk in Science) project. Pre-pilot and pilot phases of the project were undertaken to inform the main study with regards to the most effective manner and context in which to use the puppets, and to establish data collection methods.

The main research phase of the study involved comparing the talk in whole class lessons taught by 13 competent science teachers of children aged 7-11 years, with and without puppets. Each teacher taught a typical science lesson as a baseline against which future lessons with puppets could be compared, before being initiated in the use of puppets over a period of several weeks. For the lessons with puppets, teachers operated hand-held human character puppets (up to 66cm in height) posing problems in a range of everyday scenarios, following the usual science curriculum. Data was collected in the form of observations and video recordings of lessons, teacher and child interviews, and teachers' reflective diaries. The range of data sources and collection methods enabled comprehensive cross-referencing and triangulation of the data. Data analysis was thorough; a coding system allowed comparison of the nature of the talk in pre-puppet and puppet lessons, the amount of the different types of talk was elucidated using video and transcript together, and thematic analysis was undertaken of teachers' and children's interviews. Fifty-one children were interviewed (33 aged 7-9 years and 18 aged 10-11 years); purposive sampling was used to include some who appeared positive about the use of puppets and some who appeared negative.

Results indicated that the puppets provided a stimulus for an increase in the amount of argumentation and reasoning in classroom talk. Children were more engaged and contributed more to discussions in lessons involving puppets, treating the puppets as real characters in the classroom. Interview data showed that children found the lessons with the puppets easier to understand; their explanations for this included the fact that the puppets spoke more slowly and explained things more clearly. Some reported an increase in confidence when speaking to the puppets. Authors

suggest that the puppets may be mediating in two ways: by posing problems that challenge and are slightly in advance of the children's reasoning, but within their grasp, and by providing social scope for the children to communicate their thinking.

This large, multi-centred study led to further research into the pedagogic use of puppets. For example, prompted by the positive impact of the PUPPETS project, Carr, Rix and Burton (2008) undertook a small-scale study of four children aged 5-6 years and identified as reluctant speakers to investigate the impact of the use of puppets on their talk during science sessions. The main researcher was an undergraduate. The study was carried out over four science lessons, each lasting 45 minutes, on the topic of 'Light and Dark'. Puppets were introduced but not used in the first lesson, lessons two and three involved the use of one puppet, and two puppets were used in lesson four. During lessons three and four the puppets made direct verbal contact with the pupils. The quantity and quality of pupil talk was recorded, but quality was not defined. Results indicated that both the amount and the quality of pupil talk were significantly higher in the lessons with puppet input compared to that without. However, there was no significant correlation between the amount of high quality talk and the use of puppets on an individual pupil basis, and it was not clear if the method of puppet(s) use or the number of puppets was of significant influence. Although the results of this study appear to suggest that the use of puppets can prompt an increase in the amount and quality of dialogue in reluctant speakers, the number of children involved was too small to offer any real degree of validity.

Hackling, Smith and Murcia (2011), a group of Australian researchers, undertook a study that investigated the impact of puppets on classroom discourse in primary science. The study, entitled 'The Puppets Project', involved 12 confident teachers of primary science and their classes of children (aged 8-12 years). The teachers were videoed teaching a whole class science lesson and then interviewed after they had viewed the video. These data collections were repeated after a professional learning intervention, which included workshops on pedagogies associated with using puppets in teaching primary science followed by science lessons taught using puppets as part of communicative scaffolding. Video recordings of the parts of the lessons that involved substantive whole class discussions were transcribed and analysed to identify: the proportions of teacher and student talk, the types of questions asked by the teachers, and the amount of quality student talk (defined as the number of elaborated utterances – those of more than 100 characters of transcript).

Results indicated that the intervention (lessons involving the use of puppets in a communicative approach) increased the average number of questions asked by teachers and the proportion of open questions generating student explanations and ideas, and reduced the proportion of open questions eliciting descriptions. More students participated in discussions and gave fuller explanations in the lessons with the puppets than in those without. These results are consistent with those of Simon et al. (2008).

An interesting point of note from this study is the comment from some teachers about the difficulties involved in using the puppets, such as, manipulating them, developing personas for them, and transitioning between puppet and teacher talk. Four of the teachers admitted that they were not confident using the puppets. Keogh & Naylor (2009) assert, "…teacher confidence is an important element in using puppets successfully." (p.34). They caution that pupils are more likely to be uncertain in their response to puppets if the teacher appears apprehensive or is not wholehearted about their use. Keogh & Naylor were part of the UK research team involved with the PUPPETS project and they then expanded their research to focus on the use of puppets in mathematics lessons. They used puppets to present conflicting ideas or to pose problems, sometimes using two puppets with different ideas. They found that the puppets had the most impact when they were "the least knowledgeable member of the class", and that children were eager to talk and explore ideas that could assist the puppets in problem solving (p.32). Interesting points to emerge from their research included the observation that older primary school children responded as positively to the use of puppets as the younger children, and that they had a marked preference for human character rather than animal puppets, whilst the younger children responded well to both.

Research Design

A mixed methods approach to the research design was used as it, "provides strengths that offset the weaknesses of both quantitative and qualitative research" (Creswell & Piano Clark, 2011, p.12). This involved using both a questionnaire and semi-structured interviews because whilst questionnaires tend to provide descriptive information, interviews can provide depth of explanation (Drever, 2003, p.8; Munn & Drever, 2004). This approach enabled me to employ both open- and closed-ended questions, and statistical and text analysis. I chose to use what Creswell (2015) describes as an explanatory sequential design, whereby quantitative data (questionnaire) were

collected first, followed by qualitative data (semi-structured interviews). The qualitative data were used to explain the quantitative data; data was integrated during interpretation.

Participants

The research was undertaken in a primary school in January 2016. An entire Year 6 class (22 pupils aged 10-11 years) and eight pupils from a Year 3 class (aged 7-8 years) were invited to participate, and letters outlining the research, along with consent forms, were sent home for the attention of their parents/carers. No objections to participation were received. Twenty-six pupils (eight from Year 3 and 18 from Year 6) completed the questionnaire; four Year 6 pupils were off ill during the study period. Four children (two boys and two girls) from each class were chosen for interview. I selected two from each year group who had responded with positive answers to the questionnaire and two whose answers were either mostly negative or a mixture of negative and slightly positive. This purposeful sampling strategy (maximal variation sampling) involves selection of individuals who are expected to have different perspectives on the research experience in order to provide diverse qualitative data. The number interviewed was deemed appropriate for the qualitative research approach taken (Creswell & Piano Clark, 2011).

Lessons taught and the role of puppets

I chose to use puppets in mathematics lessons to encourage dialogue because talk in mathematics has been shown to help children to reflect on their thinking and construct new understanding (Wickham, 2008). I devised and taught lessons, both with and without puppets, on mathematics topics that were currently being studied, and I constructed the lessons around rich mathematical tasks involving problems. I used two, 45cm tall, hand-held human character puppets (Archie & Flora).

Year 3 lessons

I taught two, 45-minute lessons on multiplication. The first lesson (without puppets) introduced the use of repeated addition and arrays as conceptual structures for multiplication. The children were asked to solve multiplication problems by constructing arrays, using Dienes cubes if they wished. The second lesson took place the following day and the puppets, Archie and Flora, were introduced to the children. They presented problems using scenarios to which the children could relate and

which required application of multiplication skills to solve them (Appendix 1). They requested help and were sometimes confused or misguided. The children were asked to help the puppets solve the problems and, as with lesson one, they were provided with Dienes cubes to use if necessary. I operated both puppets, alternating between the two characters.

Year 6 lessons

The mathematics topic for Year 6 was percentages. I taught two, 10-minute starter sessions as part of 60-minute, whole class lessons. The first was without puppets, whilst the second involved using puppets to pose problems for the pupils to solve. For these introductory sessions I operated the puppets. Later in the same week I taught two, 45-minute small group lessons (eight pupils for lesson one and six for lesson two). As before, puppets were not used for the first lesson. The second lesson involved using Archie and Flora in simple narratives, of scenarios to which the children could relate, which involved percentage problems to be solved (Appendix 2). The lesson began with me operating the puppets but quickly progressed to the children using them themselves to pose the mathematics problems and to work to help produce solutions.

Questionnaire

I created my own Likert scale questionnaire (Appendix 3), condensing the usual five-point scale to one with three responses, keeping the questions simple in structure, and using emoticons, as Hopkins (2014) suggests for primary aged children. There were six questions, which the children answered by placing a tick next to the emoticon that best described their viewpoint: a smiley face for ‘yes’, a straight face for ‘a bit’, and a sad face for ‘no’. Questions were based on the themes that emerged from interviews with children in a previous study that considered the impact of the use of puppets in lessons (Simon et al., 2008). The questionnaire was used with both year groups to ensure that all the participants were presented with the same questions in the same order. Using standardised questions is advantageous because, “you are strictly controlling the stimulus presented to all respondents” (Munn & Drever, 2004, p.4). The children were given clear instructions (verbal and written) as to how to complete the questionnaire, and reassured that it was not a test and that there were no right or wrong answers.

Semi-structured interviews

Interviews were used to obtain qualitative data to explore the quantitative results from the questionnaire. Scott (2008) asserts that it is feasible to use semi-structured interviews (group or individual) with children once they have reached the age of seven, therefore I was assured that this data collection method would be suitable for my study of children aged 7-11 years. I decided that individual interviews would provide focused input from the children, and simplify audio recording and subsequent transcription. I also felt that the children had got to know me and would be comfortable with one to one interviews. By setting main questions to structure the interviews (Appendix 4) and using prompts and probes to guide them, as outlined by Drever (2003), I was able to maintain control whilst giving the children freedom to express their own thoughts.

Ethical considerations

Ethical considerations were taken into account throughout my research project. The names of all children and adults were changed throughout the essay. I initially sought permission from the school in which my research was undertaken; a research proposal form outlining the aims, approach and methods of my proposed project was approved and signed by my class mentor and my personal tutor. It was also discussed with the relevant class teachers. I completed an ethics checklist, verifying that I understood and would adhere to the ethical requirements of the Faculty of Education, University of Cambridge and the British Educational Research Association (BERA), which was signed by my personal tutor.

In accordance with the BERA (2011) guidelines the best interest and rights of the child should be the primary consideration when conducting research involving children. As the participants in this study were all children, in addition to helping them consent to taking part, consent was sought from parents/carers, thus adhering to the BERA (2011) guidance that "researchers must also seek the collaboration and approval of those who act in guardianship" (p.7). An integral part of gaining consent is ensuring that participants (and if appropriate their parents/carers) are fully informed of, and understand, the purpose, methods and intended possible use of the research. Therefore, letters were sent to the parents/carers of the children invited to participate in the research summarising the aims of the project, explaining how their child would be involved, and providing assurance that all

collected data would be anonymised and recorded material destroyed at the end of the 2015-2016 academic year.

When obtaining parental consent for research such as the current project, the practice of the school in which the study was undertaken is to obtain passive parent/carer consent to avoid the large nonresponse rates often associated with active consent procedures. Passive (sometimes called opt-out) consent requires the parent/carer to sign and return a form/slip only if they do not want their child to participate in the research. Non-return of the slip is then taken as assumed consent for the child to take part (Ellickson & Hawes, 1989). I was advised by my class mentor to observe this accepted school practice and thus the parents/carers, having been provided with written information about the research, were asked to return a reply slip only if they objected to their child's participation. As my research did not involve exploring a sensitive topic, the participants were all KS2 children, and it was conducted in a school where consent was sought from the headteacher and the relevant class teachers, passive consent was deemed appropriate. However, on reflection, it would have been preferable to obtain active consent where parents/carers had to sign and return a form indicating their consent for their child to participate in the research.

It was ethically important that all the children chosen to take part in the research were fully informed of what it would entail (voluntary informed consent). Therefore, in line with BERA (2011) guidelines, I explained everything to them and emphasised that all data obtained would remain confidential and anonymous and be destroyed once the project was over. I also explained to the children that at any point they could decide not to participate or to withdraw their participation.

Results and discussion

Questionnaire analysis

Children's responses to the questionnaire (Appendix 3) were analysed using Microsoft Excel, and the data displayed in the form of bar graphs. Bar graphs are considered to be a clear and effective means of displaying comparative data and illustrating numeric trends (Bigwood & Spore, 2003).

Enjoyment

The results are displayed in the form of a grouped bar graph (Figure 1). Sixty-nine per cent of all the pupils who completed the questionnaire indicated that, 'yes', they enjoyed the lesson(s) with the puppets. Only 4% stated that they did not, which correlates with the 3.9% figure from a previous study (Simon et al., 2008). The percentage of pupils answering 'yes' rose to 83% for the Year 6 pupils, whilst 37.5% of Year 3 pupils gave this response. None of the Year 3 pupils answered 'no', but 62.5% gave the response 'a bit'. A significantly smaller percentage of Year 6 pupils (11%) answered 'a bit'. The Year 6 pupils therefore were more resolute in their answers, with 89% giving a firm yes or no response.

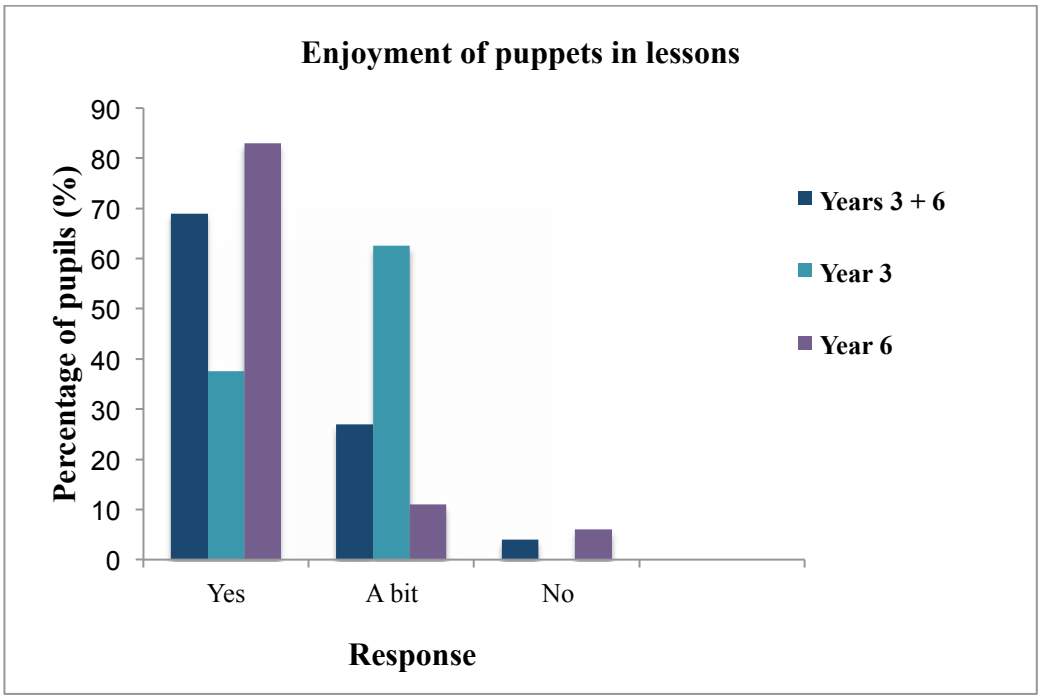

Figure 1. Pupils' enjoyment of the use of puppets in lessons

There are several possible explanations for the differences in the results between the year groups, none of which are likely to be exclusive. Due to time restraints I was only able to involve a small group of eight Year 3 children whereas a larger number of Year 6 pupils (18) participated. Therefore, the small sample may not have accurately reflected the Year 3 population. The Year 3 children were only introduced to the puppets at the beginning of their lesson, whereas the Year 6 pupils experienced the use of one of the puppets in a science lesson prior to the mathematics session(s). This previous experience may have affected responses, with lack of familiarity causing

62.5% of the Year 3 pupils to provide a moderate, less decisive answer than the firm responses given by the majority of the Year 6 pupils. Six of the 18 Year 6 pupils participated in the whole class starter session and a small group lesson (both with puppets), so here again familiarity may have led to decisive yes or no responses. There could be differences in how puppet use is viewed in small group lessons and in whole class sessions (experienced only by Year 6 pupils), which may have influenced pupil responses. Age itself may have played a part, with 62.5% of the younger children being less assertive and avoiding the extremes of the possible responses.

Puppets in more lessons

The results are displayed in the form of a grouped bar graph (Figure 2). Seventy-seven per cent of all the pupils who completed the questionnaire indicated that, 'yes', they would like to see puppets used in more of their lessons, whilst only 4% stated that they would not. The percentage responses in each of the three categories (yes, a bit, no) were the same for the Year 6 pupils for this question as for that about enjoyment of the puppets. All Year 6 pupils were consistent in their answers to these two questions. Again, as with the question regarding enjoyment, none of the Year 3 pupils answered 'no'. However, for this question the Year 3 percentage responses 'a bit' and 'yes' were reversed when compared with the responses to the enjoyment question. This time 62.5% of the Year 3 pupils responded with a 'yes' to wanting to see puppets used in more of their lessons. Forty per cent of those who responded 'a bit' to the enjoyment question went on to answer 'yes' to wanting to see puppets used in more of their lessons. Although numbers were small, the results appear to indicate that enjoying the puppets 'a bit' was enough for 40% of these respondents to definitely want to see the puppets used in more lessons.

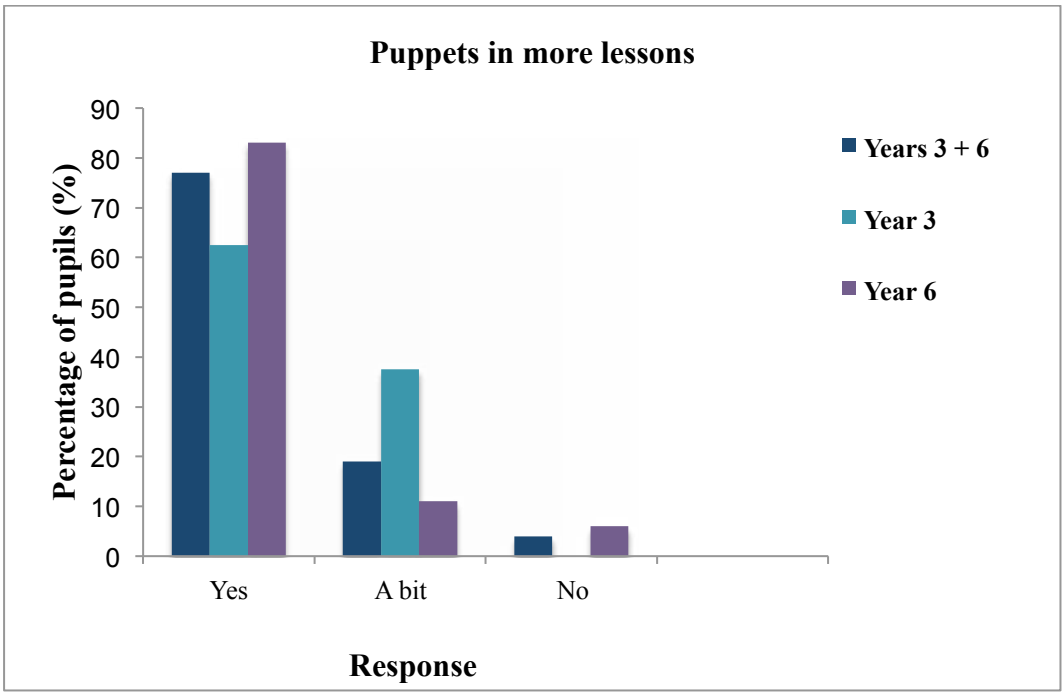

Figure 2. Pupils' views on having more lessons involving puppets

The possible explanations for the differences in the results between the two year groups proposed for the enjoyment question (see enjoyment subsection above) are also likely to apply to some extent here, albeit possibly to differing degrees. The degree of difference between the two year groups in the 'yes' and in the 'a bit' answers for this question compared to that regarding enjoyment lessened, indicating that age alone cannot account for the differences recorded.

Understanding and behaviour

Pupils' responses to the questionnaire about the effect of puppets on their understanding, attention, confidence and contribution in lessons were collated and displayed in the form of bar graphs. Figure 3 indicates the collated results of both year groups, and figures 4 and 5 show those for Year 3 and Year 6 respectively. As the number of pupils participating from each year group differed, responses were converted to percentages to allow accurate comparisons.

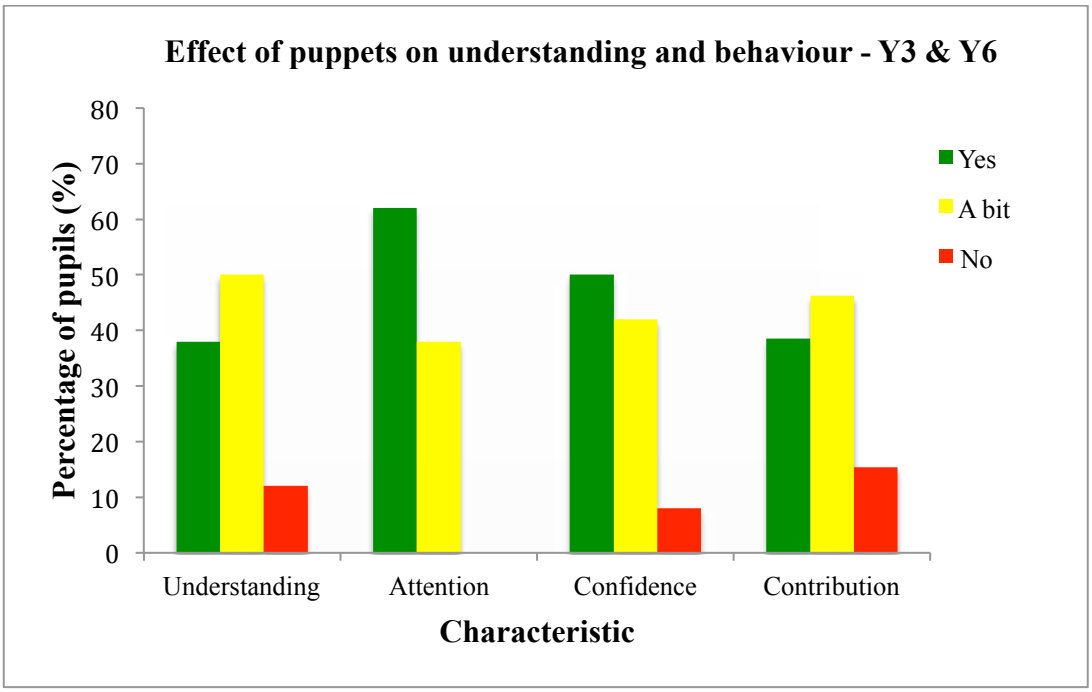

Figure 3. Y3 & Y6 pupils' perspectives on the effect of puppets on their understanding and behaviour

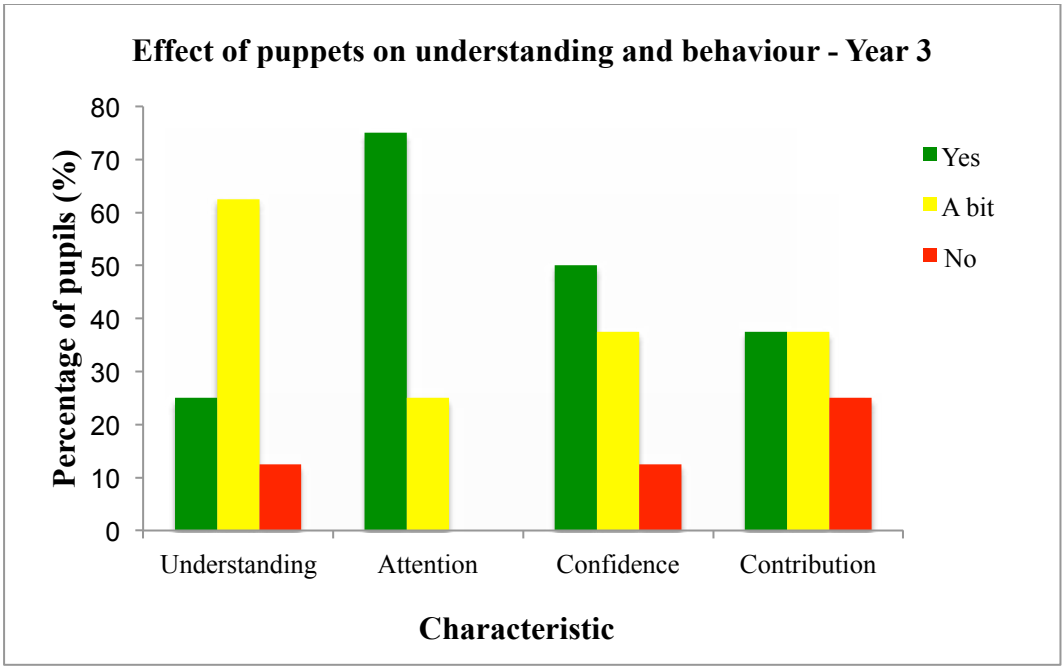

Figure 4. Y3 pupils' perspectives on the effect of puppets on their understanding and behaviour

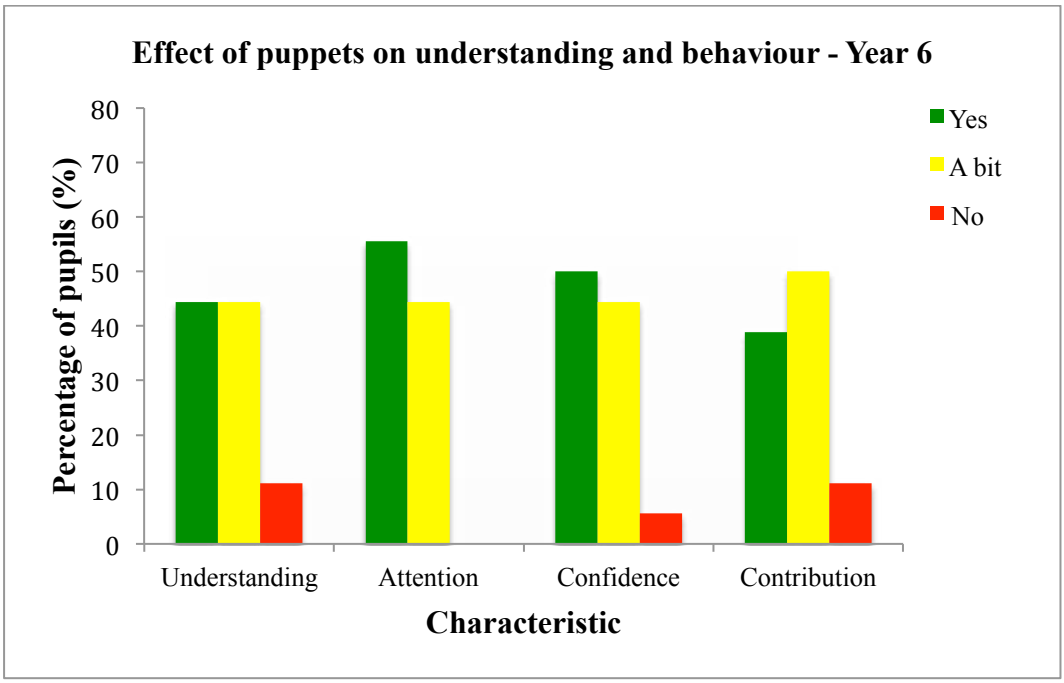

Figure 5. Y6 pupils' perspectives on the effect of puppets on their understanding and behaviour

Thirty-eight per cent of all pupils indicated that, 'yes', they found the lesson with the puppets easier to understand when compared to the one without, whilst 12% did not find that the puppets helped improve understanding. Half of all pupils responded that the use of puppets had made understanding a bit easier. A similar percentage of pupils from both year groups responded 'no' to the question about understanding, but 44.4% of the Year 6 pupils gave a 'yes' response compared to only 25% of those in Year 3.

Sixty-two per cent of pupils overall responded that 'yes' they paid more attention in the lesson(s) with the puppets, and this figure rose to 75% for the Year 3 pupils. None of the pupils indicated that they paid less attention in the lesson(s) with puppets. This result is consistent with studies reporting that children pay attention and become interested in lessons immediately when puppets are used (e.g. Simon et al., 2008).

For the question about confidence, half of the children in both year groups stated that they felt more confident during the lesson(s) with the puppets. This is higher than the 34% of children interviewed as part of the PUPPETS project who reported increased confidence in lessons involving puppets (Simon et al., 2008). In the current study only 12.5% of Year 3 pupils and 5.6% of those in Year 6 indicated that the use of puppets did not make them feel more confident.

It is interesting to note that although 62% of all the pupils felt that they paid more attention in the lesson(s) with the puppets, and half of them stated that they felt more confident, only 38.5% felt that, 'yes' they had contributed more. This figure relating to contribution was similar across both year groups. The question about contribution produced the largest percentage of 'no' responses; overall 15.4% of the children did not judge their contribution to have been more in the lesson(s) with puppets and this increased to 25% for the Year 3 pupils.

Interview analysis

Results from the quantitative analysis (questionnaire) were examined to determine what questions to ask participants in the qualitative interview phase of the study (Appendix 4). All eight interviews were audio-recorded, listened to in full, and analysed to identify explanations for the answers given in the questionnaire and any new ideas put forward by the pupils. Selective transcriptions were made of 'rich' material from all the interviews. This reduced the time taken for transcription but still afforded preservation of a substantial proportion of the significant information (Drever, 2003). One interview was fully transcribed. I determined that it was best to handle the data in the form of text, rather than by coding, and so the findings of the thematic analysis are presented as a narrative.

The first question that I asked all the interviewees was about what it was that they enjoyed / did not enjoy about the lesson(s) with the puppets. Children from both year groups mentioned fun, for example Mary from Year 6 responded:

'They were fun and interesting.'

One Year 3 pupil (Kelly) who had responded in the questionnaire that she had only enjoyed the lesson with the puppets 'a bit' gave the explanation:

'I didn't really like them. They were a bit annoying when I was doing my work.'

Having puppets in lessons increased pupils' attention, and even Kelly who hadn't enjoyed them that much acknowledged that she paid more attention because the puppets were, '*…helping us write them [the answers] out.'*

Mark (Year 3), explained:

'They helped me a bit and so I decided to pay more attention.'

Jack (Year 6), was very enthusiastic about the puppets and explained:

'I was engaged. I had fun and I wanted to answer more questions.'

The children interviewed in the study undertaken by Simon et.al (2008) indicated that the puppets "facilitated learning and feelings of confidence''(p.1244), and the comments of pupils in the current study largely concurred with this. When asked to consider the relationship between their understanding and having the puppets in lessons the children gave some interesting and insightful answers, including:

'It was a bit easier with the puppets. They supported us; I liked that.' (Stephen, Year 3)

'The percentage problems were easier to relate to when we had Archie and Flora because you could really picture them in your head having the sweets and doing the things.' (Winston, Year 6)

'The puppets help you work through the problems and you can ask the other puppet for help.' (Mary, Year 6).

Kelly (Year 3) found the puppets a bit distracting and explained:

'It was a bit more tricky to understand in the lesson with the puppets because once the puppets were in my head I couldn't get them out.'

Relating to the puppets and finding them supportive and helpful is consistent with comments from teachers on how children view puppets in the classroom, for example, "they interact with the puppet as if she is a real person" (Keogh & Naylor 2009, p.33). This theme was also strongly conveyed in many of the comments from the children in the current study when talking about the effect of the puppets on their confidence. Stephen (Year 3) told me:

'I was more confident because the puppets were helping me with their suggestions. I felt that it was just hints from them but still me doing the work. If it is the teacher you think she is telling you the answer.'

Winston (Year 6) explained that he was confident because he felt encouraged:

'It was like Archie was on my shoulder saying, 'you can do it.' '

When asked what it was about the lessons with the puppets that made him more confident, Jack (Year 6) gave a very full explanation:

> *'Ah, I think there might be more than one way. First of all, you are engaged into it, then you understand it a bit better and then you experience the lesson more clearly and so you feel more confident to speak and join in.'*

In the questionnaire, a higher percentage of all the children responded 'yes' to the question about increased confidence with the puppets than to that about increased contribution. However, in the interviews two of the children (one from each year group) directly related confidence to contribution:

> *'I contributed more because I was more confident.' (Matilda, Year 3)*
>
> *'...you feel more confident to speak and join in.' (Jack, Year 6)*

The Year 6 pupils reported that they enjoyed using the puppets themselves, with Jack stating, *'It was like having another person there.'*

Jack also said that when he had the puppet he felt that he explained things better.

One Year 3 pupil preferred Archie because *'I'm a boy and so is Archie'*, whilst the other Year 3 pupils did not express a preference for one puppet over the other. Whilst Keogh & Naylor (2009) state that, "as their gender identities become more firmly established, many of the boys show much more positive reactions to male rather than female puppets" (p.34), only 2 of 13 teachers involved in the PUPPETS project noted this tendency (Simon et al., 2008). All the Year 6 pupils (irrespective of gender) preferred Archie because, '*he was in more lessons*' and '*we know him more'*, reinforcing the importance of familiarising the children with the puppets.

Overall findings

Overall, the majority of children in both year groups responded positively to the use of puppets in their lessons and indicated that they improved characteristics such as understanding, confidence, contribution, and particularly attention. Results correlate with the findings of the PUPPETS project (Simon et al., 2008). The use of puppets was effective with both the older and the younger pupils; both age groups provided illuminating explanations for their perspectives on their use in lessons. This concurs with the findings of previous research (Keogh & Naylor, 2009). Those who answered

'a bit' to questions in the questionnaire went on to provide positive commentary as to why they found the 'bit' helpful. Only 1 of 26 pupils studied did not want to see puppets used in more lessons, and Jack provided the most positive statement of support for their continued use:

'I would definitely like to have them in more lessons. They are amazing.'

Analysis of Methodology

The mixed methods approach to the research methodology proved effective. Combining the trends shown by the quantitative data with the personal perspectives obtained from the qualitative data provided a better understanding of the research question than either form of data alone (Creswell, 2015). All 26 children found the questionnaire, which used closed questions and an emoticon Likert scale, easy to understand and quickly completed it. With this small sample size it was important not to rely on statistics to strengthen conclusions and to use interviews for elucidation (Munn & Drever, 2004). The semi-structured, individual interviews worked very well. The children were relaxed, spoke freely, and provided detailed perspectives on the use of puppets in their lessons. The semi-structured nature of the interviews meant that, although they were "formal encounters on an agreed subject" (Drever, 2003, p.13), the children had a reasonable degree of freedom to express their views as they wished.

Certain aspects of the methodology could have been improved, in particular the sample size of Year 3 pupils. I was only able to include eight Year 3 pupils in my research; therefore the results are not necessarily representative of the year group. The Year 6 pupils had experienced use of one of the puppets in a previous science lesson, and six of them participated in both a whole class session and a small group lesson for the study. Familiarity with the puppets for one of the year groups studied had the potential to bias results. The Year 6 pupils were also more familiar with me, which may have had some influence. If the study was to be repeated it would be prudent to: use a larger sample size, involve children with a similar degree of familiarisation with the puppets, and expose groups to the same type of teaching (whole class, small group or both), to improve data quality.

Drever (2003) states that "A transcript can both enhance and demonstrate the soundness of your research", but also acknowledges that the main problem with transcription is that it is time consuming and suggests that there are "strong arguments for using transcription selectively" (p.61). With this in mind I opted for selective transcription, selecting passages of 'rich' material from all

the interviews. I then fully transcribed one interview, compared this full transcript with a selective transcription of the same interview and discovered that the selective transcription had captured all the significant and pertinent information. The interview data was not coded because I was not looking to document the number of times themes emerged but rather to explore the richness of explanation obtained from the personal perspectives of the children. Despite the limited time available for this small-scale research project the methodology employed resulted in useful and revealing information, which I will consider when using puppets in future lessons.

Implications for my professional development

Undertaking the Researching Pupil Perspectives (RRP) assignment not only provided me with insight into pupils' perspectives on the use of puppets in their lessons but also gave me the opportunity to learn how to undertake mixed methods small-scale research. This introduction to classroom research should prove very valuable in my future professional practice. At a recent interview for an NQT post I talked about my puppet research and the teachers were particularly interested in the positive comments from the older, Year 6 pupils.

I first became interested in using puppets in lessons when, as part of my PGCE curriculum assignment about assessment for learning in science, I read a paper about talking and thinking in science that referred to the impact of puppets on pupils' engagement and classroom talk (Keogh & Naylor, 2007). Keen to use puppets in lessons and to explore pupils' perspectives on their use, I got two puppets (Archie & Flora) and began my research.

The pupils' views have been very useful for me as I plan to involve the use of puppets in creative problem solving when teaching in the future. I was particularly struck by how the characters of the puppets became real for the children and that they willingly entered into dialogue with them. Both age groups mentioned that they could relate to the puppets and that being able to picture their problem scenarios helped them to become engaged and understand more easily. I am encouraged to use puppets in future lessons to present conflicting ideas or problems to be solved to which the children can relate and empathise with the characters.

The one Year 3 pupil who did not enjoy the puppets or find them helpful explained that she found them distracting. On reflection, with the Year 3 pupils I may have been too animated when using the puppets. For future use I plan to be confident and enthusiastic (but not overly exuberant), as

"that initial response is really important" (Keogh & Naylor, 2009, p.34). From this research I have learned the importance of familiarising pupils with the puppets in order that they feel confident enough to contribute but are not too caught up in the fun element that they become distracted. One boy suggested that I use them in some lessons and then have some lessons without, which is a good reminder to me to get the balance correct in my future practice. I intend to use the puppets in some introductory starter sessions of whole class lessons, as this approach did appear particularly successful and as one pupil explained, 'would be fair for everyone'. Next year I will be teaching a Year 5 class, and I look forward to introducing them to Archie and Flora, and hopefully promoting their engagement and learning.

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Appendix 1

Archie and Flora's multiplication problems for Year 3

Problem one

Archie: I will be playing football for one of four teams in a competition this Saturday. There are five players in each team. I have to bring an orange for every player. Can you help me to work out how many oranges I need?

Flora: I'm not sure but it must be lots of oranges, maybe 9. I think that you can draw an array to help with this calculation. Can any of you help Archie?

Archie: What is an array? Can anybody help us with this?

Problem two

Flora: I was at a party this week and all six children had four scoops of ice cream each. How many scoops did we eat altogether?

Archie: A lot!!

Flora: I know that, but I would like to know exactly how many. I'm sure somebody can help me work it out. Could anyone show me how to draw an array to help me?

Problem three

Archie: I am a good reader and I read five pages of my book every night. I'm not so good at multiplication, so can you help me work out how many pages I will read in one week?

Flora: Well, first you have to know how many days there are in a week. Does anyone know that? Ok, now what do I have to do to help Archie work out the answer?

Problem four

Flora: I am having trouble working out how much sticky tape I need to wrap some gifts. Mum tells me that I need nine centimetres of sticky tape to wrap a gift and I have three to wrap. How much tape will I need to wrap all three gifts?

Archie: That is a hard one. I am trying to remember my three times tables. Maybe somebody could help us draw an array and work it out.

Appendix 2

Archie and Flora's percentage problems for Year 6

1. Archie has 100 sweets. He gives Flora 60.

- What percentage of his sweets does he give her?
- What percentage does he keep for himself?
- How many sweets does he keep for himself?

2. **Archie:** My mum has given me £20 but she says that I have to give my little brother 10% of it.

- How much money do I have to give him?

Flora: I would only give him 5%, because that would only be 50p.

Archie: I think it is more than that. Can anybody help us work out how much is 5% of £20?

3. **Archie:** James bond rescues the Queen and saves £20,000 worth of jewels. He gets 15% of the money as a reward.

- How much does he get?

4. **Flora:** There are 130 people living in my Street. 60% are children.

- How many are NOT children?

5. **Archie:** As a treat we are having pizza for tea tonight. There is an offer on at the minute. 1 large pizza costs £12. If we buy 3 of them, we get 25% off the total bill.

- How much will we have to pay?

Flora: yummy, that is a lot of pizza. I know it will be less that 3 times 12 but how much? Can you help me work it out?

6. **Flora:** The original price of a laptop was £500. In a sale it was reduced by 10%.

- How much was it in the sale?

Flora: I would like a better bargain. I would like 20% off in the sale.

Archie: How much would it be with 20% off the original price Flora?

7. **Archie**: I saved £2.50 a week for 10 weeks. Then I spent 20% on a new football.

- How much money do I have left?

Appendix 3

Questionnaire

What do YOU think?

I am very interested to know what you think about the use of puppets in your lessons and I would like you to answer the questions in the table below.
This is not a test and there are no right or wrong answers.
Thinking about the maths lesson with the puppets compared to the one without the puppets, put a ✔ beside the face which best describes what you think.

	Yes	A bit	No
1. Did you enjoy the lesson with the puppets?			
2. Did you find the lesson with the puppets easier to understand?			
3. Did you pay more attention during the lesson with the puppets?			
4. Did you feel more confident during the lesson with the puppets?			
5. Did you contribute more during the lesson with the puppets?			
6. Would you like to see puppets used in more of your lessons?			

Thank you for your help

Appendix 4

Semi-structured interview schedule

Introduction

I am trying to find out what children think about having puppets in their lessons. It was great that you helped me by completing the questionnaire. Thank you for agreeing to talk to me to help me understand the reasons you gave for your answers, and to answer a few more questions.

1. Question about enjoyment

- What was it about the lesson(s) with the puppets that you particularly enjoyed/did not enjoy so much?

2. Question about understanding

- In the questionnaire you told me that you found the lesson(s) with the puppet easier/harder to understand /didn't make much difference compared to our lesson without the puppets. Why do you think that was?

3. Question about attention

- Why do you think that you paid more / less attention in the lesson(s) with the puppets?

4. Question about confidence

- What was it about having the puppets in the lesson(s) that made you feel more/less confident?

5. Question about contribution

- Why do you think that you contributed more / didn't contribute more in the lesson(s) with the puppets?

Additional questions for the Year 6 pupils

- What do you think about the pupils using the puppets rather than, or in addition to, the teacher?

- Do you think that you talked differently to your peers when they had the puppet than you would normally in a group discussion?

Last question

- Is there anything else about using the puppets in your lessons, which we haven't already talked about, that you would like to tell me?