

Year one teachers' views on parental involvement in children's early learning of number: An English case study.

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In this paper we present results of an interview study of English teachers' views on parental involvement in year one children's learning of number. Transcripts were subjected to a process of constant comparison that, in addition to highlighting teachers' generally positive perspectives, yielded two broad categories of parental. Firstly, there were informal involvements like conveying positive messages about mathematics at home and drawing children's attention to the everyday existence of mathematics through games and household activities. Secondly, there were formal involvements which included systematized mechanisms initiated by schools in which parents are expected to participate. Within both categorisations could be found positive and negative perceptions as well as elements of inconsistency.

Keywords: English year one pupils, parental involvement, teacher interviews, number.

Introduction

This paper presents the first results of an interview study of English teachers' perspectives on parental involvement in the number-related learning of year one pupils – pupils who will turn 6 during the academic year. Funded by the Swedish Research Council, the Foundational Number Sense (FoNS) project is a comparative study, undertaken in England and Sweden, of the role of parents and teachers in supporting year one children in acquiring those number-related competences necessary for later mathematical success (Andrews & Sayers, 2015). Initial work has involved semi-structured interviews with year one teachers in each country. These interviews had two broad aims; to yield constructs appropriate for inclusion in a later survey and to uncover teachers' perspectives on the teaching and learning of number to year one children. The latter included teachers' perceptions on the role of the parent in the development of these core number competences, and it is on those that this paper focuses.

It is accepted internationally that the involvement of parents in their children's education has both learning and social benefits (Jeynes, 2005; Cheung & Pomerantz, 2011). In addition to the obvious raising of attainment (Aunola, Nurmi, Lerkkanen & Rasku-Puttonen, 2003; LeFevre, Skwarchuk, Smith-Chant, Fast, Kamawar & Bisanz, 2009) these benefits include improved motivation (Cheung & Pomerantz, 2011), enhanced self-efficacy (Cheung & Pomerantz, 2011), lowered subject anxiety (Vukovic, Roberts & Wright, 2013) better attendance (Simon, 2001), improved behaviour (Aunola et al., 2003) and an increase in post-secondary education participation (Ross, 2016). In light of such matters it would seem appropriate to investigate how teachers construe their individual engagement with the parents and carers of the year one children they teach.

Parental involvement in children's education

In broad terms, parents' involvement in their children's education has been categorised according to the relationship between participants - parent-child, parent-teacher and parent-parent (Epstein, 2011). The parent-teacher relationship, the principal focus of this paper, has been construed as social, formal or educational (Oostdam & Hooze, 2013), where a social relationship concerns parents' involvement in out-of-school activities unrelated to instruction, a formal relationship involves parents engaging voluntarily with matters essential for the smooth running of the school and an educational relationship concerns activities that inform and shape a child's learning processes (Oostdam & Hooze, 2013). In addition, it is important to note that, while parental involvement can also be categorised according to two broad themes concerning parental beliefs on the one hand and parental behaviour on the other (von Otter, 2014), principles rather than practices seem to have greater impact, with research unequivocally confirming the benefits of high parental aspirations (Fan & Chen, 2001). In other words, "the most important aspects of parental involvement... appear to be (those that are) more subtle" (Jeynes, 2005, p. 263). Importantly, participants' cultural location also plays a role in the nature and manifestation of parental involvement (LeFevre et al., 2009). For example, English children, exposed to frequent formal home teaching about number and related vocabulary, were more able to recognise numbers than their French peers, who received no such instruction (LeFevre et al., 2009). Moreover, a recent study by Ule, Zidover & du Bois-Reymond (2015), undertaken in eight European countries, found parents believing that their children's future is dependent not only on the work of teachers but the extent to which they themselves are coeducators, a responsibility frequently provoked by scepticism over lack of school support and inadequate parent-teacher communication.

Within the English context, not only is parental involvement considered to be an "essential foundation for achievement" (Department for Children, School, and Families (DfCSF), 2007; p.7) but teachers are expected to provide clear guidance and support for this involvement (DfCSF, 2007). Indeed, the Chief Inspector of Schools recently proposed that parents who fail in these duties should be prosecuted (Wilshaw, 2014). Such matters are likely to inform how English teachers' view parental involvement.

Parental involvement in children's learning of number

While much research has highlighted the benefits of parental involvement in children's literacy-related learning, little has been undertaken with respect to number. The little there is has categorised parental involvement as formal - counting or practising simple arithmetic - and informal - playing mathematical games, shopping and cooking. Both forms have been associated with children's later mathematical achievement (LeFevre et al., 2009; Skwarchuk, Sowinski, LeFevre, 2014; Huntsinger, Jose & Luo, 2016), although the benefits of the two are different; for example, informal activities positively influence children's non-symbolic number competence whereas formal practices contribute to children's higher performance within symbolic number system and number recognition (Skwarchuk et al., 2014). In sum, while relatively few studies have examined how parents support their children's learning of mathematics, even fewer have explored teachers' perceptions of it, an omission we seek to address in this paper.

Methods

This paper draws on analyses of ten semi-structured interviews with year one teachers in England. Participants were contacted in various ways, including teacher electronic bulletin boards and cold calls to randomly selected schools across the country. As a result teachers were drawn from a range of geographical locations and reflected different genders, ages, training and teaching experience. Interviews involved a number of open questions, designed and piloted by the project team, intended to elicit colleagues' perspectives on a range of issues concerning the teaching of number to year one children. One of these asked teachers how they saw the role of parents in their children's learning of number. Interviews were conducted in teachers' own schools and video-recorded directly onto a laptop. Transcripts were made by the interviewer and analysed by the team. Due to the aim of identifying constructs for inclusion in a survey instrument, a constant comparison process was adopted (Strauss & Corbin, 1998). Thus, a transcript would be read and codes of response identified. With each new code, previously read transcripts would be re-read to determine whether the new codes applied to them also. This process yielded two broad categories of parental involvement, formal and informal, each of which comprised both positive and negative teacher perceptions. Each of these is discussed below and pseudonyms have been used throughout.

Results

All teachers consider parental involvement important in children's learning of early mathematics. They recognise that parents are the child's 'first educators' (Christina) and that this role continues as children progress to and through school. For example, Louise, commented that

As a school we believe that parental involvement is very important. If you don't work together with the parents to do the best for the child then you, you can't always get the best out of them that you need.

In the above, the manner of Louise' use of the word, 'need', was interesting in its indicating a focus less on the child than on the system represented by her. In addition, Kate offered the view that children with parental support not only are but want to be more successful. She said that

it does seem to be the children that get more support at home are brighter. Not always the case but in a high percentage of cases it's the ones that have that at home, do succeed more in the classroom or want to.

As the analyses unfolded, teachers' views on parental involvement in their children's learning of number fell into two forms, informal and formal. Here, informal involvement was focused on how parents convey positive messages about mathematics to their children, with teachers expecting parents to make mathematics a fun part of their child's every-day life. Alternatively, parents' formal involvement, typically driven by teachers' desires to fulfil curricular requirements and meet institutional targets, emphasised the importance of systematized mechanisms initiated by the school in which parents are expected to participate. Within both categorisations could be found positive and negative perceptions that frame the following.

Informal and negative parental involvement

Although teachers' comments about parents' involvement in their children's learning were largely positive there were some negative. Dominant in this respect, and considered by teachers as a major hindrance to children's learning, was the belief that some parents convey negative attitudes towards mathematics through comments to their children like, as quoted by Anna, "Oh I hate maths". In such statements parents, as construed by interviewed teachers, were legitimating children's learning deficiencies, based on an argument that mathematical capabilities are hereditary. For example, Louise commented that, "Sometimes parents feedback and say 'Oh, I was never very good at maths so that's why they're not'", beliefs that, according to Michael, "filter down to the children" (Michael) and impact on both their attitude and beliefs about themselves as learners. In this respect, Mary's comments were typical. She said:

I think quite often you have children that just give up. They don't persevere. They lose that perseverance because "Well, I don't have to. It's alright 'cause mummy and daddy aren't... Mummy or daddy isn't good at maths so it's ok for me not to be good at maths".

In response to such "undesirable behaviours", and wishing, as Anna said, to "avoid these children growing up like that", most teachers discussed a range of desired parental behaviours, which include expressing positive attitudes towards mathematics as well as encouraging perseverance and resilience, traits that Louise, in particular, believed would result in improvements.

Informal and positive parental involvement

A positive theme running through many teacher comments was not only that children learn best when they are having "fun" (Anna) but that this is achieved at home through making the learning of mathematics an informal and engaging activity. This was exemplified in Kate's comment that "if they're having fun, that's the main thing". In a related vein, teachers spoke of the development of a number-aware home culture in which parents encourage children to "see that numbers are everywhere" (Mary), with the consequence that children not only acquire a specific "attitude towards maths" (Mary) but also, as indicated by Kate, they "feel comfortable with numbers (they) have grown up with number; it's always been a part of what they do". Most teachers spoke of this number-aware home culture being enacted through frequent every-day use of mathematical language, evident from as early as when children "start to learn to walk" (Mary) and through the use of simple phrases like, "one more step, one more" (Mary). It can be achieved through noticing real-life opportunities such as "looking for numbers on a bus" (Jenny) or enabling their "watching educational programmes" (Michael). It involves, as observed by Louise, parents seeing the home as a resource not only with respect to number but also shape, a view confirmed by Christina, who commented that parents, "can, you know, just by the, the resources that they've got at home and the way they talk about those things".

The different ways in which teachers spoke of these informal but positive parental behaviours could be categorised in five broad ways. Firstly, teachers spoke of the ways that parents play games to facilitate general counting that would, as Michael indicated, help "keep the score" or use dice to supporting the development of skills like subitising. Secondly, teachers spoke of every-day counting opportunities, as seen in Sarah's comment on "singing counting songs", Anna's counting

of “the trees as you walk down the road”, Kate’s “counting down looking at house numbers” and Peter’s “how many presents did you get for your birthday?” Thirdly, linked explicitly to number recognition, teachers spoke of activities that expose children to “the fact that numbers exist” (Peter) and looking for the numbers in the environment like “house numbers” (Anna), “number plates (and) speed signs” (Sarah). Fourthly, teachers spoke of general home activities such as cooking, that involved different proportions in recipes or “pairing up the socks in two and counting them” (Anna). Fifthly, teachers spoke of how shopping can support the learning of different aspects of number, as in Kate’s comment concerning “adding things up when they go shopping” and Anna’s mentioning the development of the “concept of money”. That being said, Mary added that often it is simply parental presence itself which makes the difference in children’s lives, regardless of the activity they might engage with. She said that, “what we really want is that they (parents) spend time with the children whatever it is they're doing”.

Formal and negative parental involvement

A number of teachers mentioned parental practices they thought hindered their school’s preferred approaches to teaching. These included, for example, concerns that parents were making mathematics too formal, typically by compelling children to do “lots of worksheets” (Mary), “pages of sums” (Kate) and teaching calculations using “the wrong method” (Anna). In this latter respect, Sarah’s comment reflected those of others when she said that

it's particularly challenging if they've taught their child something and they, their child then knows a different method to the way I need to teach it to them. So that can be a challenge. It gives the children a lot of misconceptions.

In a related argument, Mary emphasised the importance of parents following the school’s lead with respect to the pace at which children are introduced to the new subject content. For her it was important that parents refrain from “pulling the children on too fast” beyond the curricular requirements for the particular age-group and, instead, support them in deepening their understanding of the prescribed content.

Formal and positive parental involvement

Teachers spoke frequently about practices they believed not only contributed to a child’s learning but also complemented the school’s efforts. These were typically framed against statements indicating a belief that well-informed and knowledgeable parents will better engage their children in curriculum-specific activities that not only help “consolidate the previous learning” (Michael) but also address a child’s particular performance target. Consolidation was a recurrent theme, as seen in Jenny’s comment that “if we say ‘We’re learning about number bonds to 20’, I would expect them to maybe try this at home”. That said, most teachers mentioned curriculum-prescribed targets and their desire for children to rote learn *key instant recall facts* (KIRFs). KIRFs are frequently set as homework, as shown in Peter’s comment that “we send home specific KIRFs every half term (...) so they’re practising, hopefully practising, those every week”.

In addition, teachers spoke positively of those parents who approach teachers to find out what is currently being taught. For example, Sarah spoke of those parents who ask teachers “what to teach

and when and how” in order to better understand curricular aims and help their children with specific homework. To facilitate this communicative process, many schools provided parents with copies of school policies alongside a more than tacit expectation that they will be adhered to. For example, Louise commented

Yeah, we have a maths policy on the school website and in the maths policy it maps out the different (...) methods we use to help the children with the different aspects. So the parents can refer to that to see how to help and what to do.

In similar vein, Michael spoke not only of sharing the school policies but also of how his school offered parental workshops to coach parents on how to follow those policies. He said that

in a maths workshop we talk about number bonds they've been learning and how we can do that and how that can be taken home. And then we bring in the children whose parents are there, who then come and work with their parents and we circulate round and discuss ways of them doing it at home and how this can help them in school.

Discussion

In this paper, we set out to examine how teachers of year one children in England construe parental involvement in children’s learning of number, something which all interviewed teachers believed was important. Broadly speaking, teachers’ positive responses fell into two broad categories of parental involvement, formal and informal, that were resonant with earlier research (Huntsinger et al., 2016) and which we discuss below. Moreover, while teachers’ interviews frequently alluded to the importance of Oostdam & Hooze’s (2013) social and formal relationships in children’s learning in general, when discussing the learning of number their comments were clearly focused on an educational relationship (Oostdam & Hooze, 2013).

With respect to informal involvement, teachers spoke of the importance of parents inculcating into their children positive attitudes towards mathematics, being disappointed with those who transferred their own negative values onto their children, resonating with Jeynes’ (2005) claim that “the most important aspects of parental involvement... appear to be (those that are) more subtle” (p. 263). They spoke of the importance of parents engaging their children in a range of informal activities focused on supporting their number awareness and basic number-related procedures like counting, cooking or shopping. Such activities were discussed by all teachers and highlighted the creation of a number-aware home environment, matching well with research on parents’ support of their children’s learning of basic number (LeFevre et al., 2009). Through such accounts, teachers offered an image of family-like schools, in which children are treated with understanding (Epstein, 2011).

From the perspective of formal involvement, teachers’ views were strongly structured by institutional goals and procedures concerning children’s completion at home of school-devised tasks. While not all teachers spoke of homework in a traditional sense, many spoke of key instant recall facts (KIRFs)¹ that children were expected to learn under the support and guidance of their

¹ While the origins of the key instant recall fact (KIRF) is unclear, the expression is ubiquitous in English primary schools, with many hundreds of schools’ websites alerting parents to their importance in children’s learning.

parents. The ubiquity of this acronym highlights the extent to which English children are exposed to frequent formal home teaching about number and related vocabulary (LeFevre et al., 2009). Such practices, with their high levels of formality and expectation that learning, in both school and the home, reflect a school-like family in which school values are enforced at home (Epstein, 2011).

Interestingly, while strong in their advocacy of KIRFs and their expectations of pupil mastery of routine skills, the same teachers spoke with disappointment about parents who chose to give their children similar exercises to those typically found in KIRFs, arguing that such actions over-formalised children's experiences of mathematics. In so doing, they appeared unaware of the incongruence. That is, on the one hand, they expect parents to engage with KIRFs in support of children's fluency-driven practice of number-related skills, while, on the other, seemed to disparage those parents who initiated similar activities.

In sum, both formal and informal involvement of parents in their children's learning of number was valued highly by all interviewed teachers, albeit in different and, at times, conflicting, ways. On the one hand, teachers spoke of the importance of parents encouraging children's enjoyment of and positive attitude towards number. On the other, they sought to ensure that particular curricular skills and school targets are met through school-initiated rote activities, while simultaneously criticising parents who initiated such activities themselves. Moreover, parental involvement, as discussed by these teachers, was effectively unidirectional, focusing solely on what parents can do to support their children's number skills acquisition. In other words, the role of the child in the process was absent (Ule, Zivoder, and du Bois-Reymond, 2015). Teachers' concerns were related to what can be done *for* (or *to*) children to facilitate number-related learning (Edwards & Alldred, 2000), to the extent that not one teacher mentioned children taking agency for their own learning. Such findings, we argue, warrant further research on how teachers, parents and children themselves can productively support children's learning of number.

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References

- Andrews, P. & Sayers, J. (2015). Identifying opportunities for grade one children to acquire foundational number sense: developing a framework for cross cultural classroom analyses. *Early Childhood Education Journal*, 43(4), 257-267.
- Aunola, K., Nurmi, J-E., Lerkkanen, M-K., Rasku-Puttonen, H. (2003). The roles of achievement-related behaviours and parental beliefs in children's mathematical performance. *Educational Psychology*, 23(4), 403-421.
- Cheung C. & Pomerantz E. (2011) Parents' involvement in children's learning in the United States and China: implications for children's academic and emotional adjustment, *Child Development*, 82(3), 932-950.
- Department for Children, School, Families (2007). *The children's plan. Building brighter futures*. Norwich: The Stationery Office.

- Epstein, J. (2011). *School, family, and community partnerships: preparing educators and improving schools*. Boulder, CO: Westview Press.
- Fan, X., Chen, M. (2001) Parental involvement and students' academic achievement: a meta-analysis. *Educational Psychology Review*, 31(1), 1–22.
- Huntsinger, C., Jose, P., & Luo, Z. (2016). Parental facilitation of early mathematics and reading skills and knowledge through encouragement of home-based activities. *Early Childhood Research Quarterly*, 37(4), 1-15.
- Jeynes, W. (2005) A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement, *Urban Education*, 40(3), 237–26.
- LeFevre, J.-A., Skwarchuk, S.-L., Smith-Chant, B., Fast, L., Kamawar, D., Bisanz, J. (2009). Home numeracy experiences and children's math performance in the early school years. *Canadian Journal of Behavioural Science*, 41(2), 55–66.
- Oostdam, R., Hooge, E. (2013) Making the difference with active parenting; forming educational partnerships between parents and schools. *European Journal of Psychology of Education*, 28(2), 337–351.
- Ross, T. (2016). The differential effects of parental involvement on high school completion and postsecondary attendance. *Education Policy Analysis Archives*, 24(30), 1-35.
- Simon, B. (2001). Family involvement in high school: Predictor and effects. *NASSP Bulletin*, 85, 627, 8-19.
- Skwarchuk, S., Sowinski, C., LeFevre, J. (2014) Formal and informal home learning activities in relation to children's early numeracy and literacy skills: The development of a home numeracy model. *Journal of Experimental Child Psychology*, 121, 63–84.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory*. London: Sage.
- Ule, M., Zivoder, A., du Bois-Reymond, M. (2015) 'Simply the best for my children': Patterns of parental involvement in education. *International Journal of Qualitative Studies in Education*, 28(3), 329–348.
- von Otter, C. (2014). Family resources and mid-life level of education: a longitudinal study of the mediating influence of childhood parental involvement. *British Educational Research Journal*, 40(3), 555–574.
- Vukovic, R., Roberts, S., Wright, L. (2013) From parental involvement to children's mathematical performance: The role of mathematics anxiety. *Early Education and Development*, 24(4), 446-467.
- Wilshaw, M. (2014, June 7). Schools should fine 'bad parents', says Ofsted chief. *The Guardian*. Retrieved from <https://www.theguardian.com/education/2014/jun/17/schools-fine-parents-ofsted-michael-wilshaw>.