
Mediating self-regulation in kindergarten classrooms: an exploratory case study of early childhood education in South Africa

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Abstract

This article examines the role preschool teachers could play in mediating self-regulation among preschoolers. It is based on a case study which probed how a teacher's mediation promoted cognitive and emotional development of preschoolers between the ages of 4-6, and facilitated the acquisition of self-regulation.

This case study, informed by Vygotsky's socio-cultural theory of learning and development, involved the teacher mediating self-regulatory processes through facilitating role-play (or what could be termed 'fantasy play') by providing models of appropriate dialogue structure to preschoolers, as well as strategies for organisational and problem-solving skills.

The teacher, researching her own teaching-intervention, using theory-informed teaching strategies, found that preschoolers achieved significant cognitive shifts towards mastering self-regulative forms of thinking. This was manifested through children's greater awareness of own thoughts, talking systematically about their thinking as to what processes were involved during solving specific problems or in planning for how a solution could be achieved. Preschoolers who had initially – during pre-mediation activities – revealed impulsive and egocentric modes demonstrated, during post-mediation activities, greater awareness and mastery of their own thinking.

This case study has crucial importance for how preschoolers could be prepared in early learning and preschool classes for productive, developmentally-oriented forms of learning that foster more reflective and analytic forms of thinking.

Introduction

Early childhood education and specifically; school readiness, is a subject that has not received much attention in South African research and little is known about the modes of activities and thought processes that dominate children at preschool level and how these could effectively articulate with formal

learning processes as children begin formal schooling in Grade One. Preschool¹ education; that is, the education of children before they enter formal schooling as a way of preparing them for the demands of formal learning tasks, is critical for laying a firm foundation for successful learning at foundation phase level of children's schooling.

This article is an attempt at bringing the issues of early childhood development and the appropriate, theoretically informed methodologies of relating to these children in ways that mediate effective modes of learning and problem-solving skills; grounded on the ability to control own thinking and reflect on own actions during interactions. Using the neo-Vygotskian, cultural-historical activity theory framework, this article examines the mediation of self-regulation to preschoolers through a variety of play activities, as well as appropriate modes of dialogue to help them transcend their egocentric and impulsive responses to situations that normally arise in the course of their relationships with each other and with their teachers.

Theoretical framework

Self-regulation

The child's ability to regulate himself or herself is essentially linked to social activity, particularly at preschool level, allowing for profound developmental activity because it provides opportunities to safely 'test'; new learning and establish appropriate dialogue.

In this article self-regulation refers to:

... a deep internal mechanism that underlies mindful, intentional and thoughtful behaviours of children. It is the capacity to control one's impulses, both to stop doing something (even if one wants to continue doing it) and to start doing something (even if one doesn't want to do it). Self-regulated children can delay gratification and suppress their

¹ We use the concept *preschool* or *pre-schooler*, in line with its general usage in Vygotsky's socio-cultural theory (e.g. Vygotsky, 1997; 1998), reflecting the "social situation of development" of children – a stage which, in South Africa, would comprise the _{years} prior to the beginning of formal schooling; with lower boundaries around the age of 3 and upper boundaries around the age of 6 (see Bodrova and Leong, 2003). Children in South Africa begin formal school at Grade One by the age of six years, turning seven in their next birthday.

impulses long enough to think ahead to the possible consequences of their action, or to consider alternative actions that would be more appropriate (Bodrova and Leong, 2005, p.55).

Self-regulation for Vygotsky (1978) is achieved through social interaction and begins with the child exploring their inner potential to imitate adult actions through, for example: 'adult watching' (Bruner, 1977). The child's developmental potential is evidenced by the degree to which they benefit from external intervention (Hall, Glick and Rieber, 1997). Learning would lead development if it occurs within the child's zone of proximal development (ZPD) where skills and concepts can come to fruition with the appropriate guidance of the teacher, peers or significant others (Bodrova and Leong, 2001). The concept of ZPD would therefore suggest that learning can lead developmental change and the use of mediation will influence the child's capacity to develop.

Furthermore Vygotsky sees development as occurring on two plains; namely, the interpersonal level that is between people and subsequently at intrapersonal level, inside the child (Glick, 1997). At preschool level, this guidance could take the form of mediation within fantasy play which provides the opportunity for the preschoolers to learn how to delay gratification; listen to instructions and plan a task (Karpov, 2005). In so doing children are developing self-regulation (Elkonin, 1974).

Karpov (2003, 2005) discusses how children acquire self-regulation through conscious mediation by the teacher within a 'fantasy corner' and in general classroom environment. He suggests that it is only when the teacher actively provides the necessary dialogue to resolve conflicts, provides tools for problem solving, unpacks tasks into manageable steps and sets up fantasy corners that motivate preschoolers to explore the adult world, that self-regulation will be optimised by the mediator.

The work done by the prominent Soviet Psychologist, Lev Vygotsky and his students: Luria, Leont'ev, Galperin and Elkonin has demonstrated that the dominant activity at preschool level is play. Play is important at this level of development because it allows for imitation of adult behavior; the development of language and meaning and opportunities to internalise generalisations which facilitate regulation of the child's actions within socially accepted norms (Elkonin, 1974). According to Elkonin (1974) the work of Vygotsky has helped to shape our thinking around the significance of

play and the importance of mediation. Vygotsky (1967) believed that meaning is constructed through a combination of language and its cultural context and that when children indulge in play they are extending already existing skills to new limits (Bruner, 1977).

Mediation

Karpov (2005) puts forward the notion that the adult plays a key role in the child's ability to develop self-regulation because it is the adult who presents an attitude towards learning, provides stimulating objects, models situational language and helps the child to develop their motivation to learn. This role could be performed by the teacher within the preschool classroom when she provides tools for learning. For example material that can be draped as a cape or used as a tent; when she gives the child the dialogue to resolve conflict, for instance, 'Please may I have a turn with the princess crown'; when she sets up creative activities that stimulate new learning and provide discussion, for example, planting beans and making a giant beanstalk.

For Vygotsky, humans are different from animal species because they bring to the learning environment an evolutionary capacity to adapt and manipulate their environment and, consequently, built up cultural and historical tools (Van der Veer and Valsiner, 1991). This collective social history is brought to the classroom and transferred from preschooler to preschooler and from teacher to preschooler through the process of mediation. Van der Veer and Valsiner (1991) state that the mediational process, according to Vygotsky, is a goal directed and conscious activity in which the teacher creates an environment that is conducive to learning. Further, Vygotsky views mediation as happening with the assistance of signs; which gives it its generative quality; which in turn encompasses the social and cultural qualities of the relationship between the teacher or mediator and the child (Moll, 2004). Language occurs at the same time as the child begins to use symbols and it is language that opens the door to understanding things that are not necessarily present (Piaget, 2001). It is therefore conscious mediation on the part of the teacher that facilitates self-regulation for the preschooler because:

Cognition is distributed across mind and society, in the activities of preschoolers and other people, in the artifacts and sign systems they use, and in the institutions in which they participate (Moll, 2004, p.107).

Karpov and Haywood (1998) posit that self-regulation occurs in children in the course of mediation, when they acquire and master new psychological tools; which results in the development of new mental processes because “. . .the learning of specific abilities in one domain transforms the intellectual functioning in other areas” (Van der Veer and Valsiner, 1991, p.334). As existing mental processes outgrow the child’s current activity, it creates the basis for shifting into new activity (Rowe and Wertsch, 2007). Vygotsky argues that the child does not develop in a straight line but rather develops through “discontinuity, a replacement of one function by another, a displacement and conflict of two systems” (Vygotsky, 1997, p.225).

Higher mental processes are mediated by psychological tools such as language, signs and symbol which; in turn, are taught by adults and internalised by the child (Karpov and Haywood, 1998). From the Neo-Vygotskian point of view, mediation not only creates ZPDs of new mental processes, but also creates ZPDs of new activities of children through the conversion of their goals into motives and actions into activities (Karpov, 2005).

Mediation of language

Language is intimately tied to actions and this enables the child to internalise their new learning and to develop levels of self-regulation (Karpov, 2005). Language is internalised into private speech, which helps the child to learn to regulate his or her actions and to internalise new learning (Wertsch, 1979). Much of the self-talk by the preschooler occurs during fantasy play, which traditionally is an area where preschoolers in South African preschool level, kindergarten classrooms, are given the freedom to play without explicit structure or deliberate intervention.

The problem-solving through external dialogues frequently requires intervention on the part of the preschool teacher (Karpov, 2005). It is here that the teacher must help provide the language to the preschool child, necessary to lead him or her to self-regulation (Zeidner, Matthews, Roberts and MacCann, 2003). Meanwhile, discussion of emotions is important in building emotional competence and therefore self-regulation. In this study, preschoolers were given appropriate language to resolve conflict and to solve problems. They were given plenty of opportunities to practice using the given sentences and to discuss their own emotions or the emotions of the characters

in the story: '*Jack and the beanstalk*'.² The choice of the story of '*Jack and the beanstalk*,' was largely arbitrary but it did provide some interesting contexts for problem solving, language acquisition and emotional development. A number of versions of the story were explored in order to provide a variety of morals and values for discussion. The preschoolers were motivated to behave appropriately and use the correct language by means of a 'sharing tree' upon which they received 'leaves' if they were found to be regulating their actions. That is, when they became aware of their actions or consciously controlled their impulses. Across the class the preschoolers quickly began to regulate one another's actions by correcting their friends when they used wrong phrases in a sentence or could not remember how to ask for something.

Mediational tools and play

Adult mediation guides the child and gives them the tools to plan and direct their thinking thereby becoming more logical, less impulsive and better able to regulate their behaviour (Elkonin, 1974). As an infant, the child is initially interested in manipulating objects or tools presented to them by the adult or primary caregiver on whom the child is largely focused (Bruner, 1977). The child changes from simply exploring their environment to observing the links between the objects they are manipulating and their purpose. The focus changes to one of "...object-orientated actions whereby the adult draws the child's attention to the context of the object. For example, a spoon is used for eating" (Karpov, 2005, p.86).

At preschool level objects can be manipulated to represent any manner of things. For example, a wooden block could be a cellphone and a piece of netting, a veil. In the present study, preschoolers used salt dough coins as cookies once they had tired of counting them and using them as illustrated in the story of '*Jack and the beanstalk*'. Whilst indulging in this type of fantasy play, preschoolers are continuously describing how the game will be played

² The choice of this story was largely arbitrary as any traditional fairy tale – including those from non-English literary traditions (we suppose) – could be used as cultural tools for mediating self-regulation. *Jack and the beanstalk* has different versions and the teacher in this study used the different versions of the story; also employing the values and morals each version portrayed, to foster children's critical engagement with contradictory solutions and issues of 'right' and 'wrong'. The class discussions therefore, also provided children with opportunities to explore the universal relevance morals and values portrayed in the various versions of the story.

out. In this way, children are organising their thinking and regulating their actions (Van der Veer and Valsiner, 1991). By engaging in play, children learn to regulate their actions because they experience the need to regulate their actions within their imagined roles (Bruner, 1997). In the present study, preschoolers regulated one another by sticking to the roles they had been assigned which were determined by the costumes they were wearing or the object they were using. For example, if a preschooler was holding the drum, then they were ‘the giant’ whilst a preschooler wearing an apron was ‘the giant’s wife’.

Further, children learn to regulate their actions when exposed to mediation through external dialogue. For example, when a preschooler asked if they may be ‘the giant’, they were told that they had to have the drum and to beat it whilst reciting the verse from the story of *Jack and the beanstalk*. If they did not have the drum and had to wait their turn to use it, then they could not play the part of the giant. In this way they are being mediated by the dialogue between them and their peers – as well as their teacher – and the mediational tools in the form of the objects used in the game, as well as the language employed.

Bodrova and Leong (2007) argue that teachers should allocate more time to play in the preschool programme because it is through play that the child moves forward and develops.

. . . play contains all developmental tendencies in a condensed form; in play it is as though the child were trying to jump above the level of his normal behaviour’ (Vygotsky, 1967, p.16).

This would suggest that play has a potential to help the preschooler to regulate their behaviour. Rubtsov and Yudina (2010) argue that current studies show a tendency to spend the preschool years cramming knowledge of numbers, letters and phonics into the daily programme and that the reason for this is the natural desire to learn that is exhibited by most preschool students and consequently exploited by policy makers. As a result, “. . .the child’s development is artificially accelerated and the preschool education is made more ‘adult’ ” (Rubtsov and Yudin, 2010, p.8). These authors consider this a grave error on the part of teachers and support the view that play should be encouraged.

Bodrova and Leong (2007) advocate that the teacher mediates play activities in order to improve the development of literacy and cognitive skills, but they do not see the teacher playing alongside the preschooler as a direct member of the group. The reason they give is that the preschooler would then be inhibited within their natural level of play because they would be aware of the teacher's presence. They do however see the benefit of guidance and that the teacher should encourage more competent and socially mature children to mentor those less able. Mediation would therefore be given by the teacher and by peers; who are considered by the teacher to be more mature and therefore able to guide their friends. In the present study, the teacher provided appropriate dialogue in conflict situations, set up a rich fantasy play area and established a stimulating theme as a foundation for new learning. The researcher did not play alongside preschoolers but did intervene when required, observed preschoolers from a peripheral vantage point and also encouraged more competent preschoolers to assist less capable preschoolers when necessary.

Methodology

This case study involved a demographic of twenty-five preschoolers in a multi-cultural South African girls' school. The age of the preschoolers and their language ability was of significance as children at preschool age demonstrate potentially different ZPDs which would affect their ability to be mediated. Furthermore the multi-cultural demographic of this case study presented differential backgrounds which could inhibit the effects of mediation.

The school in which the study took place had an existing emotional competency programme which involved helping preschoolers to recognise their emotions through labeling them; using 'Care Circles'³ in which preschoolers rated their feelings on a scale of one to four; designing art activities which enabled preschoolers to focus on their feelings and using literature and puppet shows to explore feelings in different contexts. This case study built on this foundation of emotional competency by providing additional tools that would

³ A care circle is a morning-ring in which preschoolers state how they are feeling using a rating of 1-4 on their fingers.

enhance the preschooler's awareness of their behavior and consequently help them to manage their inappropriate impulses.

The use of a 'sharing tree', to validate the preschoolers who made the effort to share without being prompted to do so, was a successful tool. Providing icons on a 'dress-up chart' with the names of preschoolers next to popular items meant that preschoolers were able to plan their play time and share in an organised manner. Class discussion on the emotions of the characters in the '*Jack and the beanstalk*' theme provided preschoolers with the opportunity to examine a variety of ways to manage emotions and problem solve.

Filmed observations and interviews were the main means of gathering data for this qualitative research project because preschoolers were too young to 'write' tests but were considered old enough to verbalise their emotions effectively.

A baseline study was performed before mediation took place, first by taking film footage of the preschoolers in fantasy play, class activities and outside classroom play. The preschoolers were interviewed individually and scored on an observation grid. The interview questions were drawn from their knowledge of the story of '*Jack and the beanstalk*' and included questions that covered some of their everyday activities. The questions were designed to cover the preschooler's understanding of problem solving, organisational skills and emotional competency. They were briefly introduced to the story of '*Jack and the beanstalk*' in order that they may have a basic understanding of the theme. Observation and filming in the baseline study took three weeks and were then followed by a three-week period of conscious mediation which was also filmed and scored on an observation grid. The final phase of the research; namely, the post-mediation stage was filmed over a three-week period and scored as before.

Observation of self-regulation around problem solving, organisational skills and emotional skills were rated on a five-point scale. Preschoolers were observed during role play and general class activities. The observations were filmed during the pre-mediation and post-mediation stages of the research. The ratings were applied in the pre-mediation and post-mediation stages. The same scale was applied to the interview data gathered on film in the pre-mediation and post-mediation stages of research.

The participants were informed of the purpose of the teachers filming and interviewing and were given the first term to habituate to the presence of a camera in the classroom. The preschoolers were interviewed in a separate room in order to minimise distraction from their peers and some questions had to be rephrased because of the limitations of the age group being studied.

The period of conscious mediation drew from Karpov's (2005) theories of extending a theme from the fantasy corner into the main classroom activities and included Bodrova and Leong's (2007) practical suggestions pertaining to how the teacher could consciously mediate. These included providing adequate time for play, planning play time and monitoring how the preschoolers interact, together with the teacher modelling appropriate dialogue and encouraging preschoolers to mentor one another.

In the post-mediation phase of research each preschooler was interviewed again and filmed during fantasy play and class activities. This data was scored again using the observation grid and viewing of film data.

At the end of the research period the data was analysed by viewing all the film footage and scores which were then statistically analysed to obtain graphs which may show any shift between the pre- and post-mediation conditions.

Findings

The question of self-regulation being facilitated by mediation by preschool teachers was the basis for the case study under discussion in this article. The term 'mediation' is defined by Bodrova and Leong (2007) as a means by which the teacher contributes to the restructuring of the child's mind by promoting the transformation of lower mental functions into higher mental functions. The teacher, as mediator, provides the scaffolding which allows the child to make the transition from a position of maximum assisted performance to one of independent performance, thereby achieving self-regulation (Bodrova and Leong, 2007). The findings in this study demonstrated significant shifts between the pre-mediation and post-mediation stages of research.

Table 1: Scores for observation grid

	Problem solving score (1–5)	Impulse control score (1–5)	Task management score (1–5)	Significance
Pre-mediation	<ul style="list-style-type: none"> • 10 scored 2 • 10 scored 3 • 2 scored 1 • 3 scored 4 	<ul style="list-style-type: none"> • 8 scored 2 • 10 scored 3 • 7 scored 4 • none scored 1 	<ul style="list-style-type: none"> • 7 scored 2 • 9 scored 3 • 8 scored 4 • 1 scored 1 	Some evidence of task management and impulse control prior to mediation.
Post-mediation	<ul style="list-style-type: none"> • 2 scored 2 • 13 scored 3 • 10 scored 4 • none scored 1 	<ul style="list-style-type: none"> • 1 scored 2 • 10 scored 3 • 14 scored 4 • none scored 1 	<ul style="list-style-type: none"> • 1 scored 2 • 8 scored 3 • 16 scored 4 • none scored 1 	Marked improvement after mediation suggesting mediation helps self-regulation.

The table below shows a marked improvement in all three areas of self-regulation between the pre-mediation and post-mediation conditions. This suggested that conscious mediation helped the preschoolers to internalise self-regulatory skills.

Table 2: Scores for interviews

	Problem solving average score	Understanding emotions average score	Task management average score	Significance
Pre-mediation	<ul style="list-style-type: none"> • 6 scored <50% • 14 scored 50–70% • 5 scored 70–85% 	<ul style="list-style-type: none"> • 7 scored <50% • 10 scored 50–70% • 8 scored 70–80% 	<ul style="list-style-type: none"> • 11 scored <50% • 9 scored 50–70% • 5 scored 70–88% 	Some evidence of task management, impulse control and problem solving prior to mediation. Could be result of E.Q. programme.
Post-mediation	<ul style="list-style-type: none"> • 3 scored <50% • 4 scored 50–70% • 18 scored 70–99% 	<ul style="list-style-type: none"> • 2 scored <50% • 6 scored 50–70% • 17 scored 70–99% 	<ul style="list-style-type: none"> • 3 scored <50% • 7 scored 50–70% • 15 scored 70–99% 	Marked improvement in self-regulation suggesting mediation helps self-regulation.

Table 3: Evaluative episode examples

	Nature of episode	Person mediating	Sample of dialogue	Significance
Pre-mediation	Preschooler refuses to share a dress and moves away to avoid sharing.	Teacher consciously does not mediate but preschoolers attempt to resolve problem.	'You've had the dress a long time. Can I have a turn?'	This shows some evidence of problem solving skills but preschoolers were not successful without mediation from teacher.
During mediation	Preschooler refuses to share a drum but is encouraged to do so and obliges.	Teacher consciously mediates and gives appropriate dialogue and reward.	'What must you say if you want a turn?' 'When you have finished your turn, please may I have a turn.'	When given the appropriate dialogue and problem solving skills, preschoolers can regulate behaviour.
Post-mediation	Preschooler prepared to share and does so without being asked.	Preschoolers solving the problem by themselves.	'I gave her a turn with the pink dress without being asked.'	This shows that the regulatory tools given have been internalised and preschoolers are able to regulate their actions.

The high number of preschoolers struggling with emotional skills, organisational skills and problem solving was considerable in the pre-mediation stage. The preschooler in the problem-solving evaluative episode during the pre-mediation stage uses avoidance tactics to escape sharing the dress with their peer. It should be noted that without mediation from the researcher, the preschoolers did attempt to mediate one another. They were however, not successful in their attempt. The marked improvement after the period of mediation is significant. The pride attached to succeeding in problem solving was evident. Preschoolers demonstrated a keen desire to 'get it right' and for this to be noted by the researcher. Having the appropriate dialogue to solve a problem appeared to facilitate an ease of self-regulation. Preschoolers quickly grasped the language that was given and implemented it appropriately.

The dialogue extracts below revealed the contrast in a preschooler who struggled with organisational skills in the pre-mediation condition but appeared to benefit from mediation and the extension of the theme of *'Jack and the Beanstalk'* into general class activities. The preschooler appeared to have difficulty grasping what was being asked and consequently the teacher had to rephrase the question.

Extract 1: Example showing a shift in organisational skills

Pre-mediation Interview

Teacher: Can you tell me how would you go about making yourself a sandwich for your snack box?
Preschooler: Um, What do I put on my sandwich?
Teacher: Yes, how would you make yourself a sandwich?
Preschooler: I would put syrup. . .and then I'd put. . .actually I'd put melted cheese.
Teacher: On what? What are you putting it on?
Preschooler: Do you know that flat thing that goes up and then you press it down and then you leave it alone?
Teacher: Are you talking about a snackwich maker?
Preschooler: Yes.
Teacher: O.K. So how would you make yourself a snackwich?
Preschooler: Hmmm. . ., that's how I'd do it.
Teacher: You'd just put syrup on something?
Preschooler: Yes.
Teacher: O.K.

Post-mediation Interview

Teacher: Tell me, pretend teacher is very stupid and I don't know how to make a sandwich, explain to me how would I make myself a sandwich?
Preschooler: You first, you first get the bread. Then you put butter. Then you put what you want. Then you put it on. Then you get another slice of bread. Then you put it on and then if you want to cut it then you can.

The contrast in length of dialogue between the two interviews, together with the confusion in understanding the question in the pre-mediation interview, suggests a shift in understanding on the part of the preschooler during the post-mediation interview. The post-mediation text showed a more logical sequence of thought and understanding of the question being asked. At no

stage were preschoolers instructed on how to make a sandwich nor did they actually perform this task in class time. The purpose of this question was to determine if organisational skills that had been put in place with general school tasks, were being carried over into domestic activities. It was also seen as an opportunity to determine if preschoolers could organise their thinking around a simple task.

During the mediation period of research, the preschoolers had plenty of opportunity to practice breaking a task down into simple steps which helped them to organise their thinking before performing the given task. Discussing a task with their peers or teacher provided additional clarity and confirmation that they understood the designated activity. Furthermore preschoolers were taught to pause and notice each stage of a task as a means of checking if they were performing appropriately.

When activities were extended into the classroom, in the pre-mediation condition preschoolers were struggling to organise their thinking, appeared to have difficulty understanding the instructions and remembering all the steps of the given task. This may have been age related as the younger preschoolers have a shorter concentration span and therefore have difficulty retaining more than a couple of instructions. Language capabilities could have been a contributing factor as some of the preschoolers were being instructed in English, which was often their second language and; developmentally, some preschoolers tend to be slower to grasp language and, therefore, struggle to understand instructions. Preschoolers were always reminded on a daily basis to place their names on their work and should therefore have been familiar with this basic step in any creative activity. This is one of many examples that were taken during the study. At the time of observation, preschoolers had been in preschool classes for six months and many had attended some form of preschool classes since the age of two.

Table 4: Pre-mediation organisational skills

Example of task/incident	Preschooler response
<p>Preschoolers participated in a Pritt competition and had to place their names at the back of the work before constructing their collage. They were shown how to put together their picture and which pieces to put on the page first. The collage consisted of many elements but an example was provided and the elements were discussed in detail.</p>	<p>Eight preschoolers forgot to place their name on their work at the beginning of the exercise and had to be reminded to do so. Three preschoolers wrote their names on the front despite being asked not to do so. Four preschoolers used too much glue and too many of a particular resource whilst others did not use enough of the glue or the materials provided. Preschoolers struggled to complete the task in the time given and some chose to pick glue off their fingers instead of doing the set task.</p>

Table 5: Post-mediation organisational skills

Example of task/incident	Preschooler response
<p>Preschoolers were instructed on how to make a cow mask out of cardboard and water colour paints. The colours were discussed and the steps of the task described. For example preschoolers were reminded to put names on their work first, paint using one colour at a time and cleaning the brush each time to keep colours pure. They were also reminded to place wet art on the drying rack. The steps were revisited and carefully unpacked before the task was begun. Preschoolers had to verbally state what the necessary steps involved.</p>	<p>All Preschoolers were happy to work independently and appeared to enjoy discussing the colours they were using and why they were appropriate for the animal concerned. All preschoolers remembered to place their names at the back of the mask before painting and to place their completed work on the drying rack separate from a peer’s art. They also remembered all the steps of the task.</p>

The above examples show how preschoolers followed instructions, remembered all the components and worked independently. They shifted from a somewhat disorganised state to one of confident learning.

Extract 3: Example showing shift in problem-solving skills**Pre-mediation Interview**

Teacher: Where do you think Jack could hide to get away from the giant?
Preschooler: When the giants coming to get him. . . In the oven thingy.

Extract 4: Example showing shift in problem-solving skills**Post-mediation Interview**

Teacher: Where do you think Jack could hide to get away from the giant?
Preschooler: I think it would be in the oven and the bath tub.
Teacher: In the bath tub! Why the bath tub?
Preschooler: So then, so then because, you know the giant . . .the giant won't be bathing.
Teacher: Oh is he just dirty? Does he never bath?
Preschooler: Yes he's just dirty. He doesn't brush his teeth, he has bad manners.
Teacher: O.K. . . .that's a good idea

The pre-mediation response (extract 3) is taken from the preschooler's knowledge of the basic story of '*Jack and the Beanstalk*' in which the character of Jack is placed in the oven when the giant arrives home. The preschooler's response is brief and taken directly from the example of the story she heard. This suggests that little thought went into her answer and consequently no effort was made to solve the problem. The originality of thought should be noted in the post-mediation answer (extract 4) together with the length of the response. The preschooler has sourced their answer from a combination of the role play ideas that took place in the classroom and her own adaptation of the concept of the giant as being ill-mannered, to her understanding of a good place to hide. This suggests that she has thought carefully about her answer and is working to solve the problem posed. Furthermore she is providing a creative and appropriate solution to the question.

Table 6: Pre-mediation problem-solving skills

Examples of tasks/incidents	Preschooler response
During outside play a preschooler complained that another preschooler had pulled her uniform and laughed at her.	The preschooler who complained to the teacher was able to say that she felt ‘sad’ when her friend was unkind but she was unable to decide how to solve the problem.

Table 7: Post-mediation problem-solving skills

Examples of tasks/incidents	Preschooler response
Preschoolers were inspired by the story of ‘Rapunzel’ who had to ‘let down her long hair’ for the witch to climb up into the tower. During outside play one of the preschoolers used an old duvet cover to represent her hair and was hanging this item over a high wall. Another preschooler was attempting to climb up the fabric. Both preschoolers were informed that this was potentially dangerous and were asked to re-evaluate the game.	The preschoolers responded by moving to a flight of stairs which facilitated safe climbing and allowed the game to continue. This solution was devised without intervention from the teacher.

The contrast between the pre and post conditions show how the preschoolers are moving from a state in which they were unable to find a solution to a problem to one in which they creatively solved their problem and did so independently. The preschooler leading the game had shown difficulties resolving conflict independently during the pre-mediation phase of research and was in fact repeating Grade R⁴ because of her emotional immaturity. She was particularly responsive during the activities in the mediation phase and was often seen to be mediating her peers. She appeared to enjoy taking on a leadership role and it seemed to build her confidence. Furthermore, this child was able to verbalise her feelings and paused to notice how her behaviour was impacting her peers, which was evidenced in a post-mediation incident in which she apologised for saying something unkind to her friend. In the pre-

⁴ In South Africa, Grade R is a reception year within the early childhood education subsystem which comprises a class immediately before the formal school’s year one or Grade One class.

mediation period of research she would probably have sulked, denied fault and been unable to discuss the incident appropriately.

The text extracts below illustrate a shift in emotional skills as demonstrated by one preschooler’s understanding of ‘Jack’. The existing emotional competency program meant that preschoolers were already able to label emotions and the aim was to build on this existing knowledge.

Extract 5: Example showing a shift in emotional skills

Pre-mediation Interview

Teacher: How do you think Jack felt when his mommy sent him to bed with no supper?

Preschooler: Ummm. . .ummmm. . .he gets into bed.

Teacher: He gets into bed. . .how did he feel though?

Preschooler: Sad.

Teacher: Why would he feel sad do you think?

Preschooler: Because he will be hungry (said quickly and somewhat flippantly).

Extract 6: Example showing a shift in emotional skills

Post-mediation Interview

Teacher: How do you think Jack felt when mommy sent him to bed with no supper?

Preschooler: Umm. . .Sad.

Teacher: Would he feel anything else do you think?

Preschooler: Cross.

Teacher: Why would he be cross do you think?

Preschooler: Because his mommy never gave him tea and, and food and such. (preschooler took a moment to consider before answering and seemed confident in her response)

The misunderstanding of the question in the pre-mediation interview should be noted. The researcher needed to redirect before getting an answer linked to emotions. Film footage shows the preschooler being somewhat dismissive in her response and appearing to give an answer gleaned from the familiar version of ‘*Jack and the Beanstalk*’. The more complex description of emotions in the post-mediation interview is relevant. The preschooler has returned to their original answer of ‘sad’ but has also described another appropriate emotion for this context. The explanation is a little more detailed

than in the pre-mediation stage. The film footage also demonstrates that the preschooler took more time to consider the question when answering during the post-mediation interview. This suggests a greater depth of understanding of emotions.

Table 8: Pre-mediation emotional skills

Examples of tasks/incidents	Preschooler response
One preschooler wishes to play a princess game and is told that she must ask another preschooler as it is not their game. The preschooler leaves the play area and comes back a few minutes later complaining that she is 'sad'.	The preschooler describes her friends as being 'rude' to her because they would not play with her. She is sulking and struggling to resolve the problem but does understand that she is upset and why.

Table 9: Post-mediation emotional skills

Examples of tasks/incidents	Preschooler response
One preschooler picked up a drum and began to beat it whilst reciting the verse from 'Jack and the beanstalk'. Her peers immediately accepted she was the 'giant' and took on other roles such as 'Jack', 'the giant's wife' and 'Jack's mother'. Props were used to define the roles and the rules were strictly adhered to.	Preschoolers responded by running and hiding from the giant whilst screaming in 'fear'. Some preschoolers joined in with other percussion instruments and recited the verse with vigor. This was repeated several times throughout the period of research. Everyone worked co-operatively without adult intervention and accepted their designated roles without conflict.

The general classroom emotions were happy with the occasional altercation. Most preschoolers were already able to express their feelings but did not always know how to manage a conflict situation as seen in Table 8 above. Those preschoolers resorted to whining. Most preschoolers were happy to tell the teacher about their problem and this was often sufficient for them to feel better and shift to another game. In the post mediation condition preschoolers displayed a level of independence when exploring their emotions but were also able to regulate their actions and to participate in a potentially chaotic game (as seen in Table 9) in a regulated manner. The example described in Table 9 shows preschoolers playing co-operatively and using tools to define their role in the game. Here, they were exploring the concept of 'fear', but in a safe manner and the repetition of this game suggests that they were enjoying the experience.

Conclusion

This case study reveals that children could be assisted to acquire conscious control of their own thinking or achieve self-regulation, especially during the critical period in their development when such cognitive skills are fundamentally important for learning success when they enter formal schooling, as well as for relating effectively to the world around them.

However, for the mediation of self-regulation to be successful – as Vygotsky (1978; 1981) argued, it has to happen at the appropriate level of children's socio-cultural engagement. That is; when children can make sense of and relate meaningfully to the cognitive tools or conceptual skills that would eventually become part of the repertoire of their thinking processes and problem-solving strategies. This is the level appropriately termed the zone of proximal development; which for these preschoolers was constituted within their play activity.

Play is a crucial part in preschool children's development – a 'leading activity' that defines this critical, stage in the course of children's development. Therefore, systematic intervention in children's play activities; aimed at deliberately mediating cultural tools that foster the development of self-regulation, may assist children transcend their egocentric and impulsive modes of thinking and relating to the world and generate reflective and self-regulative forms of thinking – necessary for successful learning and development during formal schooling.

Self-regulation in this case study was mediated through the use of appropriate discourse modes that facilitated children's acquisition of a sense of awareness of alternative perspectives and feelings, views and interests of other persons. For example, preschoolers were encouraged to change their limited egocentric modes towards others and be considerate and collaborative. For example, they became aware of the need to ask when they needed to use something that did not belong to them and to express gratitude when receiving something from a friend, etc. Meanwhile, the use of appropriate discourse modes by the teacher assisted preschoolers to use language towards themselves as a means to regulate their own thinking and thereby begin, gradually, to make more deliberate use of their newly acquired cognitive strategies.

Therefore, the mediation of self-regulation fostered the development of planning skills on the part of preschoolers; which required that they think about and reflect on their actions, and approached the tasks in a more organised manner. Given the opportunities to practice these skills, the preschoolers were able to master new learning over a relatively short period of time and had also begun the process of internalisation of new cultural tools which had hitherto been at their primitive stage of development. They could, for example, also share their knowledge and mediate to one another, thus gaining greater awareness of their own thoughts and actions and consequently becoming less impulsive and more self-regulated. Through storytelling, preschoolers acquired the crucial skill of logical sequencing of events as well as organisation of their own thoughts, etc.

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