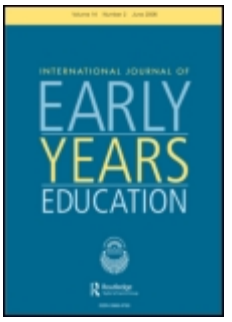

The Value of introducing Sensopathic Materials in a Play Pedagogy Programme during the Reception Year

Journal:	*International Journal of Early Years Education*
Manuscript ID	CIEY-2020-0084
Manuscript Type:	Original Article
Keywords:	sensory processing, sensory play, play pedagogy, sensopathic, materials

The Value of introducing Sensopathic Materials in a Play Pedagogy Programme during the Reception Year

Rich play enhances the child's engagement during play, and this improves the potential for learning. This study examines the place of sensory materials focused on visual and tactile stimuli (sensopathic material) in play pedagogy programmes for the reception year. Interviews with teachers and observation of the children while playing with sensopathic material were used to generate qualitative data at five private schools that applied different play pedagogies. It was found that using sensopathic materials during play enriched the young child's play experience and increased engagement. The teachers realised their critical role in the play process and the management of play and found that learning can be facilitated both inside and outside the classroom with readily available sensopathic materials. This article creates awareness of the value of using sensopathic materials and illustrates how careful planning can enhance young children's engagement during play and create learning opportunities in a playful manner.

Keywords: sensory processing; sensory play; play pedagogy; sensopathic materials

Introduction

The aim of any preschool or reception year curriculum (the year before formal school) is to ensure that young children are ready for the day they enter the formal schooling system (De Witt 2009, 156-157). Traditional preschool programmes emphasised the development of the young child's physical and mental abilities, but in the past decade the importance of sensory processing and development of the young child has been highlighted by leading experts like Fleer (2011), building on the work done by Ayers (1972) and Dunn (1998). Fleer showed that young children with sensory processing constraints are less developed, and thus less likely to be ready for school, than children with few or no sensory processing problems. In the past decade, preschool programmes

including the sensory development and processing of the young child or student has become an important part of curriculum development. This is because the inclusion of sensory development not only ensures that focus is placed on the way in which sensory information is managed in the brain, but also emphasises the added support sensory processing provides for the learning process (Ackerman 1992, 123).

In their respective studies, Ayers (1972) and Dunn (1998) regarded the information provided by our senses – not only the physical conditions of our body, but also the environment around us – as well as our processing of that information as crucial. Ayres (2005, 7) explains that sensory information gives meaning to our experiences when the brain sifts through all the information we receive and then selects what information to focus on. This information allows us to act on or respond to the situation we are experiencing in a purposeful manner in what is known as an adaptive response. As sensory processing develops, better organisation and more complex skills are attainable. Young children who learn to organise their play and who develop skills through play are more likely to organise their schoolwork and be successful in the challenges that are presented throughout life (Ayres 2005, 8). However, some individuals lack fully processed responses to stimuli on a neurological and cognitive level. This condition is often referred to as Sensory Processing Disorder (SPD), but for the purposes of this discussion "sensory processing" or "sensory integration constraints" will be used.

Research performed by, amongst others, Fleer (2011), Moyles (2015), Schaaf and Mailloux (2015) and Wood (2013) indicated that if play is not incorporated in young children's daily lives, young children in general, as well as those with sensory processing and integration impairments, risk delays in the development of social, motor, cognitive and sensory processing skills, which in turn affect the quality of their learning. Johnston and Nahmad-Williams (2009, 20) noted that Froebel recognised the value of play as a

means for learning as early as 1873. He strongly related play to enhancing children's problem-solving skills when dealing with various materials and tasks, and encouraged children to play with different materials during role play. This observation is supported by Ashiabi (2007, 206), who notes that play can facilitate learning by allowing young children to build on previous experiences, knowledge and interaction with their peers as well as with the environment.

With a better understanding of the significance of play, it became necessary for different stakeholders to appreciate the degree to which sensory integration adds to play pedagogy and how it needs to be integrated into their curriculum. Due to the diversity of children and diverse models of play pedagogy, the future of the preschool environment not only needs to be rethought, but a tailored approach is required for each specific environment.

The varying approaches followed in education systems have created a need for teachers and parents to be more aware of the value of sensory play and how improving the quality or richness of play can enhance the level of learning. The aim of this article is to illustrate how the introduction of sensopathic materials (those appealing to the tactile and visual senses) into play activities enhances the child's level of engagement during play. With enhanced engagement, play is more natural, which improves the effectiveness of the play pedagogy programme.

Richer Play enhances Learning

There is a considerable body of knowledge surrounding the characterisation of play. Gronlund and Rendon (2017, 11) emphasise that play can be spontaneously performed for its own sake. Brown (2009, 17-18) notes that play seems to be without a specific purpose, creates pleasure and delight and leads the player from one step of mastery to the

next. He describes properties that make play different from other human interactions: for example, play is seemingly without a purpose, it is voluntary, it is inherently attractive and it provides freedom from time. In addition, when we play we experience a reduced awareness of self as we are caught up in the moment. Brown concludes that play has the ability to stimulate improvisation and provides a continuation desire.

Bateson (2011, 41-47) indicates that play is a creative activity that utilises both the body and the mind; it is variable and adaptable and, as a rule, has no specific purpose. He observes that play has a positive, often enjoyable impact on the players and requires dedication as well as a deep level of learning. Play in the young child's life does not only serve a recreational, but also a developmental purpose (Wood 2013, 22). Play develops the young child's motor, cognitive as well as sensory processing skills. Furthermore, Gestwicki (2017, 34) argued that play should include ideas of pleasure and spontaneous activities free from instruction and reality.

These descriptions of play indicate that children participating in play have independence, alternatives and a measure of control over parts of their lives during play and have experiences that life in an adult-led world rarely affords them. The level of engagement of the child during play should thus be enhanced to increase the richness of the play. The characteristics of engaged or rich play differ from less absorbing or superficial play, in which participants are more sedentary or more scripted, such as in an electronic or virtual world.

Moyles (2015, 7) summarises the nature of play as a natural way of enabling the development of a range of concepts, skills and knowledge of the world and other people and posits that play equates well with learning, as learning through play can be scaffolded, and meta-cognition is enabled through the young child's ability to learn and understand

through his own play. When a concept is understood, play allows young children the opportunity to rehearse, practise, revise, replay and relearn (Moyles, 2015, 17).

Sensopathic Materials enriches Play

Using Ayres' 1972 research, Cantu (2002, 41-47) observed that sensory processing is extremely complex. He established that sensory processing engages more than 80% of a person's nervous system and compared the human brain to a 'sensory processing machine' when organising or responding to sensory stimuli. Although no-one is born with completely developed sensory systems, most young children are adept at integrating sensory data by the age of six. By then the senses are significantly integrated, and it is rare that only one sense will be stimulated at a time. For instance, feeling texture provides input on a tactile level, but the act of feeling will engage proprioceptive senses, with all of this enveloped in a kinaesthetic environment.

Watts, Stagnitti and Brown (2014, e42) investigated a number of key studies indicating that the young child's individual development could be influenced by the different ways in which children process and utilise sensory information. They also established that every individual has their own individual way of processing sensory information. This in itself has a substantial influence not only on the individual's capability to play, but also to learn. They suggested that an individual's sensory processing in turn has a unique influence on the way in which that individual learns, participates and interrelates with others. However, the association between sensory processing and play (and therefore the association between sensory processing and learning) is neither simple nor entirely clear-cut (Bundy, 1991, 65).

Research by Ayres (2015, 7-8) and Kranowitz (2005, 248) showed that sensory processing is improved by practice, e.g. when sensory-focused, enjoyable and organised

playing opportunities are developed and implemented by the teacher or another adult. Ayres (2015, 53) observed that if a healthy relationship exists between play and sensory processing, the frequency and number of adaptive responses increases. If young children's sensory processing improves, they can be more engaged in their play. Through better organised and engaged play, they are more likely to be effective and successful in their schoolwork and learning, regardless of the school or other environments (Ayres 2015, 53).

Play Pedagogy needs effective Play

The link between play and learning has spawned several play-based teaching methods or play pedagogies. Scott and Marshall (2009, 556) define pedagogy as the science or art of teaching, with reference to the methods and principles that inform educational techniques. Farne (2005, 170) notes that play pedagogy uses play and exploits it for educational purposes – play is used as a device to assist the learning process. In turn, Pramling, Samuelson and Carlson (2008, 635) promote integrated play and learning in a purpose-driven preschool, recognising the importance of seeing the young child as one who plays, but also learns. Recognising the young child's creativity, choices, initiatives and reflections is paramount in the play pedagogy process. They furthermore suggest a pedagogy that does not separate play and learning, but promotes creativity through their similarities. This requires an orientation which emphasises the active construction of knowledge from interactions with not only the environment, but also with resources and peers (Bennett, Wood and Rogers 1997, 126).

Fleer (2010, 14-15) and Malaguzzi (1994, 52) both agree that pedagogical play can be used in early childhood to support learning. Both authors note that play should be

relatively open-ended and exploratory and that teachers should primarily focus their interaction on ensuring that their students are actively engaged.

Gestwicki (2017, 146) regards the role of the teacher in the young child's development as of the utmost importance. She states that a teacher not only needs to be proactive, but also act as a co-player when selecting activities and taking the child's interests into consideration. These activities not only elicit questions from the young child, but also demonstrate new ways for the child to interact with the available materials. According to Pyle and Daniels (2017, 274-289), teacher-led play pedagogy lies midway between free play and instruction. An activity can be either child initiated or adult led, but the locus of control should be primarily with the young child in order to preserve the open-endedness of the play. Teacher-led play pedagogy lends itself to the teacher suggesting activities that can be especially appealing to the senses. Such sensory play experiences enrich the learning process and thus enhance the play process, elevating play from just a play experience to a learning experience through the deeper engagement of the young child.

Method

This research is part of a comprehensive qualitative study conducted by the first author. Primary textual data was generated by way of case studies, including interviews with and observation by participants. The researcher acted as a non-participating observer.

Research Approach

The research was based on multiple case studies involving a number of schools with multiple participants per school. The advantage of this approach is that the application of the results is across multiple contexts, which enhances the richness of the data. Using this

methodology, it was possible to explore differences within and between cases and to observe replication of findings across cases.

Selection of Sites and Participants

In order to select suitable sites and participants, stratified purposive sampling as described by Ritchie, Lewis and Elam (2003, 79) was employed. In this approach the selected groups display variations on a particular phenomenon (their application of play-pedagogic principles), but are otherwise fairly homogenous, so that subgroups can be compared.

Five independent (non-governmental) schools were selected that followed either a variety of play-based curricula or the South African Department of Basic Education's curriculum (CAPS) (Department of Basic Education, 2011). This provided a good cross-section of available play pedagogies.

- School A was a CAPS-based pre-school with an ethnically diverse student population.
- School B was an independent preschool that followed the CAPS curriculum but incorporated elements of play programmes.
- School C was an independent school with a play-based curriculum. The school attracted a culturally and ethnically diverse population of students.
- School D was an independent school with an international play-based curriculum. It followed a combination of teaching methods and principles such as NAEYC and Montessori.
- School E was an independent school focusing on a 'whole person, whole brain' approach with a play-based curriculum.

The schools were selected on the basis of their representative curricula with regard to sensory development and their willingness to participate. The participants were teachers at the various schools.

A total of ten teachers from the schools were recruited for participation based on their exposure to play pedagogy and experience in general. The basic requirements for a teacher to become a participant were a three-year diploma or a four-year Bachelor of Arts degree in Basic Education or ECE and at least three years' working experience of Grade R teaching or comparable practical experience.

Four second-year Bachelor of Education students were recruited to assist with field preparations and assisting the researcher with physical tasks during the research in the field. Assistants had a background in pedagogy and were trained in the theoretical grounding and the contextual framework of the study. Where necessary, they also assisted the participants to execute the sensopathic pathways. The assistants did not contribute as data sources in the study.

Sensopathic Pathway

As part of the study, a sensopathic sensory pathway was constructed in order to observe the way in which teacher-led activities can affect the sensory sensitivity of children and to stimulate opportunities for teacher-led play activities. The pathway consisted of a sensory 'obstacle course' focused on sensopathic senses (tactile and visual), with both indoor and outdoor activities and was based on the work of Gascoyne (2012, 2016) and Kranowitz (1995, 2003). Activities included shell sorting, walking barefoot on different textures and searching for objects hidden within a container of slime balls. This presented children with a variety of sensory stimuli while performing sensopathic tasks that were related to school readiness and were designed to engage their senses in order to observe their reactions during teacher-led sensory play. The use of the pathway provided observational opportunities to the researcher as well as the teachers, who completed structured observation schedules that I had provided based on observations they made

during the children's participation in the sensory pathways. Figure 1 illustrates some of the natural material used for the pathway.

Figure 1 here

Data Generation

Primary sources of data were the observation questionnaires, records of work sessions and discussions and the semi-structured interviews with the participants. During the data generation, the focus was on the participants' direct observations during the sensory pathways and how these corresponded with their knowledge of the children's sensory processing skills. Their experience of school readiness and how that related to the sensopathic play aspects of the curricula their schools used were also explored. Participants were interviewed regarding their experience with non-play-based curricula compared with play-based curricula with sensory play. These interviews were recorded and transcribed.

Data Analysis

After data generation, an analysis basis or coding frame (Schreier, 2014, 174) was developed for thematic analysis to enable codification of the data. Coding was based on the initial contextual framework for the study and the emerging themes identified during the observations.

The data generated from observation schedules and transcribed interviews were consolidated and analysed deductively by coding the data in accordance with the themes indicated in the coding frame.

Results and Discussion

The sensopathic pathways provided the participants with an opportunity to observe how the children engaged with indoor and outdoor sensory environments. The children were exposed to a variety of different unfamiliar sensopathic sequences while using different materials. The opinions of the participants as well as the researcher's observations generally agreed with those of Wood (2009, p. 37) regarding the difference that children assign to indoor and outdoor environments - inside is for learning and outside is for playing. Teachers that take advantage of this notion can facilitate learning moments very effectively.

All the participants agreed about the importance of the teacher's role, which corresponds to Gestwicki's (2017, 146) observations. The role of teacher is mostly concerned with the manipulation of the locus of control of a play session, as noted by Weisberg, Hirsch-Pasek and Golinkoff (2013, 104) who describe teacher-led play pedagogy as an activity *between* explicit teaching and 'free play'. The activity could be initiated by adults or children, but the locus of control is with the teacher.

Sensopathic Materials enrich Play

Participants agreed in their observation that children did not expect the move away from the traditional and familiar way of playing and learning while using natural and recycled materials, which made them more receptive to the teachers' message. A participant noted that '*the unexpectedness of the rubber pieces that looked like wooden blocks made them focus immediately'*. This participant also *'enjoyed asking the children about their experiences'*, and saw the experience as a *'good opportunity for vocab and talking about personal experiences.*' In this process, peer learning was enhanced as a result of the shared experiences. Another participant commented '[*i*]*t is also interesting to hear their conversation between each other; peer learning plays a role as they help each other'*. It

was further mentioned that '*they show each other what they've got, and they are busy. They are more excited instead of me giving them the tools to play with. They even exchange their tools with each other. And they remember all these fun things*'.

Engaging from the onset with the sensory materials in both indoor and outdoor environments created an awareness amongst the children that learning is not only limited to the classroom. One participant put it: *'... by moving away from just ordinary classroom learning, you can move it outside and use stones, sticks and leaves to do numeracy. The children can learn so much from just observing the trees and leaves and also by touching and feeling different objects.*' Engagement with sensory play has a transferability property which extends beyond the classroom and transcends to nature – making nature one of the teachers, as described by Gordon-Biddle, Nevarez, Roundtree-Henderson and Valero-Kerrick (2014, 61). Teachers had an opportunity to 'think outside the box' about creating both teaching and learning moments – the most significant difference being that the students also contributed to the effectiveness of the lesson, as '*they are like sponges, sometimes very inquisitive and need to find out more and want to know more. If they don't know about something, they will say let's go find out*'. Participants noted that '*the children have engaged so much in their own play and created their own different tools for one specific material, like a shell.*' This shows how children were more engaged due to the interest value of the experience. One participant pointed out *'...in a controlled environment ....the learning environment will be stimulating and enjoyable for the teacher as well as the children*', illustrating that the interaction between the teacher and child was not only enhanced, but broadened and became more creative and stimulating, causing an appreciation akin to a paradigm shift in the child's understanding of learning. Participants remarked that this led to a changed approach by both parties – *'... several*

times a child will initiate learning and we will follow', thus improving opportunities for future teaching and learning moments to occur.

Participants' observations concurred with Kashin's (2019, 1) finding that sensory play is usually everywhere, although it is not perfect and often messy. However, if sensory invitations to play are carefully designed to provoke a learning response from the child, sensory play remains an important teaching means which should not be overlooked or disregarded. Again, participants observed that sensory play engaged children more and provided a richer play experience – '*if your students are really engaged, and your lesson is on the right level, sometimes you might find that some of your students are faster*'. As the researcher's field notes showed, experiencing activities on a sensory level seems to tap into the body's memory, which in turn allows the body to remember the sensation of learning. This sensory information is subsequently recalled and applied at a different level. Being able to access the senses as a learning tool appears to be of significant benefit to a young child.

Participants agreed that the children's enthusiasm for learning was improved when engaged in sensory play; they often did not really understand or feel that they were learning, as the engagement with the materials, as well as the group experience, was typically perceived as play. The following remark illustrates this: '… *children do not feel as if they are learning, creating a 'hidden' learning opportunity.*'

The attractiveness of sensory activities to children as '*they immediately interact and play with the material'* was also pointed out by participants. Sensory activities seem to have an attraction all of their own – several authors such as Gascoyne (2012, 2016), Goldschmied (1989) and Nicholson (1971) have commented on this. In discussions with the participants, the general agreement was that improving the sensory processing of

children improved the regulation of the body, emotions and sensory information, which enabled them to grow on cognitive, affective, normative and social levels.

Play Pedagogy and Sensory Play

The implementation of sensopathic-focused teacher-led play pedagogy relies on the interpretation of the teacher and the perception of the institution, which are often complicated, not clearly defined and at times not aligned. Varying interpretations of the curriculum, the teachers' workload as well as their attitudes and skill sets have a significant influence on their implementation of sensopathic-focused teacher-led play pedagogy. This potential problem in the relationship between the school's interpretation of the pedagogy and the teacher's implementation of that interpretation was particularly obvious at one school where two of the participants lacked the necessary understanding and knowledge of the significance of sensopathic-focused teacher-led play pedagogy. Predictably, in these schools the implementation fell short of its potential.

Teachers that chose to rigidly implement the curriculum as prescribed, rather than tailor it to their specific class, also appeared to revert to more traditional teaching methods rather than venturing into sensopathic play activities. This approach seemed to be driven by experience and training; for example, two participants only recognised the potential of sensopathic play after observing their students' participation on the sensopathic pathway. They were surprised that all play material has sensory properties, and that sensory play material need not always be specifically designed for sensory purposes in order to be used to enhance sensory learning experiences. As another participant noted: '*…they said that the biggest criticism is that sensopathic material is a rich man's tool. And it's not, if I think of things like painting on the walls with water, drawing in the sand, things you can do with newspaper, egg boxes and little stones.*'

Teachers influence the children's play experience in two ways – firstly, they are responsible for the implementation of the pedagogy chosen by the institution they belong to, and secondly they are responsible for the day-to-day execution of that pedagogy in the classroom.

Implementation of a Play Pedagogy with Sensory Play

Most of the participants were clear in their understanding and use of the curriculum at their schools. They noted that interpreting the curriculum required flexibility, as the curriculum mainly describes the 'what' and not the 'how'. One participant noted: '*It depends a lot on your planning, initiative and creativity, to turn around the learning material and to mould it to be more compatible on a child's level or a sensopathic level or on an initiative level.*'. They emphasised that in their experience as teachers, identifying the outcomes of their teaching practices clearly led to more effective teaching practices. They regarded open-ended material and child-initiated experiences as a high priority, and for mentioned that '…*the reaction of the children gives you the idea of whatever material is open ended, that the children will engage*'. In this regard, they did not find the curriculum sufficiently flexible; they therefore had to compensate to a degree for this in the day-to-day execution. They addressed the inflexibility of the curriculum by balancing and planning their teaching practices to enhance their teaching performance and be more receptive to the children's responses to their teaching practices. They further reported that they had seldom experienced a problem with the CAPS curriculum, as the use of CAPS is less challenging, which makes it easy to tick all the boxes. A participant mentioned that '*CAPS are very well put together. What it does is, it makes a teacher lazy in terms of you just do as per the curriculum. For instance, you don't have the time and freedom to stop the lesson to go more into depth on the relevant topic.*' They agreed that while CAPS and other similar traditional systems were generally well put together, it was

constricting for a sensory play-based teaching style.

The researcher's observations and experience echoed those of the participants. Curriculums are often restrictive; however, the classroom activities should not be set in stone, as noted by Howard, Broadhead and Wood (2013, 44) but be more flexible. Successful implementation of any curriculum would require that curriculum to be flexible enough to accommodate the teacher's teaching style, adaptable to the needs of the child and to remain within the perception and interpretation of the curriculum by the school. Teachers should be mindful of the requirements of their students and adapt the curriculum and activities to the children's needs.

Execution of a Play Pedagogy in daily Practice

The participants confirmed the view that the teacher not only influences the learning experience of the child, but also masterminds and thus enhances the play experience, as a participant noted: '*You can have the most amazing toys, gadgets and material, but in the end, it is the teacher that enhances the learning experiences of the children*.'. Another participant stated that '*the teacher not only plays a significant role in guiding and directing the interaction between the child and the sensopathic material, but is responsible for creating these experiences*'. As she noted, the teacher enhances the learning experience of the young child through play: '*Play always leads to learning. We always say that play is a child's language.*'

Participants also observed that a competent teacher should not only support hesitant and ambivalent children, but must also be able to manipulate and convert the play experience into an exciting and successful learning experience for even the most apprehensive child. The teacher's role is further emphasised by the following comment: '*It depends on the theme - for instance, if it's about dinosaurs they know quite a bit about it, then we let them lead. If it is something new, like why is the sea salty, they can't answer*

that. Then it is teacher initiated, teacher directed or taught.'. The observant teacher can guide and support the child who at the onset is uninterested and sceptical to engage with the sensopathic material.

Richer Play enhances Learning

According to Gascoyne's (2012, 157) continuum of play, the impact of play is that it supports effective learning. This not only highlights the powerful impact teachers have on the child's play experience, but in turn also reflects the important role that the richness or level of engagement plays in influencing the learning experience.

The consensus amongst participants was that if child's sensory needs were met, they could potentially learn more effectively, and a participant noted that '[*t*]*hey retain information better when they have experienced something using all their senses, e.g. setting out sea shells of various sizes and shapes. The children can touch and feel them, they can smell and listen to them and they can discuss concepts like big and small, heavy and light, smooth and rough etc. A seemingly simple activity can have so many learning opportunities.*' Sensory processing, and by extension sensory play, therefore have a constructive influence on learning ability. As all the senses are engaged and exposed to the sensopathic material during the activity, the learning process is enhanced and reinforced through the senses, as described by Watts, Stagnitti and Brown (2014, e42).

One participant observed that sensopathic play not only addressed the young child's sensory needs, but also created a sort of *'sensory comfort'* for children that caused them to be more tolerant of sensory input, and enabled them to process the sensory information without any emotional reaction. This participant concluded her observation by drawing on her previous experience that children with sensory processing challenges would respond differently to sensory stimuli. She was surprised by her students' emotional endurance and mentioned that three of her students had at least one to two emotional

outbursts daily; although she had expected them not to cope well with the activities, they did so without any difficulties. During the semi-structured interviews, her observation was discussed again, and she said that upon reflection become clear to her that the sensopathic pathways satisfied the sensory needs of these specific children.

When the teacher creates sensopathic play opportunities for the child, she provides the child not only with a sensory-rich play experience, but also with a learning opportunity. These learning opportunities in turn allow the children time to process the sensory information in their own individual way. They will gradually develop the ability to remain attentive for longer periods of time during a lesson. A participant noted that '[*i*]*t has an impact on the development of the child. It's not only about the sensory processing, it's about emotional maturity and safety and confidence to venture into the unknown that is cultivated.'* With the support and guidance provided by the teacher in creating sensory learning opportunities, she will in the process be able to assist the child in developing self-regulation, as noted by Huber (2017, 43). A more regulated child has a higher frequency and number of adaptive responses, according to Ayres (2015, 53), which seems to result in more effective learning.

The vigilant teacher can guide a child using continuous encouragement and sustained support in the sensory play activity – this primes the situation to provide the child with a successful learning experience.

Conclusion

This study investigated the introduction of sensopathic materials in a teacher-led, sensopathic-focused play pedagogy programme during the reception year in order to enhance the young child's play experience. The participants in the study agreed that adding sensopathic materials to the play activities enriched children's play. Improving

the quality of play of children not only contributed to the child's ability to learn, but also enabled the child to grow on emotional and social levels. This allowed children to settle into a learning situation more comfortably and thus assisted the learning process.

If one examines the ECE landscape, society seems to be more open to innovative teaching strategies than was the case in the past. Play-based pedagogies have found significant support, especially those using a teacher-led play approach, with systems such as Montessori and Reggio Emilia already several decades old. Unfortunately, some schools do not yet recognise that play pedagogy is not mere ludic (undirected or spontaneous) play, but a solid pedagogy for learning in a playful and enjoyable way. The implementation of sensopathic-focused teacher-led sensory play does not only consist of introducing a few sensory activities into the daily programme, such as art, baking or fantasy corners. Instead, the intentional implementation of this pedagogy requires adequate and competent teachers and appropriate resources that facilitate and sustain these activities on a regular basis. The intent of a sensory play-based pedagogy is to enrich play and thereby to improve the quality of learning.

On a practical level, careful planning and integration, as well as skilled execution of a properly considered curriculum, justify the use of sensory materials and activities on a more regular basis as part of the learning experience. The opportunities for learning that sensopathic play provide are unlocked through using sensory material. Teachers can optimise teaching moments and turn them into more intense learning experiences through sensory play – children participate without reluctance or resistance as they are engaged in a 'play activity' rather than experiencing it as a 'learning activity'.

Sensory materials abound on all playgrounds, and the essential elements are easily available, but not always recognised. For the most part, teachers understood the possibilities of repurposing and reusing waste material. The sensopathic pathway used in

this research also showed teachers how open-ended materials can be used to create sensopathic activities in an inexpensive way.

Schools that successfully implement a sensopathic-focused teacher-led sensory play pedagogy have found that the inhibitors, such as teachers' lack of experience and the cost are not too difficult to overcome. There is a significant body of readily available knowledge, and teachers were found to be positive and enthusiastic about implementing play pedagogy because of the benefits to the children and to themselves on a professional level. However, further research is required, specifically in evaluating the correlation between Sensory Processing Disorder (SPD) and school readiness, as well as whether children that do not have sensory processing difficulties would benefit more from normal play, sensory play or indeed a combination of both. Once the initial investment in skills has been made, the process becomes self-sustaining as long as continuous training and peer relations are maintained.

Acknowledgements

The University of Pretoria financially contributed to this study as part of capacity-building. The contents of this article are the sole responsibility of the authors and do not represent the views of the University of Pretoria.

Declaration of interest

None

References

Ackerman, S. 1992. *Discovering the brain.* Washington DC: National Academy Press Washington.

Ashiabi, G. 2007. "Play in the preschool classroom: Its socio-emotional significance and teachers' role in play." *Early Childhood Education Journal*, 35 (2): 199–297.

Ayres, A.J. 2005. *Sensory integration and the child: understanding hidden sensory challenges*. Torrance: Western Psychological Services.

Bateson, P. 2011. "Theories of play." In *The Oxford Handbook of the development of play,* edited by A. Pellegrini, 41–47. Oxford: Oxford University Press.

Bennett, N., Wood, L. and Rogers, S. 1997. *Teaching through Play: teachers' thinking and classroom practice.* Buckingham: Open University Press.

Brown, S. 2009. *Play: How it shapes the brain, opens the imagination and invigorates the soul.* New York: Penguin.

Bundy, A.C. 1991. "Play theory and sensory integration." In *Sensory integration: theory and practice,* edited by A. Fisher, E. Murray, A.C. Bundy, A.C., and S.J. Lane. Philadelphia: FA Davis.

Cantu, C. 2002. "Self-regulation and stress management." *The Exceptional Parent*, 32 (11): 41-47.

Department of Basic Education. 2011. *National Curriculum and Assessment Policy Statement. Foundation Phase Grades R-3*. Pretoria: Government Printers.

De Witt, M. 2009. *The young child in context. A thematic approach. Perspectives from educational psychology and socio-pedagogics.* Pretoria: Van Schaik.

Dunn, W. (1999). *Sensory profile*. San Antonio: Psychology Corporation.

Farne, R. 2005. "Pedagogy of play." *Topoi*, 24 (2): 169–181.

Fleer, M. 2010. "A cultural-historical perspective on play: play as a learning activity across cultural communities." In *Play and learning in early childhood settings: international perspectives*, edited by I. Pramling Samuelson and M. Fleer. Dordrecht: Springer.

Fleer, M. 2011. "Conceptual play: foregrounding imagination and cognition during concept formation in early years education." *Contemporary Issues in Early Childhood*, 12 (3): 224-240.

Gascoyne, S. 2012. *Treasure baskets and beyond: realizing the potential of sensory-rich play*. 2nd ed. Berkshire: Open University Press.

Gascoyne, S. (2016). "Play in the EYFS." In *Sensory Play,* edited by S. Gascoyne. 3rd ed. London: Practical Pre-School Books.

Gestwicki, C. 2017. *Developmentally appropriate practice: curriculum and development in early education.* 6th ed. Emerita: Central Piedmont Community College.

Goldschmied, E. 1989. "Play and learning in the first year of life." In *Babies in Day Care: An Examination of the Issues,* edited by V. Williams. London: The Daycare Trust.

Gordon-Biddle, K.A., Nevarez, A.G., Roundtree-Henderson, W. J. and Valero-Kerrick, A. 2014. *Early Education: Becoming a professional*. Thousand Oaks: SAGE.

Gronlund, G. and Rendon, T. 2017. *Saving play: addressing standards through play-based learning in preschool and kindergarten.* St. Paul: Redleaf Press.

Howard, J., Broadhead, P. and Wood, E. eds. 2013. *Play and learning in the early years.* 2nd ed. London: SAGE.

Huber, M. 2017. *Embracing rough-and-tumble play. Teaching with the body in mind*. St Paul: Redleaf Press.

Johnston, J. and Nahmad-Williams, L. 2009. *Early childhood studies*. New York: Routledge.

Kranowitz, C. S. 1995. *101 activities for kids in tight spaces*. New York: St. Martin's Griffin.

Kranowitz, C.S. 2003. *The out-of-sync child has fun*. 2nd ed. New York: Perigee.

Kranowitz, C. S. 2005. *The out-of-sync child: recognizing and coping with sensory integration dysfunction.* 2nd ed. New York: Perigee.

Malaguzzi, L. 1994. "Your image of the child: where teaching begins." *Child Care Information Exchange,* 3/94: 52-61.

Moyles, J. 2015. "Starting with play: taking play seriously." In *The excellence of play,* edited by J. Moyles. 14-25. 4th ed. New York: McGraw-Hill.

Nicholson, S. 1971. "How not to treat children: the theory of loose parts." *Landscape Architecture*. 62: 30–35.

Pramling Samuelson, I. and Carlsson, M. A. 2008. "The playing learning child: towards a pedagogy of early childhood." *Scandinavian Journal of Educational Research*, 51 (3): 623-641.

Pyle, A. and Danniels, E. 2017. "A continuum of play-based learning: the role of the teacher in play-based pedagogy and the fear of hijacking play." *Early Education and Development*, 28 (23): 274-289.

Ritchie, J., Lewis, J. and Elam, G. 2003. "Designing and selecting samples." In *Qualitative Research Practice,* edited by J. Ritchie and J. Lewis. 2nd ed. London: SAGE.

Schaaf, R.C. 1990. "Play behavior and occupational therapy." *American Journal of Occupational Therapy*. 44: 68–75.

Schaaf, R. and Mailloux, Z. 2015. *A clinician's guide for implementing Ayres' sensory integration*. Bethesda: American Occupational Therapy Association.

Schreier, M. 2014. "Qualitative content analysis." In *The SAGE Handbook of Qualitative Data Analysis,* edited by W. Flick. London: SAGE.

Scott, J. and Marshall, G. 2009. *A dictionary of sociology*. 3rd ed. Oxford: Oxford University Press.

Stemler, S. 2001. "An overview of content analysis." *Practical assessment, research and evaluation*, 7, article 17.

Watts, T., Stagnitti, K. and Brown, T. 2014. "Relationship between play and sensory processing: a systematic review." *American Journal of Occupational Therapy*, 68 (2): e37–e46.

Weisberg, D., Hirsch-Pasek, K. and Golinkoff, R. M. 2013. "Guided play: where curricular goals meet a playful pedagogy." *Early Years and Development*, 7 (2): 104-112.

Wood, E. 2009. "Developing a pedagogy of play." In *Early Childhood Education: Society and culture,* edited by A. Anning, J. Cullen and M. Fleer. London: SAGE Publications.

Wood, E. 2013. *Play, learning and the early childhood curriculum.* 3rd ed. London: SAGE Publications.

Figure 1. Children playing with sensopathic materials