

# A Strengths Approach to supporting early mathematics learning in family contexts

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**EARLY CHILDHOOD PROFESSIONALS ARE** increasingly being asked to work with children and families using strengths approaches<sup>1</sup>. However, what does this mean for working with families to support children's mathematical development? Specifically, how can this approach support and engage families, including those who may disengage from their child's mathematics education? This article aims to *introduce* a strengths framework for supporting children's mathematics learning opportunities in family and community contexts. We apply a Strengths Approach (McCashen, 2005) to an example from an early childhood mathematics program called *Let's Count*. *Let's Count* was designed as a means of assisting families to help their young children (aged three to five years) play with, investigate and learn mathematical ideas (Perry & Gervasoni, 2012). Using examples of case studies from *Let's Count*, we use McCashen's (2005) five-column strengths framework to present ways in which early childhood professionals can support families to explore mathematics with their children, using the unique everyday resources and opportunities of each family.

## Introduction

Professionals in early childhood education settings are encouraged to use *strengths approaches* to support the access and participation of all children and families. Strengths approaches emerged in social services and psychology from practitioners working with complex issues such as child abuse (Glicken, 2004; Saleebey, 2009). McCashen (2005) explains the Strengths Approach as collaborative and solutions-based, 'a philosophy for working with people to bring about change ... it acknowledges and addresses power imbalances between people working in human services' (p. v). The approach involves exploring issues with stakeholders and identifying strengths and resources to assist with developing strategies for solutions to issues.

In relation to early childhood mathematics education, relationships among stakeholders, including family members, children and educators, can have a substantial influence on the enhancement of mathematics learning. Studies show a positive association between parental involvement in their children's learning and children's achievement (Young-Loveridge, Peters & Carr, 1998). However, some family members may be reluctant to 'get

involved' with mathematics. Early childhood educators might have to provoke such involvement in order to assist families in realising the mathematical potential of their everyday activities (Perry & Gervasoni, 2012).

Internationally, educators are asked to communicate children's strengths (NAEYC, 2004) and to move away from deficit approaches (Johansson et al., 2008). In Australia, current early years curriculum and policy documents, such as the *Early Years Learning Framework* (EYLF) (DEEWR, 2009) and the *National Quality Framework* (NQF) (DEEWR, 2011), advise that strengths approaches should be used in early childhood settings. For example, in the EYLF (DEEWR, 2009) it is emphasised that: 'In order to engage children actively in learning, educators identify children's strengths and interests' (p. 9). The Australian Children's Education and Care Quality Authority (ACECQA) also states that 'each child's current knowledge, ideas, culture, abilities and interests are [to be] the foundation of the program' (2013, p. 17). Working from a strengths perspective has become an expectation of early childhood educators. However, what is meant by using a Strengths Approach, and how it can be actualised in early childhood settings, has not been well articulated, understood or interrogated (Fenton & McFarland-Piazza, 2014).

Table 1. The Column Approach\*

Stories and issues	The picture of the future	Strengths and exceptions	Other resources	Plans and steps
What's happening? How do you feel about this? How long has this been a problem? How is it affecting you and others?	What do you want to be happening instead? What will be different when the issues are addressed?	What strengths do you have that might be helpful? What do you do well? What's happening when the issues aren't around?	Who else might be able to help? What other skills or resources might be useful?	What steps can be taken, given your picture of the future, strengths and resources? Who will do what? When? How? By when?

\*Adapted from *The Strengths Approach* (McCashen, 2005, p. 48) © 2005 St. Luke's Innovative Resources. Reprinted with permission.

In Australia, the social service organisation of St. Luke's based in Bendigo, Victoria, pioneered and adapted strengths perspectives to their work in therapeutic contexts with families experiencing complex needs. This resulted in the development of their own version, entitled *The Strengths Approach* (McCashen, 2005). The Strengths Approach encourages the identification of resources and the use of challenges, as they occur, to create resilience and aptitude when working with issues. A guide for implementing the Strengths Approach is the six key stages for reflection, planning and action:

1. Listening to peoples' stories ... exploring the core issues.
2. Developing a picture of the future (visioning) and setting goals.
3. Identifying and highlighting strengths and exceptions to problems.
4. Identifying additional resources needed to move towards a picture of the future.
5. Mobilising strengths and resources through a plan of action.
6. Reviewing and evaluating progress and change (McCashen, 2005, pp. 47–48).

The first five stages are usually presented in a five-column table format to guide applying the Strengths Approach; this is termed the Column Approach (see Table 1).

The Column Approach is a generic tool for applying a Strengths Approach in a variety of practical circumstances and is reliant on developing trusting and respectful relationships between all involved in the issue being addressed. We present an argument for why a Strengths Approach is important in facilitating children's early mathematics learning. We also present examples of how the strengths-based Column Approach can be used by early childhood professionals to support families in exploring mathematics with their children, using the unique everyday resources and opportunities of each family.

## Family involvement in early childhood education

Children's experiences within their families influence their learning and their dispositions to learning (Perry & Gervasoni, 2012), and resources, home routines and environment predict educational and behavioural outcomes for children into the primary years (Melhuish et al., 2008). Parent involvement with schools is consistently found to be positively associated with children's academic outcomes (Jeynes, 2005). Parental involvement is also an effective way to increase parental social capital, which better prepares parents to support their children in school-related activities (McNeal, 2001). When parents are involved with their children's education, children receive the message that education is important. However, much of the research on parent involvement has focused on families with school-aged children, rather than families with children in early education settings.

Although there is clear evidence supporting the importance of family involvement in children's education, barriers exist for some families (Christenson, 2004). Multiple reasons have been proposed for this lack of participation, including structural and psychological barriers (Christenson, 2004). Furthermore, there is evidence that families described as 'disadvantaged' are least likely to be involved and listened to in school environments (Bernard van Leer Foundation, 2007). Living in poverty can restrict families' abilities to provide materials and associated learning opportunities for their children (Magnuson & Shager, 2010). However, there are many examples of children living in poverty who have achieved positive educational outcomes, and often this is due to strong, positive approaches from family members (Melhuish et al., 2008).

Although families with complex support needs may face barriers that impede the formation of collaborative partnerships with educators, these families often hold high educational expectations for their children (Dockett et al., 2011). In order to facilitate more collaborative partnerships with all families, early childhood educators should consider using the Strengths Approach to support young children's mathematics education.

## Family involvement in early mathematics

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Family involvement has a particular role to play in early childhood mathematics education. In particular, stimulating and responsive parenting practices have an impact on children's academic outcomes (Committee on Early Childhood Pedagogy, 2000), particularly on later maths achievement (Morrison, Rimm-Kauffman & Pianta, 2003). Relationships among family members, children and educators can have a substantial influence on the learning of mathematics, and it is clear that children's experiences within their families can influence their learning and their dispositions to learning (Perry & Gervasoni, 2012).

Although research finds that families are capable provocateurs of children's mathematics learning, some parents lack confidence in this role, often because of their own experiences of learning mathematics (Perry & Gervasoni, 2012). A further issue is that some parents and early childhood educators do not recognise the everyday activities in which children engage that hold rich potential for mathematics learning (Perry & Gervasoni, 2012). Thus, it is important to raise parents' and early childhood educators' awareness of such activities and confidence to engage with mathematical ideas as a means of supporting children's mathematical development. Early childhood educators should offer opportunities for families to become involved in their children's learning. Second, a viable set of supports should be in place to encourage parent involvement. Finally, various involvement opportunities should exist that allow families to use their strengths and talents.

It is clear that families can help their children learn mathematics in their everyday lives in the home environment. Early childhood educators can also offer opportunities for families to become involved in their children's mathematics. When strong, collaborative partnerships have been built, there is great potential for the educator to influence the families' thinking around their children's mathematics (Perry & Gervasoni, 2012). A Strengths Approach can encourage these collaborative partnerships, whereas deficit approaches, which focus on families' and children's weaknesses, can often result in a stigma (Dockett et al., 2011). This article will explore ways in which a Strengths Approach can encourage early educators and families to communicate and work collaboratively to support children's early mathematics learning.

## Method

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This paper reflects the study of applying a Strengths Approach as the subject of research, and applies a Strengths Approach as a research methodology (Fenton, 2013). We present a new strengths-based analysis of a single case study drawn from an existing larger research project of the early childhood mathematics program called *Let's Count* (see MacDonald, 2015). Ethics approvals for the original project were obtained from the university (approval No. 301/2013/05). Appropriate additional permissions were also received for the further sharing of

case study documentation relating to this paper. Drawing from the larger study, this paper uses a qualitative case study format (Yin, 2009) to investigate—at a micro level—the *process* of bringing a single early childhood educator and small group of children and families together with the aim of enhancing mathematical engagement. The case study is enriched with detailed participant narratives as a means of presenting authentic data and valuing participants' voices. Yin (2009) explains that case studies are particularly useful to gain in-depth understandings and insights from authentic practical settings. The authors use a case study format to demonstrate that an implicit Strengths Approach was applied in *Let's Count*. The purpose of the paper is to introduce and explain how a strengths-based framework can be explicitly actualised to support children's mathematics learning opportunities in family and community contexts.

## Background

The *Let's Count* program was designed by The Smith Family and researchers from Charles Sturt University and the Australian Catholic University as a means of assisting families to help their young children (aged three to five years) play with, investigate and learn powerful mathematical ideas (Perry & Gervasoni, 2012). The program has been offered in various forms (see Gervasoni & Perry, 2015; MacDonald, 2015), including an online subject embedded within an undergraduate early childhood teaching program. *Let's Count* trains early childhood educators to act as mentors to the parents and family members of the children in their setting, providing assistance in noticing and exploring mathematics in everyday life (MacDonald, 2015).

## Participants

The online subject form of *Let's Count* has, to date, been completed by 202 educators. In 2013, all former participants in the subject were invited to participate in an evaluation study. A total of 18 educators opted to participate. Educators participated in E-views (see Fenton, 2013), and shared documentation which was produced during their *Let's Count* training, including family gathering PowerPoint presentations, photographs and handouts. For the purpose of this paper, one female educator from the evaluation study was chosen for this single case study by MacDonald—Chief Investigator on the evaluation study—as an example that provides data indicative of that found in the evaluation study as a whole. The educator is the owner and director of a long day care centre in metropolitan NSW. Although the educator mentored seven families as part of *Let's Count*, due to the scope of this case study paper, detailed data is included from two families only. As part of the *Let's Count* training, early childhood educators are required to implement 'family gatherings' with the children, parents and other caregivers in their setting. As MacDonald (2015) explains:

Table 2. Applying the strengths-based Column Approach to the case study data\*

Column 1	Column 2	Column 3	Column 4	Column 5
Data of stories and issues	Data: The vision of the future	Data: Strengths and exceptions	Data: Other resources	Data: Plans and steps

\*Adapted from *The Strengths Approach* (McCashen, 2005, p. 48) © 2005 St. Luke's Innovative Resources. Reprinted with permission.

*Family gatherings are essentially workshops designed to allow early childhood educators to have conversations about mathematics with parents, and to assist parents to help their children learn mathematics. Family gatherings are an opportunity for educators to work with families to assist them in recognising the opportunities for mathematical development in their everyday family life. They are also an opportunity for educators to learn about, and appreciate, the unique capacities and resources of each family (p. 90).*

*Initially a message went out to seven parents via Facebook in a private group message to see if they would be interested in attending a family gathering to discuss how we can incorporate maths in the home environment:*

*There is no obligation to be part of this so if you don't want to participate that's fine ... [to] organise a family gathering and together we work out how we can incorporate maths in the home environment. I envisage that this will involve 1 to 2 meetings and hopefully the rest of our discussions can occur as a group on FB [Facebook™].*

*All seven parents responded that they were willing to be involved in this project [data from two families is included in this case study]. Each parent had at least one child at the centre. The next stage was to prepare for all parents to attend a family gathering at the centre so that I could run through the project with them as a group. Prior to the meeting I did ask all parents if they were able to send me a list of interests for their child in the home environment. This would allow me to provide ideas that were fun and interesting to each of the children (MacDonald, 2013).*

Two meetings resulted: (1) a group meeting at the centre for six families; (2) a meeting in the home of a family who could not attend the group meeting. The seven parents kept a journal, took photographs and shared feedback electronically with the educator and other families as the project progressed via the private Facebook™ group. The parents shared both the mathematical learning that had occurred and reflections on the project.

### Analysis plan

We apply the strengths-based Column Approach (McCashen, 2005, p. 49) as an analysis framework to facilitate top-down coding (Bergman, 2010). The five columns were used as the basis for thematic analysis of the data (see Table 2). Clustering of data in this way allowed for inductive analysis and assisted in illustrating, confirming or not confirming links between the data and literature studied (Yin, 2009). The clustering technique also enabled the data to be analysed to evaluate if Strengths Approach steps (columns) and processes had been followed.

Table 2 shows how the case on early mathematics learning is presented under column headings in the findings section in order to illustrate the sequential application of the first five steps of applying a Strengths Approach to practice. Additionally, the sixth step of applying a Strengths Approach, that of 'reviewing and evaluating progress and change' (McCashen, 2005, p. 48), is presented as a separate findings heading.

### Case study: Early mathematics learning

The project parameters were explained as such:

*For this task, you need to organise and implement a 'family gathering' with the children and families at your service. You might hold a workshop at the service and invite families to attend, or you might invite families to complete activities at home. You might 'gather' families physically or virtually. It is up to you to decide what mathematical concepts you will focus on, what activities you will implement with the children and families, and what evidence you will collect (MacDonald, 2013, p. 11).*

The early years educator planned and recorded the organisation of her family gathering project.

### Analysis and findings

#### The issue (Column 1):

The project issue was determined as being how to incorporate mathematical learning into the home environment. The educator reflects (retrospectively) on the foundational concept of recognising and raising awareness of mathematical opportunities:

*The possibilities of exploring mathematics for the parents with their children in a variety of ways within the home environment. The comments I received verbally from parents during and after this experience was that they could [now] see maths in many everyday things. That*

*[previously] they often just took for granted. It wasn't that they weren't doing some of these things already with their children it was more that the parents were [now] aware of the learning that occurs from engaging in such play with their children (Educator, 2013).*

### **The vision (Column 2):**

The vision was an aspiration of successfully using a collaborative Strengths Approach to recognise and support early mathematics learning in family contexts and to assist in transition to school.

*Two-way communication will extend children's mathematical thinking, understanding and language development. I believe the impact of a family gathering and the ideas undertaken by the families will assist in the children's mathematical thinking in a variety of ways (Educator, 2013).*

### **Stakeholder strengths (Column 3):**

*Educator and parents*

The educator brought strengths of early childhood developmental understandings, mathematical knowledge, communication skills and organisation to the project.

*As you are aware I only have two subjects to complete my Bachelor of Education. One of my last subjects is on teaching mathematics to preschool children (Educator, 2013).*

*Communication is the key to incorporating great learning into the curriculum. It is not only in the way we as educators encourage children's learning through intentional learning experiences within our centres but our ability to engage in meaningful conversations with families on how they can also engage in their child's learning in the home environment (Educator, 2013).*

*By providing the parents with information on mathematical terminology and mathematical ideas, related to their children's individual interests, provoked thinking as to how they could engage in assisting their children to learn mathematics in fun and varied ways (Educator, 2013).*

The parents as key stakeholders brought deep knowledge of, and concern for, their children, safe and stimulating learning environments as well as engagement and willingness to put time and effort into the project.

*Parents were able to instigate, investigate, question and predict endless possibilities with their children at a time that suited them (Educator, 2013).*

*I found it reassuring to see how much [Child 4] could do. With him starting school next year I was worried th[at] he didn't seem interested in learning but I found that he was quite excited about the idea of having homework. We both enjoyed doing the tasks and I found that I could bring maths into a lot of the everyday things we did (Parent 4, 2013).*

*She [Child 5] has always had quite well developed 1:1 and counting skills. These activities broadened her conceptual grasp of numeracy (Parent 5, 2013).*

*Child 1: Four-year-old boy*

When asked to identify the strengths and interests of Child 1, his mother recorded that he listed 'Lego, dinosaurs, dressing up as a superhero, pretending to be an animal, climbing trees, playing/fighting with [his sister], building things and drawing!' (Parent 1, 2013).

*Child 2: Four-year-old girl*

The strengths and interests of Child 2 were recorded as 'dolls, riding bike, drawing, spending time with animals' (Parent 2, 2013).

### **Other resources (Column 4):**

The educator provided some sample ideas and activities at the family gathering sessions. For example, a recipe for cooking banana muffins, ideas for water measuring, patterned threading and counting activities were suggestions that could be incorporated into time at home.

*The ideas provided for your child don't all have to be implemented. They are simply there to support mathematics in the home with your child. You can choose to do some of these suggestions, all of them, modify and alter them yourself or do something completely different (Educator, 2013).*

The educator also presented some information on key mathematical concepts to look for and explore with the children: 'concepts include—distance, size, mass [heaviness], sharing, position [in, out, over, under, behind, in front], more and less, matching, up/down, high/low' (Educator, 2013). Additionally, when drawing on the family strengths the educator asked:

*Does your child show any awareness of words such as:*

- Full
- Empty
- Some
- None
- Equal [we have been learning this in school readiness so they should have an understanding of this word] (Educator, 2013).

### **Plans and steps (Column 5):**

*Child 1*

For Child 1, the educator worked with the parent to suggest ideas of incorporating mathematical learning and building on the strengths previously identified. Table 3 shows the planning document developed by the educator in a collaborative partnership with the parent and child.

Table 3. Planning document for Child 1

Strengths	Ideas for learning	Mathematical concepts
Interested in dinosaurs	Setting up several of his favourite dinosaurs in height order. Drawing his favourite dinosaurs in height order or heaviest to lightest etc.	Sorting by size. Size, area.
Playing with his sister and dressing up as a superhero	Superhero game: Dress up as a superhero and his (sister) has to hide, before the superhero finds her—he has to count backwards from 10 to zero before blast off. Hide some of Child 1's toys around the house and the superhero needs to find them.	Number order. Counting on—how many has he found, how many left?; subtraction—how many more does he need to find?
Enjoys constructing with Lego	Building towers—discussion. Giving direction to where some blocks go. Sharing some blocks with his sister. Pattern making with Lego.	Height—how tall can you build it?; estimate—how many pieces do you think you have used? Position (describe)—on top, behind, in front of. What would be fair?; half to you and half to your sister. What comes next in a pattern?
Likes to climb trees	How long will it take you to get from the bottom to the top of the tree? How far is the tree from the house (or another object)?	Time; estimate. Estimate; measurement—heel to toe; counting.
Enjoys drawing	Who lives in our house? Drawing them. Game: Draw a square, draw a bigger square, draw a circle next to the smallest square, draw mummy on top of the big square, draw daddy on the inside of the circle etc.	Size, heavy/light, weight, big/small. Position, shapes and direction.
Is interested in cooking	Cupcake making.	Measurement; time; volume—half, full, quarter.

(Educator, 2013).

*Parent 1: Reviewing and evaluating progress and change (Stage 6)*

Parent 1 reflected in her journal on the learning experience at home that built on Child 1's interest in cooking. She evaluated the mathematical learning that occurred with the cupcake learning experience:

*Brody and I cooked cupcakes. Brody tipped the mix in the bowl—the bag was now empty then we got the eggs out. Brody counted how many were in the carton and how many were missing. There were 10 eggs and 2 empty spaces. Brody touched each egg as he counted. We needed 2 eggs, so he got 2 out then he counted how many were left [8] and how many were missing [4]. We cracked the eggs in half and put them in the bowl. I then asked him to count how many pieces of shell we had [4] so we talked about how 2 eggs were broken in half made 4 half shells. We needed ½ cup of milk. I had a 1 cup measure so we talked about how we only needed to fill it half way.*

*Brody helped put the patty cases on the tray. There were 3 different colours and we needed 12 (Parent 1, 2013).*

From a parent's perspective, Parent 1 evaluated the strengths-based approach used in the project:

*I liked that after reading the suggestions I thought 'hang on, we do some of that already'. I think that a lot of the things we did are things that we will continue to do. This experience made me think that there are a lot of other things we can do that involve mathematics in the home, plenty that we can do now and I've also thought of things for when they are older. It certainly made me think about how as adults we just 'do' all these things without consciously thinking 'hey, I'm doing maths right now' and it made me think a bit more about what I do that involves maths in the home. I think it's something that a lot of us just take for granted that we know it (Parent 1, 2013).*

Table 4. Planning document for Child 2

Strengths	Ideas for learning	Mathematical concepts
Enjoys riding her bike	How far can you ride in 30 seconds? Where can you ride? How far do you think it is from home to the end of the street? Mapping the bike ride out. How long will it take to ride that far? What is the probability that it won't rain while you are out riding?	Time, direction, position area, counting, guesstimate.
Likes playing with the dog	How far could you throw the ball for the dog? Walking the dog. Feed the dog half a cup of pellets (etc.). Can you put three cups of water in the dog's water bowl?	Estimate, distance, direction. Measurement—how far can you walk?; direction, mapping prior to walking the dog. Volume.
Engages with computer games	Suggested age appropriate mathematical websites: <a href="http://www.abc.net.au/abcforkids/games/show.htm?show=PEPPA-PIG&amp;id=3141088">www.abc.net.au/abcforkids/games/show.htm?show=PEPPA-PIG&amp;id=3141088</a> <a href="http://www.abc.net.au/abcforkids/games/show.htm?show=CHUGGINGTON&amp;id=2983926">www.abc.net.au/abcforkids/games/show.htm?show=CHUGGINGTON&amp;id=2983926</a> <a href="http://www.abc.net.au/countusin/games/game15.htm">www.abc.net.au/countusin/games/game15.htm</a>	Direction game. Matching game. Measurement—volume, more/less.
Often spends time with doll play	Set up a doll's picnic—perhaps using four dolls. Get 16 pieces of food and have Child 2 share the food between the dolls so they all get an equal amount of food. How is the food shared? E.g. one by one, in groups of two or three at a time etc., until the food is all gone.	Equal, sharing, sorting. Sharing, classification.
Is skilled at drawing	Who lives in our house? Draw them. Game: Draw a square, draw a bigger square, draw a circle next to the smallest square, draw mummy on top of the big square, draw daddy on the inside of the circle etc.	Size, heavy/light, weight, big/small. Position, shapes and direction.
Likes to watch and help with food preparation	Cooking cupcakes	Measurement; time; volume—half, full, quarter.

(Educator, 2013).

#### Child 2

The educator used the reported strengths of Child 2 as a starting point for designing tailored mathematical learning experiences for the home environment. In Table 4, the educator showed the family how mathematical concepts could be learnt by building on the child's strengths.

#### Parent 2: Reviewing and evaluating progress and change (Stage 6)

On the private Facebook™ group messages, Parent 2 reflected on the drawing activity suggested by the educator as one of the possible learning experiences to build on the strengths of Child 2. The activity involved all members of the family:

*I've had an interesting afternoon drawing with [Child 2]. She has used her artistic talent to draw her family members in age order. She has done well sizing from eldest to youngest even giving Jack longer legs as he is taller than me—dogs also included in the drawing with our new puppy 'Ned' being the smallest of the family. This was great seeing her distinguish from oldest to youngest, tallest to shortest, but not doing much for self-esteem with giving me the biggest belly!* (Parent 2, 2013).

Later, critically analysing the project as a whole, Parent 2 evaluated:

*I found this to be an extreme eye opener noticing how often maths is used daily. It was lovely to spend one on one time with [Child 2] and seeing her utilise maths in a*

number of different methods. I also learned some aspects of mathematics need improvement. One being counting on. [Child 2] is extremely familiar with the term equal and this term gets used a number of times daily. I have now realised that maths can be turned into a very fun way of learning (Parent 2, 2013).

*Educator: Reviewing and evaluating progress and change (Stage 6)*

The educator reflected on the collaborative process that was integral to applying a Strengths Approach.

*By actually sitting together as a group with the parents enabled not only the opportunity to provide information to parents but for them to ask questions about the project and to listen to one another in the group setting.*

*Each of the parents I approached were extremely receptive to engage in this project; not only did the children gain an opportunity to engage in some further opportunities to learn with their families but their families and myself gained a great deal. By providing families with ideas on how to incorporate mathematics into the home it became evident for many parents that most of these things they were doing, they just didn't take notice of the mathematics in many of the experiences (Educator, 2013).*

The outcomes for mathematical learning were also evaluated:

*As an early childhood educator it is about those interactions with children where so much knowledge can be attained and learning opportunities seized upon that will facilitate the children's learning in fun and innovative ways. It was evident that parents really took up with the language of 'equal' with their children, as it was a focus within the preschool environment however, without engaging in this dialogue with families, I don't think it would have been so prevalent within the journals of the parents. By using children's interests in the home environment to learn about a variety of mathematical concepts shows that we need to keep the communication lines open with families and extend on children's interests at the centre using those same interests at home (Educator, 2013).*

Feedback regarding mathematical learning from other parents in the project confirmed the educator's evaluation.

*This experiment has made me realise how much maths affects our day ... Everything from eating to dressing. I was amazed. I see that with a few prompts from me I can show [Child 3] different angles to look at things. It was a lot of fun (Parent 3, 2013).*

*I found doing this exercise very interesting. Nearly everything we do involves math. Even in video games [Child 6] learned 1st, 2nd, 3rd for a podium finish and 12th is last. It's extremely important to take notice of the different words we should use for the children to incorporate and you provided plenty of fun exercises so they don't see it as work or boring (Parent 6, 2013).*

## Discussion and conclusion

Parental involvement in children's early learning, particularly in mathematics, has positive outcomes for children (Jeynes, 2005). Families can indeed be capable supporters of children's early mathematics learning and the family context can be a rich learning environment, full of everyday opportunities to facilitate mathematical skills (Perry & Gervasoni, 2012). However, due to personal experiences, some parents may not be confident in their own abilities or recognise opportunities in the home context to promote their children's mathematics learning. We propose that a Strengths Approach could be an effective framework used by early childhood educators to promote early mathematics learning in family contexts. Specifically, we have demonstrated how the strengths-based Column Approach (McCashen, 2005, p. 49) can be applied to everyday situations to support children's mathematics learning.

The Strengths Approach requires communication and collaboration between the early childhood educator and families. Our case analysis confirmed the importance of relationships between stakeholders in early mathematics learning. The educator in our case study demonstrated the use of a Strengths Approach, which was useful in working with the families to make mathematics learning 'visible'. The case study highlights that the establishment of relationships among stakeholders is an important first step in the application of a strengths-based Column Approach in early education settings. Thus, we propose that before implementing the first column of 'exploring the issue', educators must focus on building trusting relationships. As the case study demonstrates, these relationships are crucial to the success of this solutions-based approach.

As highlighted in our case study, family gatherings could be a useful way to develop relationships with families and promote family involvement in children's mathematics learning, focusing on families' strengths. Family gatherings, along with the application of a Strengths Approach, appeared to raise parents' confidence in facilitating mathematics learning. Increased parental confidence in their ability to promote their children's mathematics learning is important, as lack of confidence in this area has been identified as a barrier (Perry & Gervasoni, 2012).

It is clear from the case study that strengths approaches may be particularly useful once initial relationships have been established. Thus, one limitation of this approach is that we cannot assume they are a template for every situation, particularly in circumstances where initial relationships may be difficult to establish. Additionally, there are other general limitations of strengths approaches. Some argue that strengths approaches are time-consuming (Glickin, 2004), overly evangelistic (Epstein, 2008) and inconsistently defined or applied (Epley, Summers & Turnbull, 2010). Others suggest that strengths approaches are simplistic and fail to recognise the complexity of some circumstances (Taylor, 2006).

Replication of our results is needed using a larger and more diverse sample. Future research could also explore other



pedagogical approaches to foster early mathematics learning which promote a strengths-based view of family engagement. It is also important to investigate families' perspectives on the impact of strengths approaches, as well as the impact on children's mathematical outcomes.

By applying a strengths-based Column Approach, we illustrate how families' diversity and strengths can be used to promote children's mathematics learning in the context of everyday situations. There is certainly potential of a strengths-based Column Approach to be used not only in facilitating early mathematics learning by supporting family engagement, but in wider applications, beyond mathematics, in early childhood settings.

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