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Title – The Highland Council Educational Psychology Service

Numeracy: Investigating parent perspectives.

What did we ask?

- What do parents already do to support their child's numeracy development?
- How confident are parents at supporting their child's numeracy development?
- What influences parental confidence?
- What additional support could be offered to parents?
- How could this be delivered?
- What prompts parents to search for information on numeracy?

What is the evidence base?

“Parental involvement seems to have its major impact on children through the modelling of values and expectations, through encouragement and through interest in and respect for the child-as-learner. It seems that pupils internalise aspects of parental values and expectations as they form an image of themselves as a learner – their so-called ‘educational self-schema’. These influences are played out through discussions about and beyond schooling” (Desforges & Abouchaar, 2003, p.51).

Parental beliefs about development and learning are passed from generation to generation and influenced by personal experiences of raising children (Super & Harkness, 1997). These beliefs influence the practices and routines that are a part of a child's daily life (Roopnarine et al., 2003 p.118). Fan and Chen (1999) found that parental aspiration/expectations were strongly correlated with learner academic achievement. Research suggests that “both parents’ numeracy expectation and parent-child numeracy activities were positively associated with the child's level of early numeracy” (Segers et al., 2015, p.230).

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Research has shown that individuals with high maths anxiety often express a variety of negative attitudes towards maths (Maloney et al, 2015). Muir (2009) expressed concern that this attitude could be passed to children by their parents. Maloney et al. (2015) found that parents' maths anxiety had a negative effect on their child's learning of maths but only when the parent frequently helped with their child's homework. Blevins-Knabe (as cited in Skwarchuk, 2009) reported that many parents disliked maths and often prioritised literacy instead. Despite the potentially negative influence of parental maths anxiety, evidence from Anthony and Walshaw (2007) suggested parents are keen to encourage and support their children in maths education.

Researchers have argued that differences in parent-child numeracy practices, and parents' numeracy expectations, partly explain individual variation in early numeracy learning (Skwarchuk, 2009). Also, shared parent-child activity makes a unique contribution to numeracy development (LeFevre, Polyzoi, Skwarchuk, Fast, & Sowinski, 2010). Indirect numeracy activities (e.g. real world tasks; board and card games, measuring when cooking and carpentry) may have an important role in developing children's fluency in basic number operations (LeFevre, et. al., 2009).

Skwarchuk (2009, p.189) found that "children who are exposed to more advanced numeracy concepts by parents with positive mathematical experiences had higher mathematics scores". However, parent-child interactions were more frequently about basic number operation (for example, counting) than complex mathematical operations (e.g. geometry, measurement, algebra, statistics and probability). It could be argued that understanding of basic number operations is required before progressing onto more advanced mathematical operations.

What did we do?

Parents from one urban nursery and one rural nursery in Highland volunteered to take part in two focus groups. All parents of children in the nurseries received an invitation to take part in the project. The invitation asked for parents help to inform the creation of a new resource to support their child's numeracy development. A total of 13 parents

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were involved; 12 were mothers and one was a father. All parents also had at least one school aged child in addition to a child in nursery.

A framework was devised for the facilitator of each Focus Group to ensure consistency of key questions. Photos of an adult-child pair baking and an adult-child pair making pizza were presented to prompt discussion about the potential numeracy content of the activities. Parents were then asked to scale their confidence in supporting their child in both numeracy and literacy. A five-point scale was adopted where one was no confidence and five was very confident. Thereafter open-questions were used to elicit beliefs, opinions and attitudes about supporting numeracy in pre-school children.

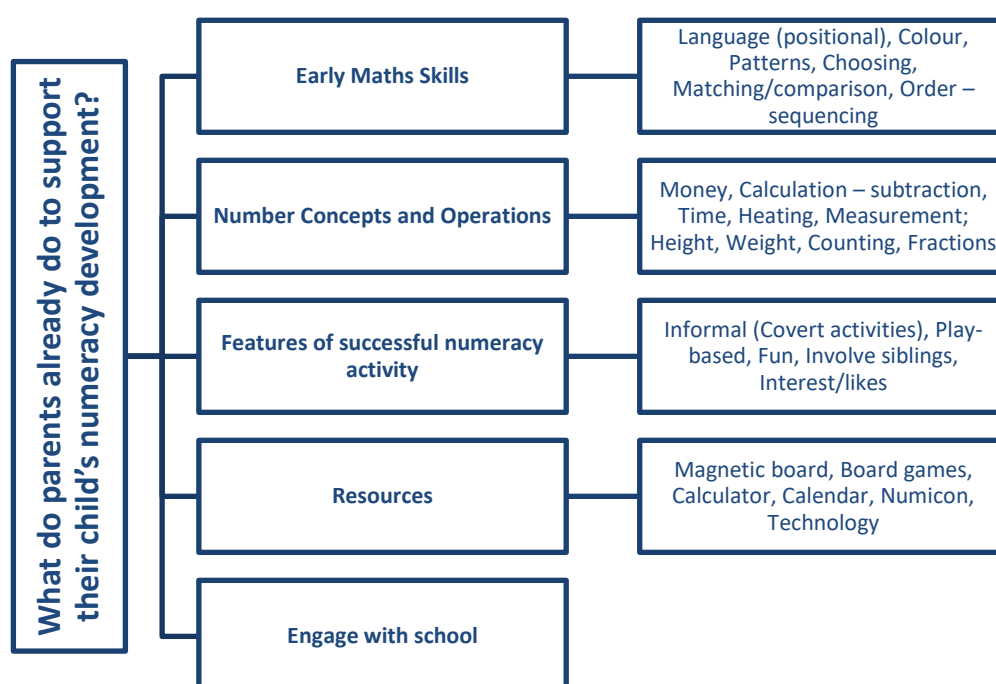
The responses were scribed onto flip-chart paper. Thematic analysis was adopted and the six phase process was followed from Braun & Clarke (2006).

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What have we found so far?

What do parents already do to support their child's numeracy development?

Parents described supporting their child's early maths skills as well as their number concepts and operations. Parents shared features of numeracy activities and listed many resources they use including games. Engagement with school was also identified as a means of supporting their children's numeracy development.



How confident are parents at supporting their child's numeracy development?

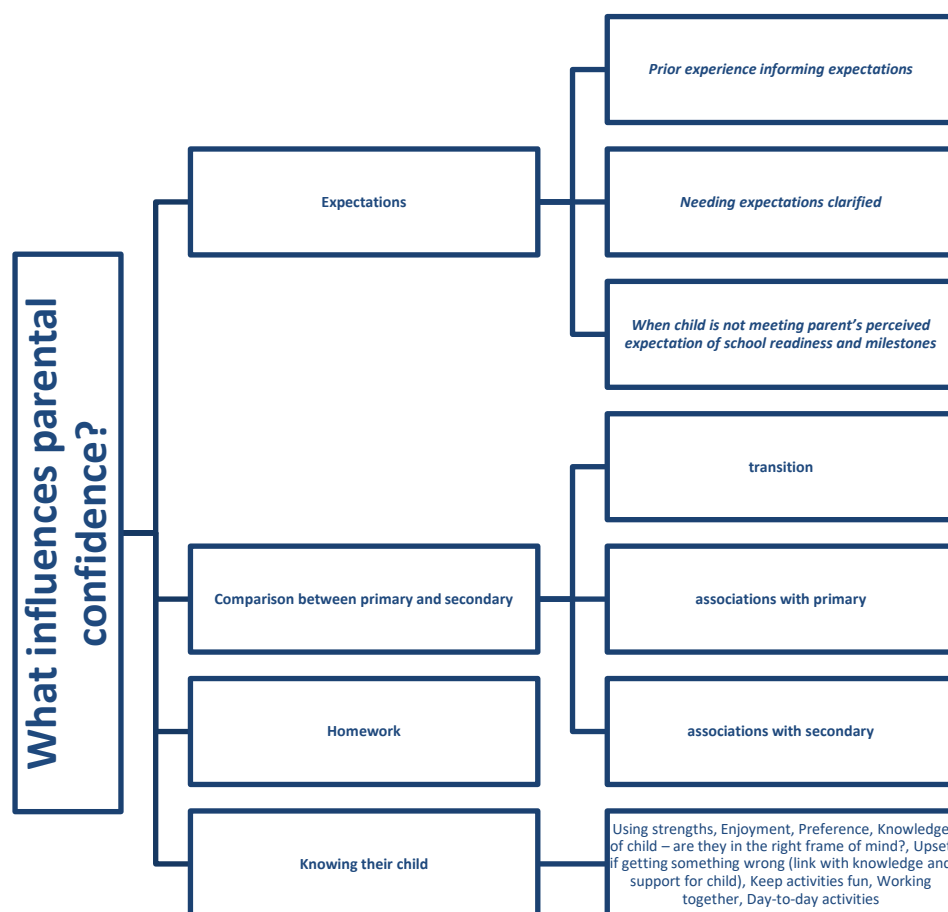
Results from the scaling activity gave an average response for numeracy as 4.2 and the average response for literacy as 4, suggesting there was no difference between their confidence in supporting their child's numeracy or literacy. Parents reported feeling more confident

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about supporting their child's numeracy in primary school compared to secondary school.

What influences parental confidence?

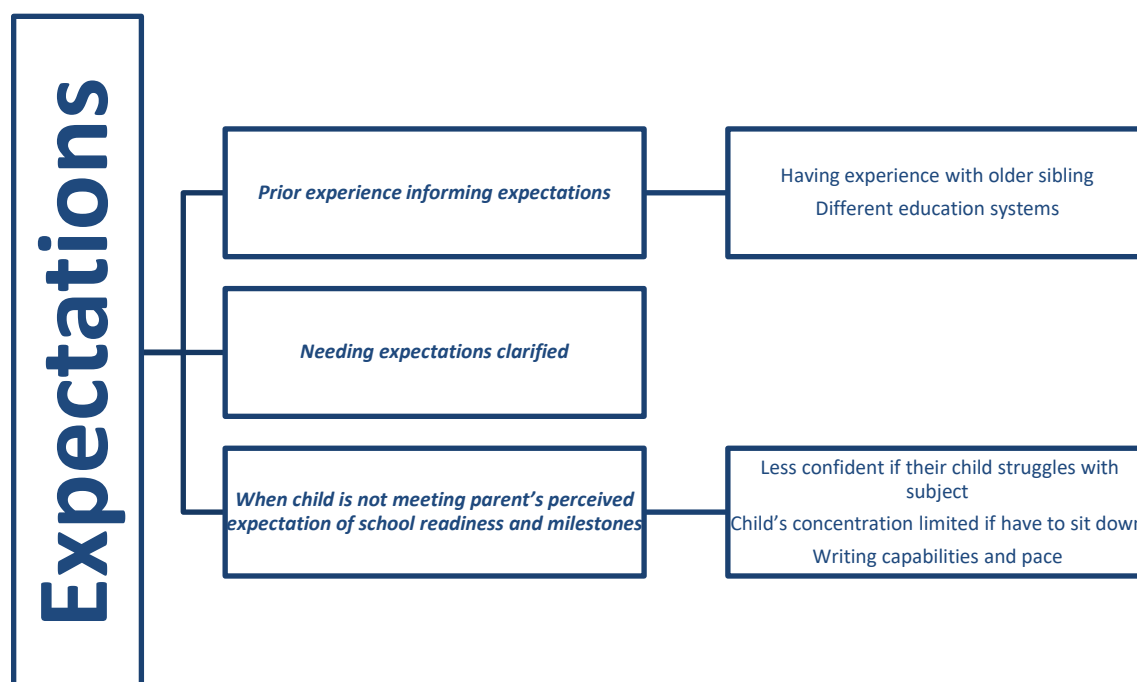
Parents reflected on their own learning as well as that of their children. Four main themes emerged including expectations, comparison between primary and secondary, homework, and knowing their child. Both homework and knowledge of their own child appeared to improve parental confidence.



Expectations influence parental confidence. Parents felt more confident when they had prior experience of a child in school. They shared that they wanted expectations clarified. They would like to know what to expect of their children both developmentally and in terms of school

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readiness. When their child was not meeting their perceived expectations of school readiness and milestones, this had a negative impact on their confidence in motivating and supporting their child.



Parents compared primary and secondary school experiences from both their perspective and their child's which led to three themes; transitions between settings, experiences associated with primary and experiences associated with secondary.

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Comparison between primary and secondary

transition

Readiness to move-on from primary to secondary

associations with primary

Primary is more fun, Less pressure in primary,
Assessment on computer in primary more fun

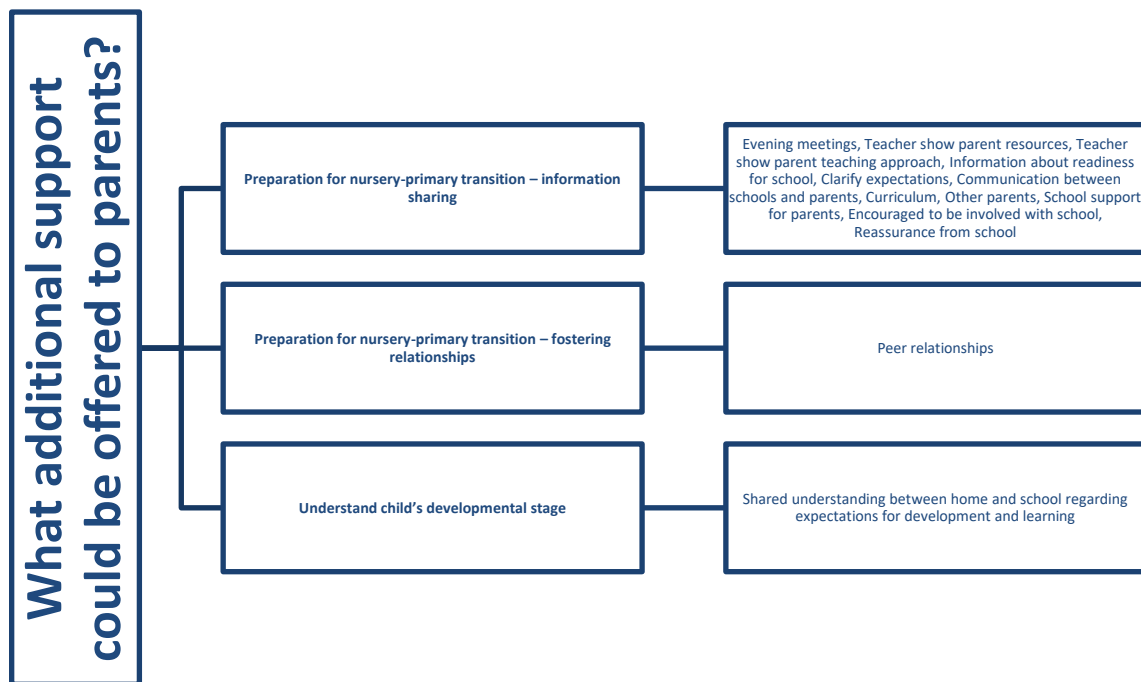
associations with secondary

Less confident in secondary, More support in primary
due to size, Different between primary and secondary,
Feelings of being daunted in secondary, Frightened to
ask question in secondary, Pressure in secondary due
to assessments, Assessment causing stress, Teachers
reminding pupil of important of assessment

What additional support could be offered to parents?

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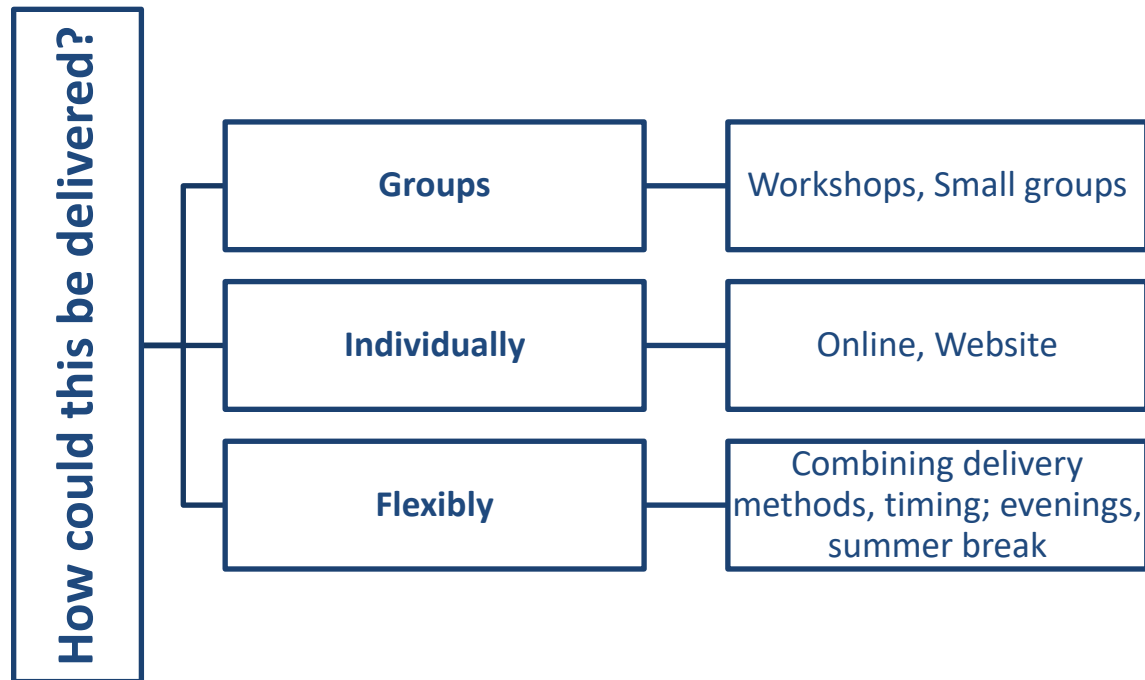
Parents found that additional support which could be offered was in the form of an information sharing session in preparation for the nursery-primary transition. They identified that fostering relationships between their children and peers was important.



How could this be delivered?

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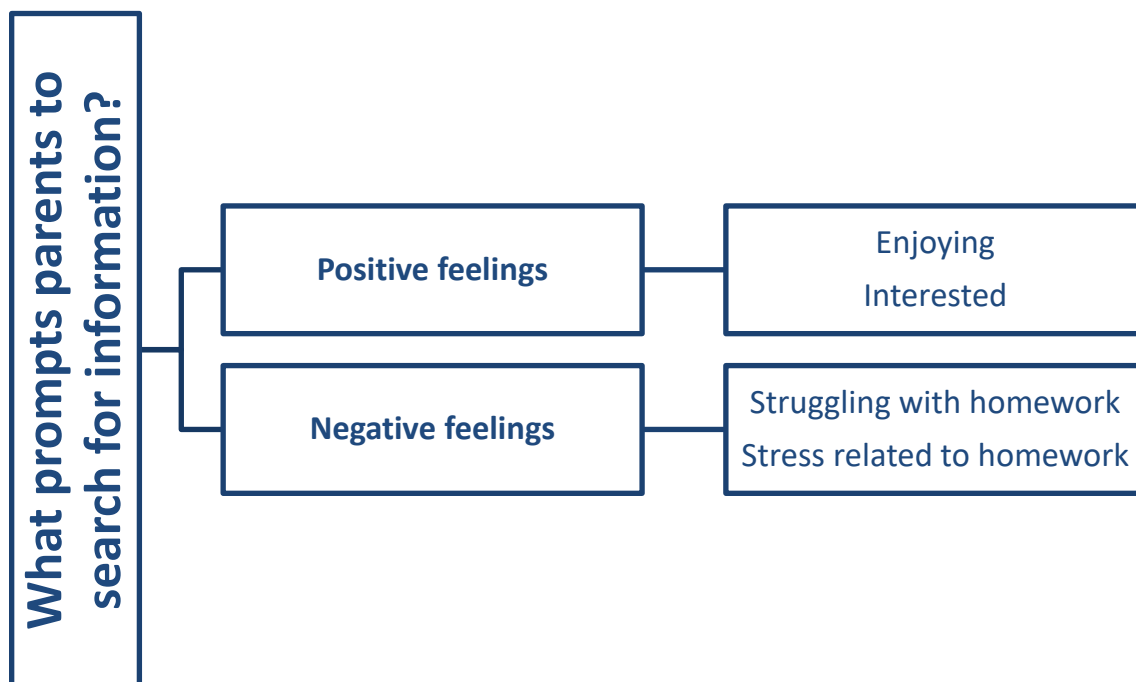
The delivery of support material could include group work, individual sessions and some flexibility about combining methods and the timing of these support sessions.



What prompts parents to search for information?

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Parents were prompted to search for information when their child either felt positively towards numeracy and therefore parents were encouraging their child, or the child felt negative towards numeracy homework and parents were trying to support their child.



What does this mean?

The original project aimed to inform the development of an Early Years resource for parents regarding numeracy. The research questions and method were devised to gather parent's views on what they already do to support their children and what else might be helpful. During the focus groups, the contributions were informed by the parent's personal experiences of primary and secondary school, as well as those of their older children. Following analysis it emerged that parents' confidence relating to numeracy in the early years was quite high (4.2 out of 5, where 5 is 'very confident'). Parental confidence reduced as their child progressed to more challenging numeracy. Therefore, it became apparent that support could be better directed towards supporting numeracy across school ages, particularly clarifying expectations around

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transitions.

In line with the literature, results suggested that parental beliefs around their own learning as well as that of their older children, influence their thinking about their younger child's learning. Parents were more confident when they had prior experience of another child progressing through school. They were equally as confident with numeracy and literacy in the early years. Results also seemed to suggest that as their child moves up through school, particularly around transitions and in secondary school, there is a reduction in confidence. Given consideration to Swarchuk's (2009) finding that parent-child interactions were more frequently about basic number operation than more advanced concepts, it may be that parents are more confident with early numeracy concepts but this confidence reduces as their child progresses to more challenging numeracy.

As evident from previous research (Anthony and Walshaw, 2007) results also suggested that parents are keen to support and encourage their children with numeracy. Parents' suggested that they already used a broad range of activities and resources to support and encourage their child in relation to numeracy. These included both direct and indirect activities (real world tasks); which Le Fevre et al. (2009) suggests have an important role in developing basic number operations.

What do we plan to do next?

This research will inform the Local Authority developments in the area of parental engagement and numeracy. The next step is to undertake an online survey with teaching staff to establish their view of the support required for children and young people's numeracy development and the parental role with this.

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