

Strengths approaches in early childhood mathematics education

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This symposium discusses the use of strengths approaches in early childhood mathematics education. *Strengths approaches* can be conceptualised as educational practices that recognise, and utilise, children's strengths. Strengths approaches originate in the social work sector, but are growing in recognition in early childhood education. This symposium considers how strengths approaches might be adopted in early childhood mathematics education, specifically, encouraging pedagogical approaches that recognise, and build upon, young children's strengths in mathematics. This symposium presents theorisation and a case illustration of how strengths approaches can be meaningfully utilised in early childhood settings in order to enhance mathematical learning opportunities for young children. The symposium addresses three aspects: (1) Overview of strengths approaches; (2) Application of strengths approaches; and (3) Leadership to promote strengths approaches; illustrated within the context of early childhood mathematics education.

The symposium format is as follows:

Chair: Amy MacDonald

Paper 1: Fiona Collins & Angela Fenton *An introduction to the strengths approach*

Paper 2: Amy MacDonald & Steve Murphy *A strengths approach to birth-to-3 mathematics education: The case of Banjo Childcare Centre*

Paper 3: Matt Sexton & Joce Nuttall *Leadership of strengths-based approaches for early years mathematics education: Using CHAT as a framework for educational leaders' professional learning leadership*

Discussants: James Russo & Toby Russo

An introduction to the strengths approach

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This paper provides a foundation for the Research Symposium, “*Strengths Approaches in Early Childhood Mathematics Education*” by providing an overview of the development of strengths-based approaches in social work and education. A framework, adapted from the Strengths Approach (McCashen, 2017), for applying a strengths-based approach in early childhood mathematics education is introduced.

An Overview of Strengths-Based Approaches

Strengths-based approaches, originally developed in social work practice and psychology (Glicken, 2004; Saleebey, 1996; Seligman, 1990), are gaining momentum as practitioners see applications in other human service fields such as education and health care (Pulla, 2017). Globally, there is a growing expectation that professionals working with children in their early years will adopt strengths-based approaches “to support the access and participation of all children and families, especially those with complex needs” (Fenton et al., 2015, p. 29). Furthermore, the Belonging, Being & Becoming: Early Years Learning Framework for Australia (EYLF) states that “in order to engage children actively in learning, educators identify children’s strengths and interests” (DEEWR, 2009, p. 9) and extends this by explaining that “early childhood educators who are committed to equity believe in all children’s capacities to succeed, regardless of diverse circumstances and abilities” (DEEWR, 2009, p.13). This paper provides an overview of strength-based approaches and then suggests a specific framework, adapted from the Strengths Approach (McCashen, 2017), for applying a strengths-based approach to support children in the early years in their learning of mathematics.

The development of strengths-based approaches in the 1980s and 1990s, alongside narrative therapies and solution-focused therapies, involved an entirely different approach to be adopted by professionals in human service practice (McCashen, 2017). Previously, therapy was pathology focused, where people and their problems were categorised according to diagnoses, behaviours and/or problems (McCashen, 2017); the focus was very much on what was wrong and as such has since been referred to as a deficit model. Later models shifted focus towards the specific circumstances of the client and the organisations around them available for support; the therapist was viewed as the “expert” and tasked with “fixing” the client in order to allow them to overcome their problem and return to a “normal” life (McCashen, 2017). However, these models raised concerns of imparting “power over” clients (McCashen, 2017, p. 54). In contrast, strength-based approaches are centred on the belief that all human beings are individuals who possess strengths, are experts of their own circumstances, and have the capacity for change if they are provided with opportunities and access to appropriate resources (Glicken, 2004; McCashen, 2017; Saleebey, 2009). Saleebey (2009, p. 97) states that “almost anything can be considered a strength under certain conditions,” whilst McCashen (2017) goes further and defines strengths as

anything people have that helps them to achieve, to overcome problems, to build on things that are already positive, to learn, grow, and be fulfilled. Strengths can be understood in terms of personal qualities – positive characteristics and things that people are good at. Strengths include people’s skills and capacities, their aspirations and values and the resources in their environment. (p. 33)

In education contexts, strengths-based approaches can also present an alternate point of view (Fenton, 2013) that is in contrast to a deficits view of learning, where emphasis is placed on ‘gaps’ in a child’s knowledge and/or skills, or identified learning problems, such as a focus on children with learning disabilities (see Harry & Klingner, 2007). For example, educators working from a deficit model design learning experiences to help children remediate “gaps” in knowledge and/or model skills which are not evident. MacDonald (2018) warns that adopting a deficit view of a child’s mathematical capacity can lead to a perpetual cycle of negative expectations, which can lead to opportunities for mathematical learning being blocked, which can contribute to negative mathematical learning experiences, ultimately resulting in disempowerment.

Instead, strengths-based approaches require practitioners to look at “individuals, families, and communities ... in light of their capacities, talents, competencies, possibilities, visions, values, and hopes” (Saleebey, 1996, p. 297). In essence, strengths approaches within education are student-centred, and focussed on measuring children’s strengths, catering for individual children’s needs, collaboration, and the deliberate application and intentional development of children’s strengths (Lopez & Louis, 2009). Mathematics educators working with a strengths approach will focus on what mathematics children can do, as well as the opportunities and resources available to assist in the development of their strengths and capacities to meet identified learning goals. MacDonald (2018) described this process as a competency cycle, “a process of creating positive expectations and opening the way for the development of new competencies” (p. 144).

Whilst strengths approaches are being encouraged in early childhood education, a number of critiques of this philosophy have also been expressed, including: that it is simply another way of describing being positive, and/or a way of reframing deficits through ignoring or denying real problems (Saleebey, 1996). The strengths approach has also been criticised for being “overly simplistic and superficial” (Glicken, 2004, p. 14) and for being an ideological theology (Epstein, 2012). Glicken (2004) cautions strengths practitioners about the complexity of discovering and applying strengths and warns that it can be a time consuming process. Furthermore, there is the potential for educators and children to adopt fixed mindsets if practice is limited merely to the identification and affirmation of strengths, without the nurturing and development of new talents (Lopez & Louis, 2009).

An Introduction to the Strengths Approach

Building on the foundations of strengths perspectives’ origins in the United States, the Strengths Approach, was developed further in Australia by St. Luke’s, a social services organisation based in Bendigo, Victoria, as a philosophy for collaborating with others in an effort to achieve a positive transformation (McCashen, 2017). St. Luke’s sought to develop practice-based principles to guide their practical work with children and families. The approach “encourages the identification of resources and the use of challenges, as they occur, to create resilience and aptitude when working with issues” (Fenton et al., 2016, p. 46). A number of principles guided the development of the Strengths Approach, including: the dignity and capabilities of each person as their own change agent; the ability of each person to enact their own strengths and capabilities; the identification and mobilisation of resources to support development; and a collaborative sharing of power between all stakeholders (McCashen, 2017).

The Strengths Approach is a framework for practice that encompasses reflection, learning, planning, action and review. It is important to emphasise that the Strengths Approach not only looks at the positives. In fact, the approach generally starts from clearly

exploring a challenge, complex issue or need. The Column Approach (McCashen, 2017) is provided as a scaffold for applying a Strengths Approach in five steps. Practitioners are encouraged to consider with all stakeholders: (i) What is the challenge here? (ii) What is the ultimate goal/vision? (iii) What existing strengths and capacities can we utilise? (iv) What extra resources are available? (v) With the previous steps in mind – what is our plan of action? A table version of the Column Approach (Table 1) can be used by educators, to assist children in their early years to develop their mathematical knowledge, skills and understanding.

Table 1
*The Column Approach**

| Stories and issues | The picture of the future | Strengths and capacities | Other resources | Plans and steps |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Ask questions that invite children to share their mathematical stories and enable them to clarify the challenges, such as:</p> <ul style="list-style-type: none"> • What’s the mathematical challenge or problem? • What’s happening here? • What are you trying to do? • What have you discovered? • Have you solved a problem, or overcome a challenge like this before? If so, can you tell me about it? | <p>Ask questions that help children explore their mathematical aspirations, dreams, interests and goals, such as:</p> <ul style="list-style-type: none"> • What do you want to know/be able to do? • What do you want to discover? • Why do you want to overcome this mathematical challenge/solve this mathematical problem? • What do you need to know? • What will solving this allow you to do? • What are you interested in? | <p>Ask children questions that help them explore their strengths, as well as their mathematical capacities such as:</p> <ul style="list-style-type: none"> • What are you good at? • What do you like doing? • What do the special people in your life think you are good at? • What were you thinking about when this happened? • What do you know that might be helpful here? • What have you done in the past when you have experienced similar mathematical challenges / problems? | <p>Ask questions that help children to identify resources that might help them reach their mathematical goals, such as:</p> <ul style="list-style-type: none"> • Who else might be able to help? • What other skills or resources might be helpful? • What have people done already that has helped? • Who or what has been helpful in the past when you have had mathematical challenges / problems like this? | <p>Ask questions that help children to specify steps towards the achievement of their mathematical goals, such as:</p> <ul style="list-style-type: none"> • What are you going to do next? • What information will you use? • What skills and strengths will you use? • Who will help? How will they help? • What resources will you use? • When will it be done? |

* Adapted from McCashen (2017) and MacDonald (2018).

Implications

The Column Approach provides a “mind map” (McCashen, 2017, p. 97) for working with children to help them: develop a narrative of their opportunities for learning in mathematics; identify their mathematical hopes and dreams; consider their strengths and mathematical capacities; identify resources that are available to them; and map out a way for them to move forward. It is also recommended that a proactive first step for educators is to

identify what they do well (for example pedagogical approaches, resource development, leadership etc.) and ensure that they continually model and refine these strengths as they work with children to help them recognise and utilise their own strengths in the learning process and environment (Lopez & Louis, 2009). In this way, drawing on its social service and psychological origins, and particularly guided with a Column Approach, the Strengths Approach can be a practical collaborative framework for acknowledging children's mathematical curiosity and challenges, honouring their existing mathematical knowledge, and importantly drawing on their strengths and mathematical capacities as their learning develops.

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A strengths approach to birth to 3 mathematics education: The case of Banjo Childcare Centre

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This paper contributes to the Research Symposium, “*Strengths approaches in early childhood mathematics education*” by providing an illustration of how an early childhood centre adopts a strengths approach to mathematics education for birth to three-year-old children. A case illustration is drawn from a current Australian Research Council-funded study focusing on mathematics education for children under three years of age. The case is analysed and described using a five-step strengths-based framework.

Introduction

It is well-established that young children, prior to starting school, are capable of engaging with a range of mathematical ideas (Gervasoni & Perry, 2015; MacDonald & Carmichael, 2018). However, most of this research has focused on children aged four years and older, with birth to three mathematics education receiving very little attention (MacDonald & Murphy, 2019). However, a current Australian Research Council-funded study being conducted by the lead author of this paper is addressing this dearth of research through a national study of mathematics education for children aged under three years. As part of the larger study, case studies of birth to three education settings are being conducted in order to examine mathematics education opportunities afforded to very young children, and the beliefs and practices of their educators which influence these opportunities. Drawing from the larger study, this paper presents a case illustration of the birth to three learning environment at Banjo Childcare Centre (pseudonym), a long day care service located in regional New South Wales (NSW), Australia. Six early childhood educators and 17 children participated in the case study, and the children ranged from 13 to 40 months in age. The authors of this paper spent two days in the site, gathering data in the forms of continuous video recordings; video and photographic observations; documents such as learning stories and daily reflections; and anecdotes from educators. This case has been selected as it illustrates how a strengths approach to mathematics education can help an early childhood service overcome a range of challenges and barriers, and utilise their unique strengths and resources in order to provide high-quality mathematics education for very young children. In the case illustration that follows, we apply the Column Approach as described by Collins and Fenton (under review) (Paper 1 in this Symposium) in order to analyse how Banjo Childcare Centre are taking a strengths-based approach to mathematics education for the birth-to-three-year-olds in their centre. The case is structured according to the five-step framework, namely: (i) Stories and issues; (ii) The picture of the future; (iii) Strengths and capacities; (iv) Other resources; and (v) Plans and steps.

The Case of Banjo Childcare Centre

Stories and Issues

As noted in Paper 1 in this symposium (Collins & Fenton), a strengths approach does not only focus on the positives; rather, the use of the approach generally starts from clearly

exploring a challenge, complex issue, or need. Banjo Childcare Centre, and the community it serves, experience a range of challenges and complex circumstances. The service has a maximum of 50 approved places; however, at the time of this study, only 42 of these places were filled. The community receives a relatively low score on the *Socio-Economic Indexes for Areas* (SIEFA) - 869 compared to the NSW average of 1001. This score indicated a disadvantaged socio-economic position characterised by attributes such as low income, low educational attainment, and high unemployment (Australian Bureau of Statistics, 2011). According to the 2018 Australian Early Development Census (AEDC; Commonwealth of Australia, 2019), 38.1% of children in this community are developmentally-vulnerable on one or more AEDC domains; a figure nearly double the NSW average (19.9%). Moreover, 23.8% of children are developmentally-vulnerable on two or more domains, compared to the NSW average of 9.6%. The centre itself experiences challenges in the current early childhood reform climate, receiving a 2018 *National Quality Standard* (NQS; Australian Children's Education and Care Quality Authority, 2019) rating of "Meeting" the NQS, a decline from their 2013 rating of "Exceeding" the NQS.

The Picture of the Future

The data presented above paint a deficits-focused picture of Banjo Childcare Centre and their community. However, these data are not how they see themselves nor the future they see for their children. The centre's handbook states that educators "maintain a high level of professionalism through working together, supporting each other and continuously expanding [their] knowledge base", that educators are "confident in children's ability to learn" and that they "encourage the children to develop a positive attitude towards learning". This positive picture of the future extends to mathematics learning at the centre. While not explicitly articulated, a strengths-based picture of the future is communicated in various ways. The importance of mathematics is highlighted through displays and explicit weekly reporting focussed on mathematics learning. There is an expectation that children at the centre, including very young children, can engage in sophisticated mathematical activities. Records showed in one week children three years old and younger were engaged in various activities that involved measuring height and volume, additive thinking, and counting using Wiradjuri words (the local Indigenous language). Analogue clocks were displayed alongside daily events in the toddler's room (see Figure 1). Collectively, this evidence suggests the Centre pictures a future where their children are capable and confident users of mathematics.

Strengths and Capacities

The centre's handbook makes explicit that educators respond to the strengths and capacities of the children to guide learning and teaching. The handbook states that educators use their observations of children "to develop an educational play based program". Further, "children are given the chance to make decisions, experiment, and explore with a wide range of activities." This philosophy was evident in the way educators responded to children's strengths and capacities through their play in order to engage them in mathematical activities. Counting was regularly introduced to children's activities; for example, ball bounces being tallied, and the time before a jump counted. Measuring concepts were incorporated into play, such as big and small when kicking a football, fast and slow when bike riding, tall and taller when measuring each other's heights, and volumes when cooking. Locating language was built into children's play; for example, when children were playing on a pretend horse (see Figure 2) an educator led a discussion of who was in front, on, and

under. Educators helped children develop plans and procedures associated with their games. In one instance, two children were endeavouring to untangle a ball on a rope, with one up the tree and one underneath, and another child playing nearby accidentally impeding the task. An educator supported the children in a complex series of actions to safely and successfully free the ball.



Figure 1. Clock display in toddler's room.



Figure 2. Pretend horse using saddles and pipe.

Not only did educators notice and capitalise on children's strengths and interests as they presented during play, but they deliberately shaped the learning environment so that these mathematical learning opportunities regularly arose. The physical environment was spatially challenging, with winding and intersecting paths, objects of various heights, and spaces of irregular form (see Figure 3). These spaces encouraged children to problem pose and engage in mathematical activity. Further, the learning culture supported children to fully exploit these spaces to exercise their strengths and capacities. Educators did little to structure play, allowing children to structure their own play opportunities. For example, the play space included a rope and pulley system attached to a tree. It was only once a small group of children were engaged in play that involved getting buckets of bark high into the branches did an educator join to discuss alternate ways of using the ropes to move the buckets higher. A culture of permitting risk also supported children to fully engage in this complex learning environment. Rather than discouraging tree climbing, objects were deliberately placed to facilitate it. Similarly, when a group of children were jumping from objects in the yard, the educator nearby did not restrict the activity, but rather supervised and engaged in discussion about the height of objects and the size of the jump.



Figure 3. Spatially complex learning environment.

Other Resources

Banjo Childcare Centre, and its community, does not have significant financial resources. Despite this, they have been able to create a rich environment to facilitate mathematical learning through resourceful behaviours that are both strategic and opportunistic. Reclaimed, recycled and repurposed objects make up the play spaces, including tyres of various sizes, wooden pallets, restored old play equipment, and items such as the pipe and saddle described earlier (see Figures 2 and 3). The centre also makes excellent use of the resources of its local community to enhance children’s engagement and learning. In particular, Wiradjuri culture—the culture of the traditional owners of the land where the centre is located—is strongly represented in the displays and practices of the centre, and, as previously mentioned, the Birth to Three program includes the use of Wiradjuri language in mathematical activities.

Plans and Steps

As noted, Banjo Childcare Centre works with a community facing complex issues, and has limited financial resources with which to do this work. The centre adopts a strengths orientation in their aims and planning for the future, including their approaches to mathematics learning experiences for their birth-to-three-year-olds. Children are empowered mathematically through a “secure environment with opportunities for risk-taking and self-regulation” (Centre Handbook). Educators are trusted to constantly develop mathematics education programs “through reflective practice and our commitment to training” (Centre Handbook). Mathematics learning is deliberately and explicitly included in documentation such as programs, learning stories, and classroom displays, thus highlighting the value placed on mathematics education within the Birth to Three program.

Summary

This brief case illustration has highlighted how an early childhood service experiencing challenging circumstances uses a strengths approach to provide a quality mathematics education program for children aged birth to three years. Educators draw on community strengths and their own resourcefulness in order to create a learning environment that encourages birth-to-three-year-olds to pose and solve mathematical problems, engage with complex spatial environments, utilise number and measurement concepts in meaningful ways, and use mathematical language and representations to add meaning to everyday routines and activities.

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Leadership of strengths-based approaches for early years mathematics education: Using CHAT as a framework for educational leaders' professional learning leadership

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We present a model that employs *cultural-historical activity theory* (CHAT) concepts to inform research with designated Educational Leaders in early years settings. We theorise practice change in early years mathematics education in terms of motive objects of activity and mediation by cultural tools. We show how CHAT can be used to lead development of a strengths-based approach to support young children's early mathematics education through systematic professional learning activity. Our overarching aim is to understand how educational leadership in early learning spaces can be reimagined, drawing on CHAT to theorise this under-researched area of mathematics leadership in early learning settings.

In this MERGA symposium paper, we present a model that employs concepts from *cultural-historical activity theory* (CHAT) to inform research and learning opportunities with designated Educational Leaders in early years settings. We show how the model can be used to lead a strengths-based approach (e.g., Fenton et al., 2016) to support young children's mathematics education. Our overarching aim is to understand how educational leadership in early learning spaces can be reimagined, drawing on CHAT to theorise this under-researched area of mathematics leadership in early learning settings. This reimagining and expansion of work sees Education Leaders lead enactment of strength-based approaches for early years mathematics education through on-site professional learning.

Culturally and historically, there have been limited expectations for mathematics education in early childhood programs (for children aged from birth to five years), relative to the focus on mathematics in the early years of schooling (for children aged from five to eight years). The work of Piaget has long influenced thinking about children's learning in early years education, with a focus on discovery learning of mathematical thinking (Stipek, 2013). This situation has been compounded by early years educators' underestimation of young children's capacity to think mathematically and misunderstandings about how young children come to understand mathematical ideas. Many educators hold negative affective responses to mathematics in general (Knaus, 2017; Moss et al., 2016; Stipek, 2013), and they also tend to have limited understanding of mathematical content knowledge (MCK), particularly understanding mathematical concepts and terms (Knaus, 2017).

The position of Educational Leader has been mandatory in all early childhood services in Australia since 2012. This policy move aims to improve program quality through the leadership of suitably qualified staff who foster changes in pedagogical practice. In Aotearoa New Zealand, there is no such mandatory position, possibly because the proportion of degree-qualified staff in the sector is higher than in Australia. In this paper, we position Educational Leaders as *mathematics professional learning leaders* who direct their leadership activity towards developing colleagues' mathematics teaching practice using strength-based approaches. We show how this leadership-of-learning process can be researched through CHAT concepts.

Theorising Leadership as a Research and Learning Opportunity

We argue for the explanatory power of CHAT for researching and transforming long-standing workplace practices, such as the historical neglect of mathematics in early years education. Professional learning can enhance educators' knowledge and practices for mathematics education, including their dispositions and expectations for young children's mathematical learning (Perry & MacDonald, 2015). We are concerned specifically with professional learning focused on strengths-based approaches for mathematics education with young children, including the use of documentation associated with those approaches (Fenton et al., 2016). We suggest that that documentation, including the concepts and practices of strength-based approaches, offer new cultural tools to inform professional learning in early years settings. These offer opportunities for educators to work on new motive objects focused on young children's mathematics learning. In this sense, we believe that research and learning opportunities lie in expanding the work of designated Educational Leaders to identify as mathematics professional learning leaders in their work sites.

We draw on three core concepts of CHAT: *motive object of activity*, *cultural tools*, and *mediation*. CHAT understands all human activity as *object-oriented* (Kaptelinin, 2005); that is, psychological and practical activity are simultaneously drawn forward by attention to collaborative tasks (*motive objects of activity*) that result in desired outcomes (Engeström, 2015). This differs from dominant understandings of motivation, which see it as an individual and internal force of will. We use the well-known triangular representation of collaborative activity (Figure 1) to show how subjects of the activity system (designated Educational Leaders) are motivated to enhance teaching practices of their colleagues. The Educational Leaders' motive object of activity is the development of mathematics teaching practices. The desired outcome is quality mathematics education for young children.

This relationship between Subject and Object is *mediated* by valued *cultural tools*. The mediating function of cultural tools is due to culturally-specific meanings that inhere in those tools. Buttons, for example, are mostly associated with clothing, but in early years education, another contextually-specific meaning inheres in a box of buttons: the pedagogical opportunity they offer to teach higher-order concepts (e.g., classification & subitising).

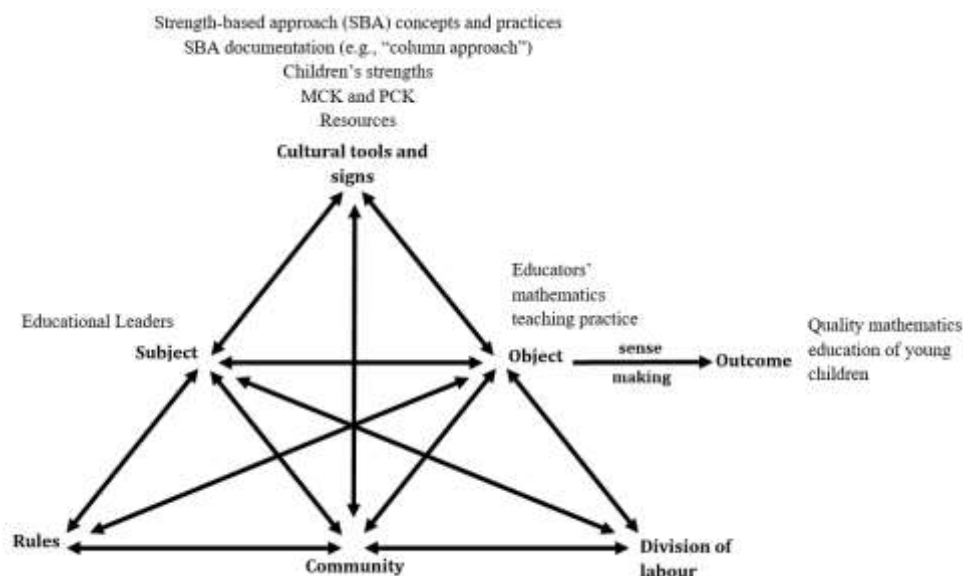


Figure 1. Representation of the Educational Leaders' mathematics professional learning activity system.

Children's Strengths as a Temporary Motive Object of Activity for Educational Leaders as Mathematics Professional Learning Facilitators

A way for researchers to use these CHAT concepts and to understand changes in the professional work of Educational Leaders is to address and transform long-standing practices that have impeded mathematics education in early years learning spaces (Knaus, 2017; Moss et al., 2016; Stipek, 2013). This could be achieved by using the example of 'children's strengths' as a cultural tool that Educational Leaders can deliberately reposition as a temporary motive object of activity. Cultural tools do not become effective components of practical and psychological activity without deliberate efforts to understand and expand the meanings that inhere within them. A key "move" for Educational Leaders in early years education therefore is to make the definition, identification, and valuing of *children's strengths* a temporary focus in their work with colleagues (i.e., a temporary motive object of the collaborative professional learning activity they are leading).

Without this critical first stage of meaning-making in professional learning, the capacity to mobilise any new concept in the context of teaching practice, including strengths-based pedagogical activity, will be severely limited. Once children's strengths takes on a stabilised meaning across early years educators' conceptualisation of young children's learning, pedagogical strategies for applying strengths-based approaches can become the *next* temporary object of activity in an *ongoing sequence* of professional development focused on a series of *related motive objects*. Educational Leaders therefore have a critical role in progressively introducing new and more complex cultural tools to support educators' professional learning of strength-based approaches. For example, in Figure 1, we included mathematical content knowledge (MCK), pedagogical content knowledge (PCK), and resources (both in the classroom and for professional learning) as further cultural tools (and therefore potential temporary motive objects for professional learning) in the mathematics professional learning leadership activity of Educational Leaders. As noted earlier, early years educators may not feel adequately knowledgeable or disposed toward mathematics pedagogy due to their own limited mathematical knowledge (Knaus, 2017). Their own internalisation of specific mathematics concepts may therefore be a critical temporary motive object of professional learning leadership activity to support educators' confidence in teaching mathematics to young children.

In the context of this symposium, the "column approach" described by Collins and Fenton (Paper 1 in this symposium) offers a key cultural tool to enhance the PCK of early years educators. A temporary focus on the use of this tool has been shown to effectively foster the uptake of strengths-based approaches (Fenton et al., 2016). According to our conceptualisation, we suggest this success is due to the new meanings the column approach makes available to mediate early years mathematics pedagogical practice.

Educational Leaders can employ a variety of approaches in directing colleagues' psychological and practical activity toward new cultural tools as temporary motive objects. These strategies include providing reading materials, practice development through action research, collaborative design-based research activities, or through the practice methodology developed within CHAT, known as Developmental Work Research (DWR) (Virkkunen & Newnham, 2013). Strengths of DWR include its incorporation of simultaneous research and learning activities, allowing researchers to track shifts in meanings and practices at close hand, and its emphasis on the volitional action of the research participants to solve practical problems found in their work (Sannino, 2015). This would prove to be helpful in expanding the work of Educational Leaders to include mathematics professional learning leadership.

Conclusion

Given the insights from Fenton et al. (2016) and MacDonald and Murphy (Paper 2 in this symposium) regarding early childhood educators' use of strengths-based approaches for mathematics education in early years settings, a research focus on the role of the Educational Leader in these settings is timely. Strategies to expand their work activity as mathematics professional learning leaders who can mobilise concepts, practices, and documentation of strengths-based approaches as motive objects of activity is one way of fostering mathematics education in early years settings. CHAT and DWR methodology have been shown to transform sedimented practices in early education (e.g., Nuttall, 2013) and is effective in expanding Educational Leaders' work (Nuttall et al., 2016).

However, this work has not hitherto focused on young children's mathematics development or educators' mathematics education knowledge, practices, and dispositions. We suggest that interventions informed by CHAT and DWR offer researchers and Educational Leaders the opportunity to conceptualise new, expanded work activity together for the professional learning leadership of strengths-based approaches for early mathematics education. Such a conceptualisation draws on the role of motive objects, specifically the adoption of new cultural tools that support the development of educators' understanding and use of strengths-based approaches for mathematics education. This would be a significant shift in the cultural and historical norms of early years mathematics education, but one that appears necessary if sedimented practices related to mathematics education in the early years are to be transformed. This research and learning opportunity, concerning the professional learning leadership of strength-based approaches, might be the investment that Stipek (2013) called for in evolving mathematics education practice in early years settings.

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