

# Conceptualising the influence of sensopathic-focussed play pedagogy on the young learner

BY

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## DECLARATION

I, CHARLOTTE LEWINGTON (student number 85560830), the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously submitted it in its entirety or in part at this or any tertiary for a degree.



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- Informed consent/assent,
- Adverse experience or undue risk,
- Registered title, and
- Data storage requirements.

## **DEDICATION**

I dedicate this study to my family Ron, Ryan and Robin for their unconditional support and love.

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## ABSTRACT

Teacher-led sensory play pedagogy, which specifically focuses on the sensopathic senses, has the potential to facilitate sensory processing in Grade R (Reception Year) children in preparing them for the transition from informal to formal schooling. In this study the complexity of the nature of this inquiry became evident when the body of scholarship was found not to reveal one single framework that represents play pedagogy, sensory integration and best early childhood practices. A variety of theories are available, but not a unifying conceptual framework that integrates cross-disciplinary knowledge systems to inform a scientific research process. Constructing an encompassing teacher-led sensory play pedagogy framework requires the integration of key principles of renowned and trusted grand theories of play, sensory play and play-based pedagogies with international best practice to preserve and advocate the importance of sensory play and learning in the early years.

The newly conceptualised framework that represents the phenomenon had to be implemented using scientific research principles. Interpretivism as methodological paradigm guided the entire research process from selecting participants and sites to data generation, analysis and interpretation. The nature of the phenomenon justified a qualitative mode of inquiry with a multiple case study approach. The selection of the research sites as well as the participants warranted a purposive sampling technique. The five sites and ten participants represent teaching communities and learning environments that value sensory play as pedagogy when implementing South Africa's national curriculum.

The conceptual framework informed the construction of sensopathic pathways for indoor and outdoor learning environments. They served as a real-time exposition with actively engaged children. The teacher-participants observed this engagement and expressed their observations and interpretation through semi-structured interviews and reflective journals. To ensure quality data, the participants were given access to a cloud-based data generation application (app) with which they captured their experiences, impressions and thinking textually and visually. Member checking and a reliable audit trail were ensured by empowering the participants to capture their experiences as first-hand raw data themselves.

The analysis of the data sets is aimed at determining how the conceptual framework informs teacher-led sensory play pedagogy. Therefore, I conceptualised an *a priori* coding framework using a deductive derivation of themes (statements), categories and codes to make sense of the data sets. A pivotal part of the study was to scrutinise how the conceptual framework inspired the integration of sensory processing and sensory play

activities, as well as how teacher-led activities introduced sensopathic play opportunities to children in an informal learning environment. The importance of aligning sensopathic play experiences with the intended curriculum is key in preparing children for the transitions from Grade R to Grade 1. The interpretation of the analysed data sets indicated that the nature of this phenomenon is more complex than anticipated, as children demonstrated a dire need for a sensory play programme whether they had been diagnosed with sensory processing deficiencies or not. In other words, sensory play pedagogy that stimulates sensory processing, self-regulation and problem-solving skills readies children for formal schooling. The newly conceptualised framework affirms that teacher-led sensory play pedagogy can be incorporated into teachers' daily school programmes and the national curriculum in South African preschools.

**Key words:** sensopathic sensory play, teacher-led play pedagogy, school readiness, sensopathic sensory activities, sensopathic material, sensopathic sensory path

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#### DECLARATION OF EDITING

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## Abbreviations and acronyms

CAPS	Curriculum Assessment Policy Foundation Phase Grades R-3
CBO	Community-Based Organisation
DAP	Developmentally Appropriate Practices
DBE	Department of Basic Education
ECD	Early Childhood Development
ECE	Early Childhood Education
EYFS	Early Years Foundation Stage
IEB	Independent Examination Board
LoLT	Language of Learning and Teaching
NAEYC	National Association for the Education of Young Learners (US)
NCF	National Curriculum Framework for children from birth to four years
NELDS	National Early Learning Standards (2009)
NGO	Non-Governmental Organisation
OBE	Outcomes-Based Education
PRQ	Primary Research Question
R&T	Rough and Tumble Play
RQ	Research Question
RSA	Republic of South Africa
SACE	South African Council of Education
SIAS	National Strategy of Screening, Identification, Assessment and Support, 2008
SPC	Social Play Continuum (Broadhead)
SRQ	Secondary Research Question
UN	United Nations
ZPD	Zone of Proximal Development (Vygotsky)

## **Key concepts**

Play pedagogy

School readiness

Sensory activities

Sensory play

Sensopathic sensory play or sensopathic play

Sensory perception

Sensory processing or integration

Sensopathic sensory play material

Sensopathic sensory path

Teacher-led play pedagogy

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# 1 Chapter 1: Overview of the research enquiry

## 1.1 Introduction and background

In my educational psychology practice, I assessed a number of Grade R (Reception Year in South African schools) learners for school readiness through the years. During these assessments I had observed that Grade R learners with sensory processing problems were less likely to be ready for school than learners with few or no sensory processing problems. As I also use sensory play as one of my therapeutic resources, it occurred to me that sensory activities within play pedagogies could support the sensory processing abilities of young learners.

Sensory processing refers to the neurological process that the brain uses to organise sensations from within the body and from the environment. This process makes it possible to use the body effectively within the environment that it is in (Ayres, 2005:9). Sensory processing is therefore the “processing, integration and organisation of sensory information from the body and the environment” (Schaaf & Mailloux, 2015:5).

Ayres (2005:5) notes that “the brain locates, sorts and orders sensations – somewhat as a traffic officer directs moving cars. When sensations flow in a well-organised or integrated manner, the brain can use these sensations to form perceptions, behaviours and learning. When the flow of sensations is disorganised, life can be like a rush hour traffic jam”.

Our senses provide us with information about the physical condition of our bodies and the environment within which we find ourselves. It provides meaning and context to what we experience by evaluating all the information and selecting which impulses to focus on. It allows us to respond to the situation we are experiencing in a purposeful manner. Ayres (2005:7) refers to this response as an *adaptive* response. As sensory processing develops, better organisation and more complex skills are attainable. For example, young learners who learn to organise their play and who develop skills through play are more likely to organise their schoolwork and to be mentally and physically successful in the challenges that life presents (Ayres, 2005:8). According to Schaaf and Mailloux (2015:5), learning is a function of the brain, and the correct processing and integration of the information from the senses is an important foundation for adaptive behaviour.

The function of play in the young child’s life is to develop social, motor, cognitive and sensory processing skills (Wood, 2013:22). If play is not incorporated into the young child’s daily life, young learners in general, as well as those who have sensory processing and integration impairments (i.e. lacking fully processed responses to stimuli on a neurological and cognitive

level), are at risk of delaying the development of social, motor, cognitive and sensory processing skills and therefore their learning effectiveness.

## 1.2 Problem statement

In the childhood years, play manifests in all young learners' lives in various forms or play genres (Bruner, 1972:699). All young learners engage in play behaviour, which is a function of their level of development, as well as their inclinations and interests (Coady, Gallop, Halleran, McLean & Greene, 2010:3). Play encompasses of a series of adaptive responses shaped by sensory processing and integration (Watts, Stagnitti & Brown, 2014:37). In turn, as sensory processing develops, better organisation and more complex skills become possible. Commonly, "play" is used in a sense that implies outdoor play, but many young learners are restricted to indoor play, with video games, television and social media being the primary occupations in the risk-averse society (Tremblay, Gray, Babcock, Barnes, Bradstreet, Carr & Brussoni, 2015:6477). Teacher-led play is a part of play pedagogy, and the possibility that it can be a substitute for, rather than supplemental to, free play in the pre-school context is therefore of significant interest to the educator in the development of the young learner.

Aronstam and Braund's (2015:5) investigation showed that the implementation of play-based pedagogy in South Africa has proven problematic due to shortages of skills and resources. Anecdotal evidence suggests that play is most often unstructured and free, and most of the benefits of play-based pedagogy are therefore not realised (Aronstam & Braund, 2015:5).

The aim of any pre-school curriculum<sup>1</sup> is to ensure that young learners are ready for the day they enter the formal schooling system (De Witt, 2009:156-157). A significant part of being physically and mentally ready for this leap is the development of the young child's sensory processing functions, which must ensure that the way that sensory information is managed in the brain supports the learning process (Ackerman, 1992:123).

To contextualise the study, it is important for different stakeholders to understand the degree to which play pedagogy adds to sensopathic (pertaining to tactile and visual senses) sensory integration and how it needs to be integrated in their curriculum. The purpose of this study is therefore to conceptualise the influence of sensopathic-focussed, sensory-based play pedagogy on young learners' sensory processing, as it pertains to their level of school readiness. In addition, because of the diversity of learners, diverse models of play pedagogy

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<sup>1</sup> The year before formal school in South Africa, also known as Grade R

were investigated in order to suggest an appropriate approach for the South African environment.

Models of play pedagogy and the successful implementation thereof, as well as constraints in real-world applications, are widely described globally. Nutkins, McDonald and Stephen (2013:144) describe some pertinent international examples, such as the Perry Pre-school HighScope Project (USA), the Reggio Emilia approach (Italy), the Swedish Early Childhood Education Curriculum, Te Whāriki National Early Childhood Development (ECD) curriculum in New Zealand and the English Early Childhood Years national ECD curriculum. As a number of these curricula are used in South Africa, I set the following objectives for the study:

- To observe the implementation of sensopathic-focussed teacher-led play-based pedagogy in pre-school environments and its influence on the sensory processing of young learners;
- To investigate how to implement sensopathic-focussed teacher-led play in accordance with play-pedagogic principles.

### **1.3 Rationale for the study**

My observations inspired me to propose this investigation to determine the influence that play can have on the sensory processing ability of learners and to identify key aspects of developmental backlogs. Under ideal circumstances, the learners' sensory processing abilities will be developed and refined through natural play. However, play opportunities have become less available in the classes of young learners due to the increased emphasis on an academic curriculum, as especially private schools succumb to pressure from paying parents to produce results through preparation of the learners for Grade 1 and beyond (Bassok, Latham & Rorem, 2016:1). Bassok *et al.* (2016:1) also note that playtime is taken up with academic tasks and more formal educational activities – this reduces the amount of play, which is therefore becoming less important in the Grade R learner's school environment. Francis (1991) observed in an interview that young learners' lives are structured and supervised by adults, who mistakenly believe that something as basic as a sport lesson here and there will make their young learners more successful as adults. Today, many young learners live in what one educator has referred to as a young learners' imprisonment. Gray (2011:443) furthermore states that young learners' opportunities to interact in a natural outdoor setting have significantly diminished from previous eras, and that young learners and outdoor play are no longer the synonyms they once were. The situation for young learners is seldom improved at home, where physical play is often replaced by entertainment through some kind of electronic or technological device (American Academy of Pediatrics, 2015:1).

Given the above, it seems as if play needs to be incorporated in the curriculum in such a way that the school structure and schedule are maintained. This is recognised by the South African National Curriculum Framework (NCF) for children from birth to four years, which states that play and hands-on active experiences enhance young learners' learning and development (Department of Basic Education, 2015:2). While the Curriculum Assessment Policy Statement for Foundation Phase Grades R-3 (CAPS) of the Department of Basic Education, 2011:10 promotes play as a pedagogy, the lack of emphasis on developing the sensory processing abilities in the process is apparent. In this study I investigated play pedagogy that supports sensory processing development and its role in improving school readiness. The specific research questions associated with this investigation are stated in the next section.

The CAPS (Department of Basic Education, 2011:10) provides specifically that Mathematics, Life Skills and Language Learning should be play-based in Grade R (DBE, 2011:10). The CAPS for Foundation Phase Grades R-3 further promotes free play or child based pedagogy, as well as structured or adult guided play, clearly underlining that play is the preferred pedagogy.

The aim of the study was to explore the influence of sensopathic-focussed teacher-led play pedagogy on sensory processing by the young learner, and whether school readiness would be affected as predicted by the available literature, especially Ayres (2005) and Gascoyne (2016), as well as my personal findings. In addition, I collected data to enable the establishment of guidelines for the implementation of teacher-led play.

## **1.4 Primary research question**

### **1.4.1 Primary research question**

How can sensopathic-focussed teacher-led sensory play in the play pedagogy context influence sensory processing?

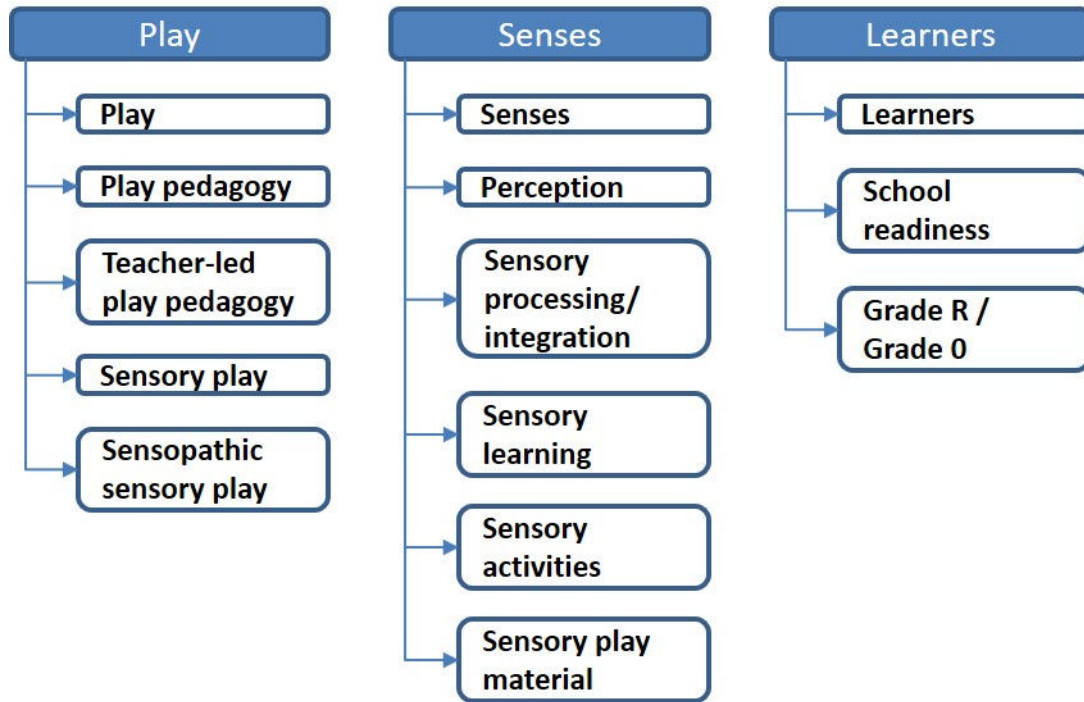
### **1.4.2 Secondary research questions**

- What is the role of sensory processing in the school readiness of Grade R learners?
- How do teachers implement sensopathic-focussed teacher-led sensory play in accordance with play pedagogy principles?
- What guidelines can be formulated for implementing sensopathic-focussed sensory play pedagogy in policy and practice?



## 1.5 Clarification of key concepts

The following concepts used in this study are defined in this section to ensure a common understanding. They can be grouped into three main areas as shown in Figure 1-1:



**Figure 1-1 Key concepts**

### 1.5.1 Play

#### 1.5.1.1 Definition of play

The Oxford English Dictionary defines play as “to engage in activity for enjoyment and recreation rather than for a serious or practical purpose; to amuse or divert oneself; to engage in fun, games, or merriment.” (Oxford English Dictionary, n.d.)

Play can be conceptualised as an activity involving critical thinking, creativity, experimentation, learning (Moyles, 2015:16), imitation, pretence, imagination (Beardsley & Harnett, 2013:4), risk-taking (Fleer, 2013:66), socialisation rules (Piaget, 2013:145) and imagination and illusion (Vygotsky, 1980:93).

Play is an activity that is self- or intrinsically motivated and voluntary. Play as an activity allows young learners the occasion to fabricate their own knowledge (Coady *et al.*, 2010:2). Frost, Wortham and Reifel (2008:219) state that play is ubiquitous and is not altered by national or cultural boundaries. Göncü, Jain and Tuermer (2007:157) theorise play as children enacting their social and cultural world by using a method of expression that are particular to their cultural

communities. Brown (2009:32) concludes that play is a fulfilling activity that assists young learners to obtain control and come to interpret life - through play young learners define who they are.

### **1.5.1.2 Play pedagogy**

Cutter-Mackenzie, Edwards, Moore and Boyd (2014:31) define play-based pedagogy as encompassing the idea that play can be used to support learning. The concept refers to occasions are rich in child-initiated play during early childhood that, in the presence of an engaged and receptive adult, can be used as learning opportunities. Farne (2005:169) notes that the pedagogy of play concerns the design and management of playing experiences with clear educational goals.

According to Rogers (2011:6), it is a pedagogy that is relational and co-constructed. It provides young learners with the opportunity to engage with other learners, as well as to interact with their environment in purposeful ways. Coady *et al.* (2010:5) observe that these playful interactions occur in an environment with access to different developmentally appropriate materials. Stewart and Pugh (2007:9) conclude that play pedagogy encompasses the understanding of how young learners learn and develop, and that play pedagogy is not only a practice through which the learning process can be enhanced, but is also rooted in values and beliefs and underpinned by theory and experience.

### **1.5.1.3 Teacher-led play pedagogy**

Pyle and Danniels (2017:274–289) define teacher-led play pedagogy as lying in the middle between direct command and free play. Weisberg, Hirsch-Pasek and Golinkoff (2013:104) and Hirsch-Pasek, Golinkoff, Berk and Singer (2009:53) support this definition by describing teacher-led play pedagogy as an activity between explicit teaching and “free play”. The activity may be initiated by adults or children, but the locus of control is placed on the teacher.

Gascoyne (2016:146), Weisberg *et al.* (2013:105) and Tsao (2008:520) describe the teacher’s role as proactive, and argue that selecting activities based on the young learners’ interests and abilities enhances the role of commentators and co-players, allowing questions or demonstrating new ways to engage with the play materials used. Gascoyne (2016:85) concludes that through the support and extension of the child’s questions, discovery and thinking, young learners can be assisted in moving into Vygotsky’s Zone of Proximal Development (ZPD), where learning is broadened further than what would be achieved through independent play.

#### **1.5.1.4 Sensory play**

Sensory play can be described as any activity that intentionally stimulates the young learner's senses: touch, sight, taste, smell, hearing, movement and balance (Jackman, Beaver & Wyatt, 2015:228; Kranowitz, 1995:2) or the use of one distinct sense (Usher, 2010:2). Gascoyne (2016:19) posits that young learners' brains and bodies are hard-wired to exploit the full potential of sensory-rich experiences. Many sensory-rich play opportunities surround us every day and are inexpensive (Gascoyne, 2012:4).

#### **1.5.1.5 Sensopathic sensory play**

Sensopathic sensory play (referred to as sensopathic play in this research study) focuses on engaging primarily senses of touch and sight during play and usually involves a specific area or table that provides contrasts of texture and observation, such as hiding toy soldiers in rice. Sensopathic play not only contributes to observation skills, but also provides for emotionally satisfying experiences, for instance when finding the hidden items amongst the fill (Van Heerden, 2011:146).

### **1.5.2 Senses**

This section clarifies the senses and sensory facets referred to in the study.

#### **1.5.2.1 Senses**

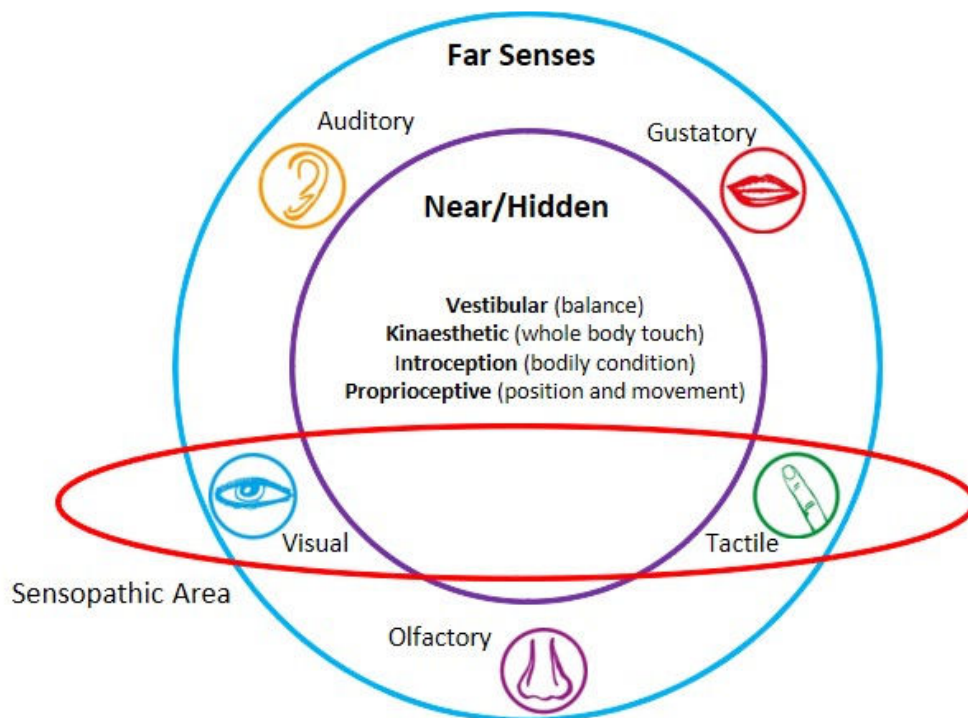
Lombard (2011:11–12), Ayres (2015: 38), Kranowitz (2005:51), Bogdashina (2003:217) and Bundy (2002:339) all acknowledge the five “visible” senses, namely: touch (tactile), sight (vision), taste (gustatory), smell (olfactory) and hearing (auditory). These five senses are commonly referred to as the “far” senses as they provide information regarding an object at a distance (Colman, 2015:274). Lombard (2011:11–12), Ayres (2015: 38), Kranowitz (2005:51), Bogdashina (2003:217) and Bundy (2002:339) furthermore describe “hidden” senses, including the vestibular sense, which helps us to orientate movement, and the proprioceptive sense, which provides the body with feedback from muscle movement and joint position. The kinaesthetic sense relates to whole body touch, although this is often seen as part of the tactile sense. In addition, the Star Institute (2018:11–12) identifies another sense - the interoception sense. This sense is associated to the physical condition within the body and provides the sense of what your internal organs are aware of, for example hunger or thirst. Porter (2017:1) and Hughes (2010:18) also link interoception to an awareness of our own emotions and physiological reactions which keep us alert and responsive.

We rarely observe with one sense alone - our five primary senses of hearing, smell, touch, sight and taste are all used to gain new knowledge. In addition, “touch” is a whole-body tactile sense

whereby information is taken in from the environment. All our senses play a role in sensory integration. The conventionally defined or far senses (touch, sight, smell, taste, sound) respond to external (to our bodies) stimuli; the near senses (vestibular, kinaesthetic, interoception, proprioceptive) respond to internal stimuli that we cannot ignore or control consciously (Kranowitz, 1995:52-55).

Although we often take our senses for granted, it is hard to imagine life without our senses. Without any contact with the outside world, we would not know what is going on around us or be able to experience sensations and learn through our senses (Riedman (1962), cited in Gascoyne, 2012:17). Although touch or the tactile sense is customarily grouped with the far senses, from a sensory processing frame of reference it is more often linked to the near senses, resulting in a total of eight senses (Smith & Gouze, 2004:35), or nine if interoception is included.

Figure 1-2 depicts the relationship between the senses, specifically the near and far senses. It also indicates the sensopathic (visual and tactile) senses.



**Figure 1-2 Relative position of sensopathic aspects**

### 1.5.2.2 Perception and sensory perception

According to Excell and Linington (2015:85-86) and Bogdashina (2003:37), perception is the process through which organisms collect, interpret and comprehend information from the environment using their senses. Ayres (2015:7-8) defines sensory perception as the flow of

sensory information, and Pike and Edgar (2005:75) describe the process as a two-way production of “action and the behaviour that follows”.

Bogdashina (2003:37) describes sensory perception as the ability to interpret stimuli from information we receive from our senses. Ayres (2005:6) states that the lack of interpretation of the sensory feedback from our senses leaves us confused about which sensation or emotion we are experiencing.

### **1.5.2.3 Sensory processing or integration**

Schaaf and Mailloux (2015:5) define sensory integration or sensory processing as the neurological processing that the body uses to organise sensations, whether from the body itself or from the environment, which enables the body to operate effectively within the environment. Bogdashina (2003:37) and Ayres (2015:7-8) define sensory processing as the organisation of sensations the body receives. Our senses provide us with data about the physical condition of our body and the environment within which we operate – sensory processing converts the data into information.

Ayres describes sensory processing and sensory integration as sifting through all the information we receive through our bodies and selecting which information to focus on. She conjectures that sensory processing allows us to act or respond purposefully to a situation that we are experiencing (also known as an adaptive response). Bundy (2002:339) states that as sensory processing and sensory integration develop, better organisation and more complex skills become possible. Ayres (2015:8) concludes that young learners who learn to organise their play and develop skills through play are more likely to organise their schoolwork and to successfully negotiate the challenges that life presents all of us.

For the purposes of this study, sensory processing and sensory integration are regarded as equivalent and will be referred to as sensory processing in the rest of this study.

### **1.5.2.4 Sensory learning**

Shapiro (2011:2) defined sensory learning as an embodied cognition. It is built on the notion that the interaction between our bodies and the environment shapes our emotion, cognition, memory, learning and attitude, *et cetera*.

### **1.5.2.5 Sensory activities**

Sensory activities are play activities that naturally encourage learners to play, create, investigate and explore through the use of sensory-rich materials (Gascoyne, 2012:2; Porterfield, 2016:2; Usher, 2010:2). Sensory activities not only bring learning to life, but also

have therapeutic qualities which are key to enabling young learners to access learning (Gascoyne, 2016:9).

### **1.5.2.6 Sensory play material**

Sensory play material is material that offers rich sensory appeal (Gascoyne, 2012:53; Goldschmied and Jackson, 1994:96-97), has multi-sensory aspects (Gill, 2011:18; Papatheodorou (2010, cited in Gascoyne (2012:89), is natural (Gerathy,1990:250) and possesses flexible, simplistic and open-ended play potential (Gascoyne 2012:13). Sensory play material provides opportunities for outdoor as well as indoor stimulation and supports brain development (Jackman *et al.*, 2015:230). It appeals greatly to young learners of different ages and interests, and examples are sand, mud, water, oobleck (a Newtonian fluid made from cornflour and water that thickens when pressure is applied), light and kinetic sand (Hughes, 2010:7).

### **1.5.3 Learners**

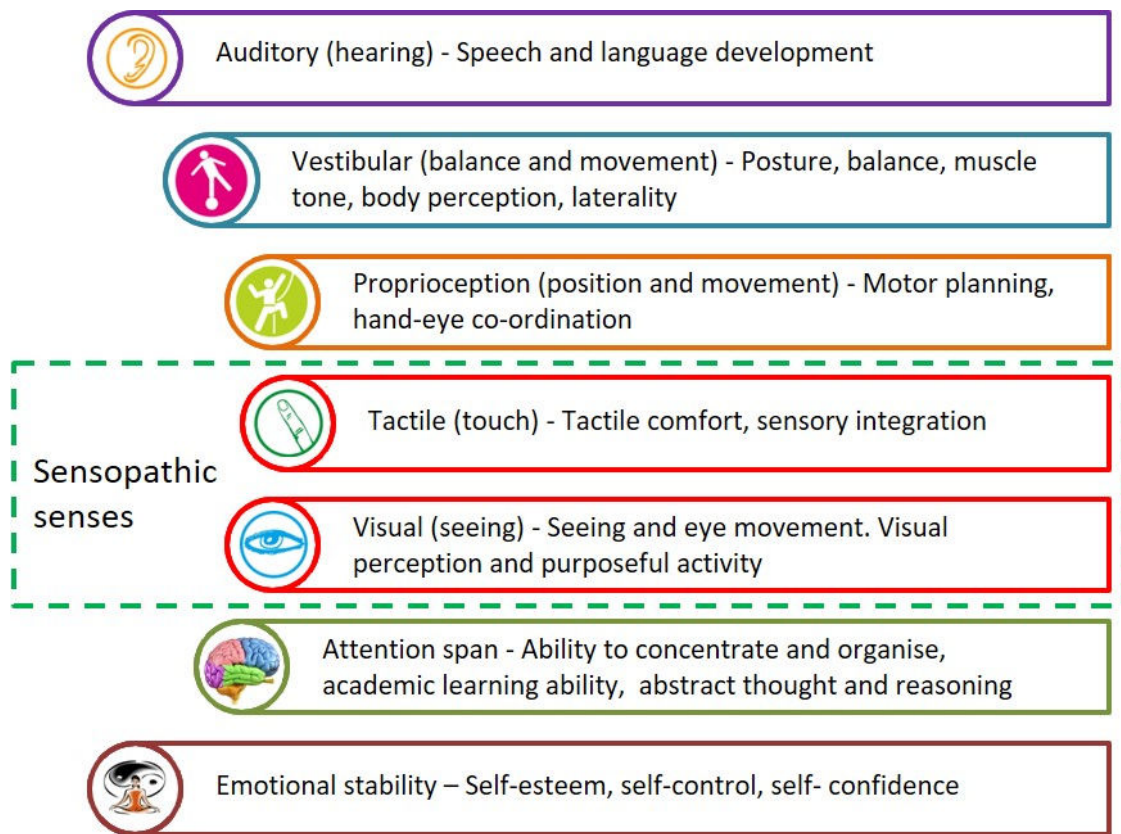
In this section the concepts related to young learners at school are discussed.

#### **1.5.3.1 Learner**

In the South African school system, children attending school (whether in Grade R or more advanced grades) are referred to as learners. In this study, the terms “learners” or “young learners” refer to children aged 4-5 years.

#### **1.5.3.2 School readiness**

Blair (2002:111–127) states that learners are school ready when they possess the skills to comprehend and organise information. In addition, Excell and Linington (2015:12) as well as Dockett and Perry (2007:74) emphasise that school readiness is a period in which young learners have to change their role within the larger school community. This change involves their own identities, roles and expectations, as well as the changes in the form of interactions and relationships between the young learners and everyone around them, including their teachers and peers. De Witt (2009:156-157) and Sherry and Draper (2012:10) refer to school readiness as the level of development of the child in terms of their physical, cognitive, affective, normative, social, cultural literacy and situational readiness. School readiness therefore requires that learners master a range of abilities in order to be regarded as “school ready” (du Preez, 2018:8). School readiness requirements can be mapped to sensory requirements, as shown in Figure 1-3 below. Figure 1-3 also indicates the sensopathic area in particular, along with the school readiness requirements.



**Figure 1-3 School readiness and the senses (adapted from du Preez, 2018:9)**

The figure shows how the senses are associated with the school readiness criteria and especially how the sensopathic senses relate to the criteria (du Preez, 2018:9). The icons associated with the various senses are also used in the discussion of the sensopathic pathway in section 4.3.

The school readiness requirements are as follows (du Preez, 2018:8):

- **Physical school readiness** – Learners require the physical growth to be able to adapt to the demands of the formal school.
- **Cognitive school readiness** – Learners must master the capability to observe, visualise and fantasise. They also require sufficient language development and a connection to perception, with the associated perceptual development.
- **Affective readiness** – Learners require encouragement, recognition and praise from teachers for affective stabilisation.
- **Normative readiness** – Learners are required to accept authority, master task orientation and completion and have a sense of responsibility. They also require the ability to communicate and self-regulate.

- **Social school readiness** – learners must be able to function in a group and be able to socially adapt within that group. They must also contribute towards that group. Furthermore, they must have mastered basic manners and forms of address.
- **Literacy readiness** – learners have to master all entry-level requirements for literacy.

### 1.5.3.3 Grade R and Grade 0

Grade R (also known as Grade 0) is a year-long programme where young learners aged 4 turning 5 by 30 June in the year of admission are taught skills, competencies and knowledge in preparation of formal schooling, as required by the South African Schools Act (Act 84 of 1996), Regulation 5(4)(a). It is the final year of informal schooling before learners enter the formal school system in Grade 1, i.e. the final year of pre-school.

## 1.6 Overview of literature

### 1.6.1 Play and learning

The term “play” in an educational setting is normally defined as a fundamental field of experience on which the subjects build their own identity (Farne, 2005:169). Play should consist of pleasurable, unsolicited activities and self-imposed ideas, and should not be curbed by reality or direction (Gestwicki, 2017:34). Gestwicki (2017:34) also cites Monighan-Nourot (2003) and Armstrong (2006) in stating that play is defined as an amalgamation of experience, symbolic meanings and absurdities. Furthermore, play is described as a dynamic process that engages the senses, and is collaborative, creative and imaginative. Play is an open-ended experience originated by young learners that entails role-playing, rough and tumble activity, or the impromptu use of real objects for creative purposes (Gestwicki, 2017:34). When young learners play, they are fully involved in their activity. They seek to solve predicaments and tasks in a very hands-on way. Farne (2005:169) also noted that the nature and culture of play allows young learners to express themselves intensely and that play takes the shape of a didactic device.

Reynolds and Jones (1997:77) state that direct teaching and learning by rote by young learners are not conducive to ensure lasting success at school even if test results are improved temporarily, because these activities do not make provision for an adequate base for the higher-order thinking skills that will be required during later school and adult life. On an international level, Schweinhart and Weikart (1997:118) note that the overuse of direct instruction may contribute to young learners’ short-term academic achievement, but that their long-term social and emotional development may be compromised. Higher-order skills have their foundations in play, through resourcefulness, problem-solving and innovating within the restrictions of reality during the game (Reynolds & Jones, 1997:77).



The originators of pedagogic theory, such as Piaget, Vygotsky and Bruner, all considered the place of play in learning. Gray and Macblain (2015:83) argue that Vygotsky's socio-cultural theory posits that not all learners follow the same sequential pathway when developing, but highlight the important role that adults and more expert peers play in helping young learners learn. Bruner suggests that young learners could be involved in creating their own learning, provided they are properly supported (Gray & Macblain, 2015:140). Vygotsky posits that through cultural tools such as nursery rhymes, stories and folklore, the young learner is a social co-constructor of his or her learning process contributing to their individual cognitive growth (Gray & Macblain, 2015:97; Smidt, 2009:74).

Vygotsky's socio-cultural theory significantly influenced play pedagogy theories by promoting culture and history in early learner programmes (Gray & Macblain, 2015:106-107). Gray and Macblain (2015:206) furthermore posit that play lies at the core of every child's development, as illustrated by Fredrich Froebel, Lev Vygotsky, Jean Piaget and Jerome Bruner. Fleer used Davydov's (2008) works to show how play-based programmes could be utilised as a bond between "play as a leading activity in pre-school and learning as a leading activity in school" (Fleer, 2011:225).

### **1.6.2 Play pedagogy and play**

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 aims to use play (a type of primary energy) and exploit it for educational purposes – play is used as a device to assist the learning process. Pramling-Samuelsan and Carlson (2008:635) promote integrated play and learning in a purpose-driven pre-school, recognising the importance of seeing the young learner as one who plays but also learns. In doing so it takes the young learner's creativity, choices, initiatives and reflections into account. They suggest a pedagogy that does not separate play and learning but promotes creativity through their similarities. "Play-based learning" can be seen as a synonym for play pedagogy.

Weisberg *et al.* (2013:106) define play in terms of the locus of control of the activity, whether child-centred or adult centred. The two most prominent types of play which have influenced current research in education are young learners' free play and teacher-guided play (Weisberg *et al.*, 2013:106-108). Free play is not only a term used to describe the play of the young learner, but also to describe the voluntary and flexible play they engage in. Free play usually involves pretend play and depends heavily on the previous experiences and interests of the young learner (Wallerstedt & Pramling, 2012:5-15). Pramling-Samuelsan and Johansson (2006:49) note that play without the learning experience might be of little or no value. In order to harness play for learning purposes, play needs to be managed within a structure that has an educational

goal, i.e., it should be guided by the teacher. This is supported by Ashiabi (2007:206), who notes that play can facilitate learning by allowing young learners to build on previous experiences, knowledge and interaction with their peers as well as the environment.

Fleer (2010a:14-15) postulates that pedagogical play can be used in early childhood to support learning; this is confirmed by Malaguzzi (1994:52), who suggested the importance of the "image of the young learner". According to both Fleer and Malaguzzi, play should be relatively open-ended and exploratory. Teachers should focus their interaction on ensuring that the learners are actively engaged in shaping and constructing their own future.

In South Africa the fundamental need for play-based learning is recognised by the National Curriculum Framework (Department of Basic Education, 2015:2), which states that play and direct involvement in activities enhance young learners' learning and development in their first 1000 days. Aubrey (2004:633) notes that many reception classes of primary schools have competing pedagogies, whether play-based or more traditional. Recently, Wood (2013:21) suggested an integrated continuum of free and structured play. Wood (2009a:27-38) reminds us of two issues that might make it problematical for teachers to recognise play in young learners: Firstly, there is often not enough clarity about what the pedagogies of play entail and the challenges they pose for teachers of young learners. Secondly, the contexts in which such play activities should take centre stage remain uncertain, namely, whether it should be during the reception year or the first formal year of schooling. My study did not lead me to form an opinion in this regard, although I did note that the play-based approach used in Grade R were not necessarily continued into the rest of the foundation phase and that benefits from the Grade R process most likely would be diminished.

### **1.6.3 Sensory processing and play**

The Star Institute (2018:1-5) and Noddings (2017:39) regard successful learning experiences as coming from our ability to process and make sense of information that is derived from our nine senses. As an extension to this, young learners require sensory experiences and teachers who are willing to put accommodations in place that in most cases differ from the traditional support mechanisms (Hughes, 2014:190).

In terms of exercising our senses, Miller and Almon (2009:35) as well as Veitch, Bagley, Ball and Salmon (2006:383-93) observed that all sensory systems develop through interacting in real world experiences and in a multi-sensory environment. Accordingly, limited exposure to the natural environment will have an adverse effect on the sensory development of the young learner. This implies that a lack of exposure to sensory experiences will affect the learning process; and indeed Ahn, Miller, Milberger and McIntosh (2004:287) state that sensory processing in humans is fundamental to perception, learning and action. Bush (2017:50)

defines sensopathic play as play utilising the tactile sense, which helps young learners to understand the world around them better. Bush (2017:50) further states that sensory play is a concrete method of learning through personal experience. In a quote often misattributed to Albert Einstein, philosopher John Locke noted in 1690 that the only source of knowledge is experience.

Ayres (2005:50–51) also argues that if not all the senses are utilised in play, the child can develop a dysfunction in some or all the sensory systems. These dysfunctions can negatively affect not only development, but also functional abilities in the behavioural, emotional, motor and cognitive domain of the young learner. Van Oers and Duijkers (2013:511-534) also observe that in some ways schools are becoming less sensory friendly, as opportunities for active outdoor play, and consequently the opportunity to practise sensory processing as well, have dramatically decreased. To ameliorate the situation, research by both Ayres (2015:7–8) and Kranowitz (2005:248) proved that sensory processing can be vastly improved when enjoyable and organised opportunities of play are developed and implemented by the teacher.

Ayres (2015:53) further observed that if a healthy relationship exists between play and sensory processing, the frequency and number of adaptive responses increase. If a young learner's sensory processing develops normally, the young learner is able to organise their play better. Through better organised play, it is more likely that they will be successful in their schoolwork and learning in school and other environments (Ayres 2015:53).

On the other side of the coin, when considering learners with sensory processing inabilities, Bundy (2002:339) and Burleigh, McIntosh and Thompson (2002:165) emphasises that the school environment contains physical and social stimuli that at times can cause significant distress to young learners with impaired sensory processing abilities. Burleigh *et al.* (2002:165) and Miller and Summers (2001:247–274) observed that these young learners may already grapple with social problems long before entering school, due to problems originating from sensory processing impairments.

It should always be kept in mind that the intent of the sensory play session is to enable learning – whether directly or by improving the sensory processing of the subject. Fleer (2011:228) also suggests that young learners' experiences of play enable them to engage with the real materials that are presented to them as symbols of ideas that their teachers want them to study. Young learners learn to solve problems instinctively if a series of cross-cultural learning tools, such as treasure baskets, are used to develop pretend play (Gascoyne, 2012:43).

#### **1.6.4 Play pedagogy in South Africa**

Child participation attracts researchers both internationally and nationally. In South Africa, Shaik and Ebrahim's (2015:2) study shows that participation of the young learner is rooted in

the social model. If child participation features strongly in the young learner's classroom, the emphasis should be on constructive rather than instructive tuition. Shaik (2014:21) shows that a constructivist approach makes greater demands on young learners' cognitive, creative and imaginative skills, which in turn leads to higher levels of child participation. Formosinho and Araujo (2011:227) subsequently developed a pedagogy based on participation, which is essentially a democratic approach that acclaims the diversity of young learners and their families. Participation pedagogy focuses on education as a holistic and inclusive practice (Shaik, 2014:23).

Shaik and Ebrahim (2015:97–123) state that the current workforce in South African schools is underqualified and that the worth of relationships and interactions with young learners is a function of the pedagogical context within which they teach. Aronstam and Braund (2015:6) note that as a result of a combination of personal pressures and interpreting the NCF in a limited manner, a feeling of frustration and a shortage of agency on the part of the teachers has taken root. This often affects the learners, as a result of the teachers' role as co-constructors being undermined.

While the international and national relationship between sensory processing and play pedagogy seldom differs, its implementation and integration in different cultures, society and policy systems do. Most of the influences, practices and observations regarding play pedagogy originate internationally and either have been or are still being adapted for implementation in our unique and complex South African context (van Jaarsveld, Mailloux & Raubenheimer, 2014:2). International practices can appear attractive, but we need to think carefully before we assume that the South African system and context would automatically be improved with less familiar ways of education and intervention (Georgeson, Payler & Campbell-Barr, 2013:4).

By investigating learning through play and establishing sensopathic-focussed play pedagogies, we can attempt not only to create awareness, but also develop our own tailor-made strategy for accommodating learners with impaired sensory development (van Jaarsveld *et al.*, 2014:2). Van Jaarsveld *et al.* (2014:5) also note that indigenous practices do not seem to support or assist young learners with impaired sensory systems and have not been the centre of curriculum development thus far. This has left learners with sensory impairment to be either outsourced to professionals outside the school system or attempts to mainstream them without specialist support (Smit, de Jongh & Cook, 2018:45). This excludes many learners whose sensory needs remain unmet, as few parents are able to afford the services of professionals. More than ever, it has become important to develop a South African teaching model which is designed to accommodate and meet the needs of sensory-impaired learners and to enhance their opportunities.

## 1.7 Policy framework

### 1.7.1 International and national policy and statutory framework

As Stach (2017:17-18) notes, the early development of young learners is a global focus in the 21<sup>st</sup> century. The General Assembly of the United Nations adopted Resolution 70/1 on 25 September 2015. The Resolution, entitled “Transforming our World: the 2030 Agenda for Sustainable Development” set a total of seventeen sustainable development goals. Amongst others, the goals of the Resolution are to end poverty, protect the planet and ensure prosperity for all by 2030. The fourth goal is Quality Education, with the aim to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

As De Jager (2009:27) notes, the Bill of Rights contained in the Constitution of South Africa (Act 108 of 1996), states that everyone has the right to receive education. The South African Department of Basic Education (DBE) deals with all schools from Grade R to Grade 12. The published aim of the DBE is to develop, maintain and support a South African school education system for the 21<sup>st</sup> century. The fundamental policy framework of the DBE is the National Early Learning Standards (NELDS) published in 2009 (Department of Basic Education, 2009). This resulted in the National Curriculum Framework for children from birth to four years in 2015 (NCF). The principles of the NELD and NCF are derived from the South African Qualifications Act (Act No. 58 of 1995), which describes the kind of citizen the education and training system should aim to create. Both the process and the content of education emphasise the learning processes, outcomes and assessment standards (De Jager, 2009:27:28).

Early Childhood Education (ECE) in South Africa takes place during the period from birth until the year before a young learner enters formal schooling, defined in the South African Schools Act (Act 84 of 1996) as children aged 4 turning 5 during the school year. This period is universally recognised as a critical period during which young learners need to be safeguarded and sufficiently nurtured. Since young learners’ physical, emotional, cognitive and social skills are extremely important for further development, these skills must be properly developed (Stach, 2017:18).

Strengthening ECE enables governments globally to achieve at least seven of the other Sustainable Developmental Goals on poverty, hunger, health, quality education, gender, water and sanitation as well as inequality. United Nations Secretary-General Ban Ki-moon issued a statement on 22 September 2015 that recognises that achieving the Sustainable Developmental Goals by 2030 is possible if driven by young learner development initiatives across the globe (Rosa, 2017:1). Young learners’ education is recognised as a powerful equalising influence in society, and based on the Resolution, every country in the world has the obligation to bring their youngest citizens, the young learners, to the fore (Stach, 2017:17).

Internationally, it seems that the pedagogical environment has become more adaptable and accommodating as regards all learners' need for sensory learning experiences, and the following policy documents are some examples of the frameworks that have been implemented in various countries to promote the importance of play in the early years:

- The Department of Education, Employment and Workforce Relations 2009 in South Africa
- The Singaporean Curriculum Framework for Kindergartens
- Ministry of Social Affairs and Health 2004: National Curriculum Guidelines on Early Education and Care in Finland
- National Association for the Education of Young Learners (NAEYC) in the United States of America
- Developmentally Appropriate Practice Guidelines (2009) in the United States of America

South Africa adopted a policy of inclusion by the publication of the White Paper 6 (2001) Special Needs Education – Building an Inclusive Educational and Training System. This policy provides a framework for a single, inclusive system of education. However, since 2001 there has been an abundance of documents published to further define the practical implementation and theory of special and inclusive education. The National Strategy of Screening, Identification, Assessment and Support, 2008 (known as SIAS) is the most recent document to be published in this field. This document provides assistance and guidelines for the process of implementing White Paper 6 (2001) and the Resource Schools initiative and serves two key goals to assist teachers with identifying, assessing and supporting their learners. These are –

- to screen and identify learners who are experiencing barriers to learning and development, and
- to establish a support "package" to address these barriers.

It is becoming more important for teachers to not only identify sensory-impaired learners, but also to support and empower them within the classroom. However, criticism of and scepticism from the larger community about the identification and treatment of sensory-impaired learners in the classroom prevails in the South African context, despite the escalating demand for identification, incorporation and guidance of the sensory-impaired learner through the South African school system.

## **1.7.2 Contextual factors influencing sensory processing through play**

As a result of varying cultures and the homogeneity of the school population, several factors influence play (Aaroe & Nelson, 2000:314-324), and therefore the implementation of sensory processing activities should be contextually relevant. In this section I examine these factors.

### **1.7.2.1 Context**

An educational experience in one specific country could be seen as “inappropriate” if it is removed from its local or original context. Contextualisation should always be considered when comparing cross-cultural practices - it can in many cases reveal the underlying epistemological traditions for that certain approach (Oberhuemer, 2005:359-383). According to Hedegaard and Fler (2008:139), adopting a socio-cultural approach will guide understanding the “who” and “how” of studying the international perspectives. Sensory processing is not limited to certain populations, but manifests in all learners to a greater or lesser degree, as described by Ayres (2005:28). Sensory processing therefore needs to be acknowledged within the ECE environment with the study of young learners and their sensory needs implanted within the specific economic, historical, cultural, geographical, economic and political contexts that exist within specific societal norms and values (Oberhuemer, 2005:359-383).

In both established and newly developing countries, models and approaches incorporating play have emerged. Several of these perspectives from around the world are well regarded, such as Reggio Emilia, Te Whāriki, HighScope and Scandinavian approaches, based on guidelines proposed by Brock, Olusoga and Jarvis (2014:71). It also remains important to investigate and be informed of challenges that educators in other less developed countries have had to overcome when studying ECE around the world.

A recent development in South Africa is Play Africa - a children’s museum based at Coronation Hill (Play Africa, 2018:3), which recently launched its new Children’s Voices programme. The main interest in this initiative for my study is that Play Africa has especially created sensory playrooms which are accessible twice a month for young learners with sensory processing needs to play in. The young learners with special needs can come together for special playtimes in this relaxed environment to play. Play Africa creates unique opportunities to strive for mainstreaming and including young learners with disabilities in all their programmes. Through play, Play Africa creates opportunities to inspire creativity, problem-solving, critical thinking and personal expression. This is one of the first significant initiatives in South Africa to recognise the importance of sensory play for all learners, but especially learners with sensory impairments, as sensory play enhances and heightens a child’s holistic skills development.

### **1.7.2.2 Culture**

According to Spradley and McCurdy (1975:5), culture is the understanding that people have acquired that enable them to interpret experience and generate social behaviour. They also claim that cultural understanding is similar to a recipe for the production of behaviour and artefacts, while LeVine (1984:67) notes that culture should be regarded as a communal organisation of ideas that includes moral, intellectual and aesthetic standards that provides context to the meanings of communicative actions.

Pai, Adler and Shadow (2006:225) combine the definitions of culture as the pattern of knowledge, skills, behaviours, attitudes, beliefs and material as well as objects and artefacts produced by human societies as heirlooms and passed from one generation to the next. Gay (1979:324) proposed a culturally pluralistic curriculum which, in a pre-school setting, would entail the exposure of young learners to a global education including the use of books, toys, and play with a diverse set of materials to enable young learners to start realising the difference between people, including their physical appearance.

According to Aaroe and Nelson (2000:314:324), Allen and Porter (2002:128–133) and Chisholm (1994:43–68), the world of teaching is currently like a mosaic, with lively and diverse colours in which a cultural miscellany forms a multicoloured whole called a universal culture. This culture contains an element of uniqueness.

Whitebread and Basilio (2014:7-9) acknowledge the differences between various cultures and subcultures with regard to attitudes towards the play of young learners. These attitudes by and large arise from cultural views of what constitutes adulthood and gender and from relations with the natural world. These beliefs are often linked to the community's economic situation, religion, gender, race and social order and passed transmitted to the young learners through the attitude of their parents and their teachers, who determine how play is supported and encouraged.

Göncü (1998:119) states that recognition of cultural differences assists in understanding the potential impact of play on young learners' development. He further notes that play cannot be adequately dealt with when it is simply conceptualised as universal behaviour for all young learners. The recognition of the cultural foundations is central to comprehending the intricacy of young learners' play (Göncü, 1998:119).

### **1.7.2.3 Diversity**

Globally, teachers are increasingly faced with learners with among others, diverse backgrounds, cultures, socio-economic status or religion (Lin & Bates, 2014:27). Regardless of the nature of the diversity they face, teachers should not only be aware of the diversity, but also be professionally able to deal with it in their classrooms.



Diversity does not only entail race, ethnicity or gender, age and religion; in my study it also includes the sensory-impaired learners, who through their behaviour and conduct, differ from the group within which they function. Ofsted (2004:5) noted that educational inclusion concerns more than a particular group of learners. The scope is broad and is aimed at providing equal opportunities for all learners, whatever their age, gender, ethnicity or background (Ofsted, 2004:5).

Charrington (2016:75) also raises an important point regarding an Afro-centric worldview and holds that patterns of sensory impairment should be addressed differently from an Afro-centred pedagogy. Not only are the learners' backgrounds diverse, but the diversity also prevails in capabilities. The sensory-impaired learner will form part of a group of learners differing as regards culture, socio-economic status and religion (Aaroe & Nelson, 2000: 314-324). Rubie-Davies (2010:121-135) observes that teachers who are aware of and embrace diverse classroom diversity create positive learning communities. Van Hook (2002: 313-324) states that the implementation of a curriculum in a diverse classroom is accompanied by many challenges, which lead to teaching barriers that can prevent integration of the curriculum in the classroom. Gay (2010:25), Hein (2004:5-1), Ladson-Billings (1994:28-29) and Villegas and Lucas (2002:21) conclude that teachers should be grounded in the particular diverse needs of the learners they are teaching.

Sensory-impaired learners pose an added challenge to the teacher in that they must be accommodated in the classroom, as in South Africa there are limited resources available for specialist intervention. Ofsted (2004:5) concludes that educational inclusion is not about any group of learners, but rather about the broad scope and equal opportunities it presents for all learners regardless their diverse educational needs.

As noted by Göncü *et al.* (2007:156), play involves young learners enacting their social and cultural world through a range of experiences. It is also necessary to investigate how play is viewed around the world. According to Gaskins, Haight and Lancy (2007:179–202), in North America and Europe play is mostly seen as the primary preoccupation of young learners while growing up, whereas in other cultures greater significance is attached to young learners helping with family chores. In this case play is relegated to a secondary activity which occurs during work or after work is done. If play is the vehicle for learning cognitive, social and emotional lessons, limiting play opportunities are clearly not desirable, although lessons may also be learned through participating in, or observing, the work of adults, albeit in a more playful fashion or by role playing.

#### 1.7.2.4 South African context

The post-independence era in South Africa (1994) presented South Africa with a unique socio- and economic situation and introduced challenges as well as opportunities. Nsamenang (2008:2-3) notes that from an African perspective, play is seen as a free mixing of multi-age groups, because sibling caretaking is seen not only as part of a social network, but also as part of the culture. Ebrahim (2011:111) further states that play also encourages creativity in an *ubuntu* sense and advances the concept of *umuntungumuntu* (a person is only a person through other people). These African concepts of human solidarity provide opportunities for young learners to act collectively to promote ideas and use articles in a creative way.

A further challenge in South Africa observed by Ebrahim (2011:117) is the schoolification of pre-schools through a push-down curriculum from primary schools. This is a result of the large number of under-qualified teachers, a fragmentary curriculum environment and parent pressure for evidence of school learning to give their young learners a head start. Brooker and Woodhead (2012:36) argue that the ever-increasing pressure for academic achievement at an early stage relegates play to an activity less important than traditional learning.

In this environment it is not uncommon for teachers to limit creative expression to free play sessions in order to reserve time for teaching basic skills. If play is to become the medium to foster creativity in a diverse country like South Africa, going forward must include that adults realise the critical role they have in developing the emerging possibilities of the young learners around them and be sensitive to their needs. Nonetheless, Ebrahim (2011:119) concludes that advocacy for enabling relationships which create safety for exploration in a relaxed atmosphere will help young learners to experiment and share valued activities.

Gielen and Roopnarine (2004:323) observed that play pedagogy is mainly promoted in best-practice curriculums, although the Developmentally Appropriate Practices (DAP) favours a "homogenised" Euro-American approach rather than a diverse South African culture. In the South African context, urban settings as opposed to rural settings are not being considered by either approach, although best-practice curriculums have young learners' best interests at heart and promote learning irrespective of the setting.

Aubrey (2017:3) emphasises the need for an indigenous, community-sensitive perspective in which the young learners' wellbeing is recognised, and that this approach needs to be established in South Africa. The significance of play in young learners' lives is often misunderstood, ignored or denied (Bartlett, Hart, Satterthwale, De la Barra & Missair, 1999:139). Nsamenang and Lamb (1994:133–146) rightfully advocate a traditional African educational system that emphasises learning through the use of a participatory pedagogic approach, where the processes of home and community care is important, and peer culture with direct teaching is also significant.

Aubrey (2017:1) states that Early Childhood Development (ECD) services in South Africa are for the most part accomplished by the private and non-profit sector, through non-government organisations (NGOs), community-based organisations (CBOs), individual day care and pre-school centres and other stakeholders, which would involve parents and other caregivers. ECD services also include home-based ECD programmes and informal nurseries established by NGOs, especially in rural areas. Pre-school teachers in the rural South African environment need to be aware of complexities of young learners' learning, development and the part that of pre-school education plays in balancing disparities.

According to Excell and Linington (2015:6), current policy documents state that 85% of Grade R classrooms must be implemented in public primary schools and the remaining 15% must be realised within community or independent schools. Where Grade R classrooms are located in urban primary schools, these tend to have a more formal approach to teaching than community-based schools in more rural settings. As du Plessis and Mestry (2019:S1) note, physical conditions in schools are frequently inadequate in rural and village communities, and academic achievements are often weaker than those of public primary schools.

According to Gardiner (2008:13) a primary problem is that across all provinces several schools are overcrowded, especially in rural areas. However, the establishment of such private or community-run structures creates a danger that the quality of teaching can be compromised, as there can be a significant difference between structures in terms of access and quality levels. Teachers in these community-based schools might not deem it necessary to spend as much time on formally preparing the Grade R learner for formal teaching but might be merely babysitting young learners and guarding them from potential dangers. It is of extreme importance that community-based services must not only meet the educational needs of the young learner, but also the standard set by the Department of Basic Education (DBE) (Gardiner, 2008:10).

Tshotsho (2013:40) further state that another challenge that needs to be faced is language. Many young learners come from different cultures and contexts, and this increases the challenges. Young learners attending the Grade R classes might speak any one of South Africa's 11 official languages. More challenging are young learners from across the border, which also speak different languages, for example French and Portuguese, and this becomes a barrier to understanding, especially if young learners struggle with the language of learning and teaching (LoLT).

Grade R is the last year of pre-school but is also seen as the first year of the Foundation Phase and therefore follows a set curriculum as prescribed by CAPS. Excell and Linington (2015:8) observe that the gap becomes prominent when attempting to align the requirements of the formal curriculum with the needs of a pre-school learner. De Jager (2009:31) concludes that

the lack of teacher skills has a significant impact on not only identification and screening, but also on the provision of the necessary support to learners who experience barriers to learning. De Jager (2009:31) then concludes that it is becoming more important for learners with diverse needs to attend neighbourhood schools so that they can continue their social development. Schools, on the other hand, should be more empowered to be able to screen and offer support to these learners in their own classroom environments.

Lesufi (2017) notes that in South Africa “[o]ur society is a mosaic of differences in culture, skills, religion, skin, colour ethnicity, thinking, communication styles, language, education levels, talents and goals. That is why we are a rainbow nation.” Hartell and Meier (2009:180) not only emphasise the increasing cultural diversity in educational institutions, but also encourage teachers to create sensitive learning communities that motivate learners with diverse educational needs to learn.

## **1.8 Outline of chapters**

In this section I provide an overview of the study based on the content of each chapter.

### **1.8.1 Chapter One: Overview and rationale**

In chapter one, the overview and the rationale of the study as well as the background and context are presented. It also describes the South African context of schooling in the greater scheme of learning. The primary and secondary questions are stated and the literature referenced in the study is presented. The chapter also describes the frameworks, both international and South African, and the impact of policy, diversity and culture within which play pedagogy should take place. The chapter concludes with the outline of the next chapters of the thesis.

### **1.8.2 Chapter Two: Literature review and conceptual framework**

Chapter two explicates the literature that is relevant to the research questions. The chapter examines the global perspectives influencing sensory processing and sensopathic play pedagogy and the influence they have on the learners’ learning experience. The conceptual framework consists of a historical overview of the grand theories of play, play pedagogy and international best practices influencing sensory processing. The chapter concludes with the developed conceptual framework, which consists of combining sensopathic play pedagogy with the sensory processing theories and the influence of teacher-led sensopathic play pedagogy on the school readiness of the young learner.

### **1.8.3 Chapter Three: Research design and methodology**

In chapter three, qualitative multiple case studies are utilised to generate evidence. I describe the worldview and research paradigm of the study and discuss the methodology of sampling and the selection of participants. The data generation process is described, the methods used, and the measures taken to ensure validity and reliability. I describe the software data generating tool and how it was used. Finally, I discuss the ethical considerations and provide an ethical framework within which the research is conducted.

### **1.8.4 Chapter Four: Data generation process**

I discuss the process of data generation and the tools I used to conduct the inquiry in Chapter Four. I specifically discuss the use of the sensopathic pathway and how it was implemented. I explain how the initial pilot study was used to validate the process and the changes I made to the process. After the completion of the data generation process, I generated a thematic coding structure with statements, categories and codes derived deductively from the research questions and the literature study. I describe the process used, with the statements or themes derived from the research questions and with categories and codes expanded from the statements based on the literature study and conceptual framework. I also present the coding frame I had developed and described the software tool I used for the analysis. I also provide a list of all data sources used and the encoding scheme I used to anonymise the data.

### **1.8.5 Chapter Five: Data presentation and preliminary analysis**

In chapter five I analyse the data using the coding frame and the software system. I analyse each of my sources according to the statements and break the analysis down into categories, codes and at times sub-codes in order to achieve the granularity required. I present the analysis of the semi-structured interview data, the reflective data and the observation data. Chapter five states the results of the analysis, while I provide my interpretation in chapter six.

### **1.8.6 Chapter Six: Data interpretation and conclusion**

The discussion and interpretation of the results and the comparison of the findings with the existing literature are contained in chapter six. I compare supporting and contradicting themes between the literature and the findings and examine the silences in the data and new insights. I discuss each theme based on the analysis performed in chapter five and use this discussion to provide answers to the research questions. I also suggest a set of guidelines for the implementation of sensopathic-focussed play pedagogy methods in the pre-school environment.

## 1.9 Conclusion

In chapter one I described the purpose and the rationale of the study, including the research questions. The concepts used in the study were clarified. I also provided an overview of all chapters to follow in the study. In the next chapter I review the available literature that is used to provide a basis for the study and examine the various theories that apply to the research. I show why sensory processing is important for school readiness and how play and play pedagogy can be used to influence sensory processing.

## **2 Chapter 2: Literature review and conceptual framework**

### **2.1 Introduction**

In this chapter I review the available theories about play, sensory processing and play pedagogy with a special focus on the influence of impaired sensory processing on the young learner's learning experience. I examine the historical background of play and learning by selecting prominent theories of play, play pedagogy and international best practices with a specific focus on their impact on the learners' learning experience. I also investigate how sensopathic play pedagogy can support the development of sensory processing, while I describe how sensory development through various sensopathic teacher-led play pedagogy activities will not only support, but also develop sensory processing by the young learner.

These theoretical overviews were used to construct a conceptual framework.

### **2.2 The importance of play for the development of the young learner**

The study of young learners' play is not a simple task. Garvey (1999), cited in Parham & Fazio (2008:6), notes that in everyday use the meaning of "play" seems clear enough, but its boundaries are fuzzy. Over the years many scholars have attempted to define, set criteria, explain, or relate play to other types of behaviour, but the debate about what it actually is still continues. One reason is the wide range of meanings of the word "play" in the English language.

According to Gronlund and Rendon (2017:11) the definition of play needs to strike the right balance – considering whatever young learners are doing as playful and important is too broad. Viewing play as trivial or a mere distraction from the importance of life is too narrow. One definition of play is: "a recreational and spontaneous activity of young learners." Gronlund and Rendon (2017:10) note that the three important words in this definition are: spontaneous (occurs unrehearsed and impromptu), recreational (doing things and enjoying it) and activity (things are happening).

Many of the current definitions of play emphasises a number of significant conditions. Stuart Brown (Brown, 2009) and Gronlund and Rendon, (2017:11) describe play as "anything that is spontaneously done for its own sake." More specifically, Brown (2009:17-18) says it seems to be without a specific purpose, creates pleasure and delight, and leads the player from one step of mastery to the next. According to Miller and Almon (2009:7) and Lane and Bundy (2012:31), play incorporates activities that are picked without restraint and guided by young learners, and occur out of natural inspiration. Brown (2009:17–18) describes seven properties that make play different from other human interactions:

- Play is seemingly without a purpose (performed for its own sake, not for survival)

- Play is voluntary (not required)
- It has inherent attraction (it is fun)
- It provides freedom from time (when fully engaged we lose our awareness of the passing of time)
- We experience reduced awareness of self (as players we do not think about how we look, whether sensible or silly, we are caught up in the moment)
- It has the ability to stimulate improvisation (we are not confined to inflexible ways of doing something, we see things in a different way)
- It provides a continuation desire (the pleasure of experience makes us want to keep on playing, we want to do it again).

Play is an exceedingly creative activity which utilises both the body and the mind; it is variable and adaptable and as a rule has no specific purpose. It has a positive, often enjoyable impact on the players and requires dedication as well as a deep level of learning (Bateson, 2011:41:47). Most of all, play provides young learners with independence, alternatives and a measure of control over parts of their lives. These are experiences that life in adult-led world rarely affords them. Play is a setting in which young learners' voices are plainly heard.

Holistically, Bodrova and Leong (2006:6–7) regard play as an essential and critical part of all young learners' development. Through different types of play the young learners learn to socialise, to think, to solve problems, to mature, and mainly to have fun. Dell-Clark (2015:375) regards play as a great builder of self-esteem. As a result, young learners are connected through play not only to their environment, but also to the world (Rigby & Huggins, 1997:155–176).

Opportunities should be granted in the classrooms for the young learners to engage in structured and unstructured play (Frost *et al.*, 2008:220). Tanta and Knox (2015:483–493) furthermore stress the importance of the combined efforts of the learning environment and the home environment in supporting the development of play. Parham's (1996:71–80) research values the important vehicle that play provides for learning. As noted above, play should take a high priority in any parent's effort to enhance and promote their young learner's development.

The learner with impaired sensory processing needs to follow another developmental path than the more regulated sensory learner, which should be considered when we observe, analyse and assess their development and behaviour. These learners' sensory needs should be addressed to match and enhance their development through sensory play activities so that these learners can also reap the benefits of development through play.



## 2.3 Overview of sensory processing and play pedagogy

The conceptualisation of sensory processing and its place in pedagogy varies from setting to setting due to the diverse physical and cultural environments in which it is used. This limits the common and consistent implementation of play-based programmes to influence the sensory processing of learners. According to Mardell (2018:10), "playful learning" and "ubuntu" in South Africa appear to have a bidirectional relationship: while ubuntu offers a sense of ownership, within a developing context it provides space for curiosity and enjoyment to develop through playful learning. This creates an opportunity for playful learning to take place in the South African context: not only provisional, but practical. Through observed representational experiences of teachers and learners, he shows how he believes voices have been given to the creation of provisional playful learning experiences in South Africa to become not only a workable, but also a practical reality (Mardell, 2018:10).

### 2.3.1 Playing and learning

If you ask children whether they prefer playing or learning, the answer is usually unanimous: playing. Education, on the other hand, is organised and, on the whole, aimed to promote learning rather than playing. From a societal and parental perspective, schools are traditionally not seen as a place of play, but rather of learning.

Wood (2009b:37) suggests that a young learner's perspective of a pre-school is often associated with play rather than learning. Play is furthermore considered as an activity started by the learners, while learning is regarded as an activity initiated by the teachers (Pramling-Samuelson & Carlsson, 2008:623). Although play and learning are often disconnected in the early learning setting using time and space (that is, playing and learning are different activities at different times using different areas of the school), learners do not necessarily perceive them as separate practices. Wood (2009b:36-37) states that the terms "play" and the "meaning of play" and what play does for players will be conceptualised differently by different researchers based the individual lens through which they view play. They acknowledge that the journey from research to practice is regarded as problematic for a number of reasons. Firstly, as Howard, Broadhead and Wood (2013:154) argue, it remains challenging to separate the benefits of play from the broader variety of learners' activities. Secondly, it is also important to see these benefits against the more extensive and fluid processes that take place within play, due to the exceptional fashion in which play creates spaces for developing expressions of cultures and identities. Thirdly, as Wood and Attfield (2005:7) observed, outcomes of research studies have been construed differently within various policies and environments, which makes the association between play and learning and between play and pedagogy difficult to determine.

Reynolds and Jones (1997:77) wrote:

“Direct teaching and rote learning in early childhood fail to ensure lasting school success, even when they produce temporary test results, because they provide an inadequate base for the higher order thinking skills that are needed in later schooling and adult life. These skills have their foundations in play: initiative-taking, problem-solving and innovating within the constraints of reality.”

That said, teachers typically see play and learning as two different activities and often use a mixture of play and learning as distinct activities rather than an integrated pedagogical approach that combines play and learning as a coordinated whole. The difference between the two approaches is that in mixed approaches, the teacher-directed events are pivotal during planning, assessment and feedback, while learner-initiated activities typically feature only as a supplemental part of the methodology, whereas in integrated approaches teachers are co-constructors of the learning process and apply different pedagogical approaches and strategies to achieve different educational goals. The integrated approach is aimed at merging the benefits of teacher-led and learner-initiated play (Wood 2013:20) in a consistent process.

The importance of a consistent approach is underlined by Gray and Macblain (2015:83), who suggest that according to Piaget all young learners follow the same developmental pathway. This is opposed to Vygotsky’s socio-cultural theory, which argues that not all learners follow the same sequential pathway when developing but highlights the important role that adults and more expert peers play in helping young learners learn. Language was one of the major tools adopted and used in Vygotsky’s instruction (Halpenny & Pettersen, 2013:20). Bruner, unlike Piaget, suggests that young learners could be involved in creating their own learning, provided they are properly supported (Gray & Macblain, 2015:140). Vygotsky posits that through cultural tools such as nursery rhymes, stories and folklore the young learner is a social co-constructor of his learning process and contributes to his individual cognitive growth (Gray & Macblain, 2015:97; Smidt, 2009:74).

Vygotsky’s socio-cultural theory was not only embraced by a number of best practice educational philosophies, for instance the Waldorf Steiner and Reggio Emilia philosophy of teaching, but also had a significant influence on the shaping of play pedagogy theories of promoting culture and history in early learner programmes (Gray & Macblain, 2015:106-107). They furthermore posit that play lies at the core of every child’s development, as illustrated by Fredrich Froebel, Lev Vygotsky, Jean Piaget and Jerome Bruner (Gray & Macblain, 2015:206). A good theory of play pedagogy should underpin the rationale of learning through play in educational settings (Johnston & Nahmad-Williams, 2009:271). Fler used Davydov’s (2008) works to show how play-based programmes could be used as a bond between “play as a leading activity in pre-school and learning as a leading activity in school” (Fler, 2011:225).

Fleer (1999:74), Göncü, *et al.* (2007:175) and Sfard and Prusak (2005:15) state that culture frames the young learners' way of learning and has a powerful influence on the formation of identities within that culture. Identities are continuously invented and reinvented through interactions between persons. Sutton-Smith (1997:80) agrees that young learners' play is often constrained by adults (at home as well as in educational settings) in conformity with, *inter alia*, social and cultural norms. Play might be regarded as trivial or frivolous within a specific culture, or associated with the "dark side", which includes bullying and social aggression (Wood, 2009a:111–120). Ryan (2005:112) and Rogers & Evans (2008, cited in Rogers, 2011:15) additionally observed that not all play is fun, free or within the child's control, even if it is conducted in the presence of adults. They furthermore state that not all young learners know how to play if they have not been acculturated into "Western" types of play experiences.

Fleer (2011:228) also suggests that young learners' experiences of play enable them to engage with the real materials that are presented to them as symbols of ideas that their teachers want them to study. Young learners learn to solve problems instinctively if a series of cross-cultural learning tools such as treasure baskets is used to develop pretend play (Gascoyne, 2012:43). With play occupying an important position in the learning process, Bennett, Wood and Rogers (1997:126) suggest two approaches for play to retain its principal place within ECE pedagogy:

- A strong commitment to play derived from a Piagetian, constructivist orientation which emphasises the young learner actively constructing knowledge from interactions with not only the environment, but also with resources and peers. In practice this entails that the teacher adopts a reactive role in play and waits for the young learners to initiate experiences.
- Bennett *et al.* (1997:126) support a play pedagogy that incorporates socio-cultural perspectives in the model of teaching and learning. This model of teaching and learning incorporates a more complex and pro-active role for teachers in play and attaches greater significance to teacher-directed interactions than constructivist models (Wood, 2007:37).

According to Aubrey (2004:6356), many reception classes of primary schools have competing approaches with varying facilities, methodologies, assessment standards and pedagogies. Recently, Wood (2013:21) suggested an integrated continuum of free and structured play. Wood (2009a:27-38) reminds us of two issues that might be a challenge for teachers to recognise play in young learners: firstly, there is often not enough clarity about what the pedagogies of play entail and the challenges they pose for young learners' teachers; secondly, some uncertainty remains about the contexts in which such play activities should take centre stage, namely, whether it should be during the reception year or the first formal year of schooling.

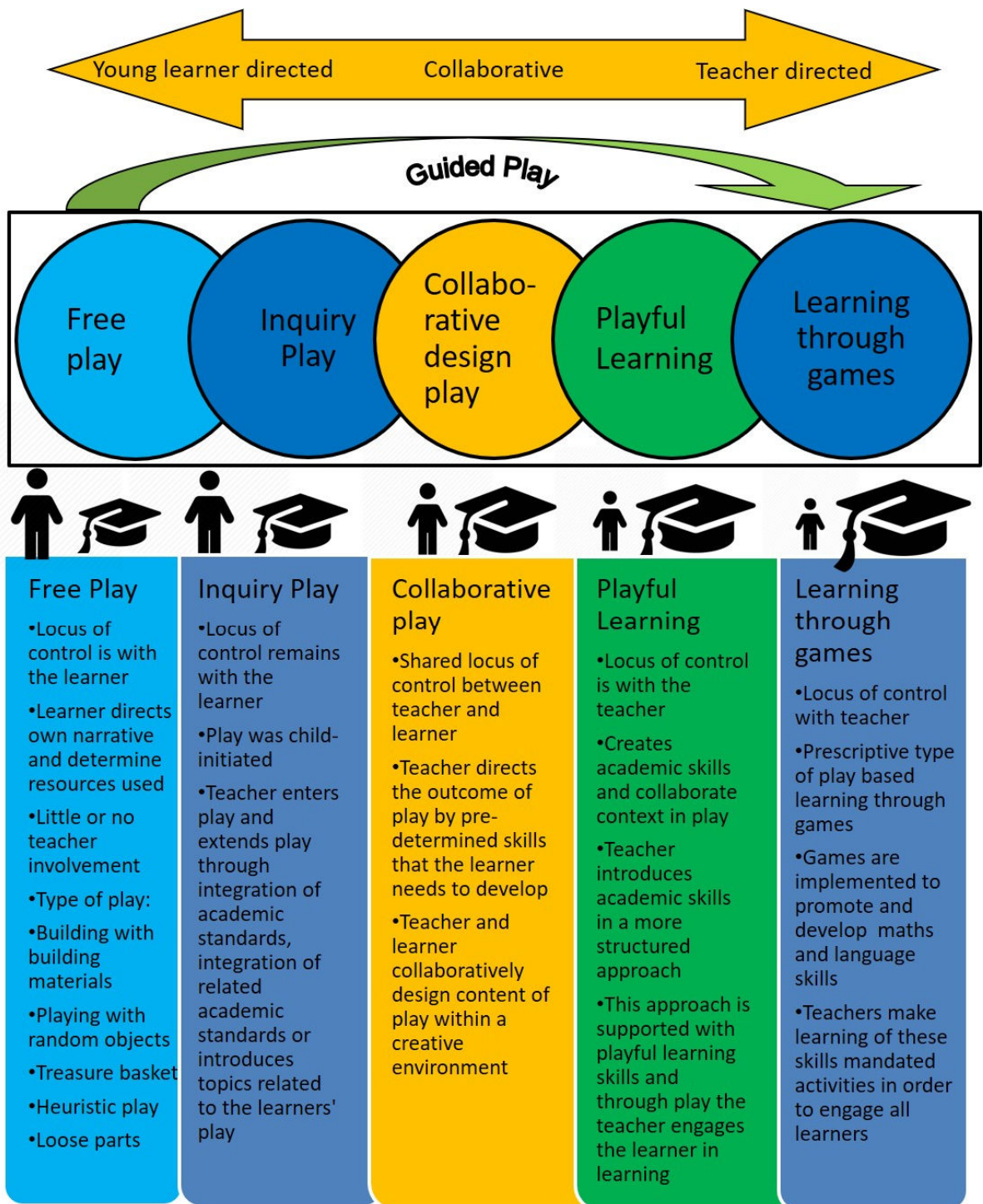
### 2.3.2 Play pedagogy

Stewart and Pugh (2007:9) define pedagogy as the knowledge of the way in which children learn and advance, and they suggest methodologies that can be used to augment the process. These practices are entrenched in standards and principles about what we want for young learners and reinforced by understanding, theory and experience. Pramling-Samuelson and Carlson (2008:635) promote the integration of play and learning in a goal-driven kindergarten or pre-school, recognising the importance of seeing the young learner as one who plays, but also learns. This takes the young learner's creativity, choices, initiatives and reflections into account. They suggest a pedagogy of the future that does not divide play and learning, but rather utilises their underlying similarities to encourage imagination in generations to come.

Figure 2-1 illustrates the progression from free play to adult- or teacher-guided play as well as the characteristics of each. Weisberg *et al.* (2013:106-108) define play based on the locus or turning point of control of an event or activity, and posit that a change in the locus of control determines the type of play, as Figure 2-1 illustrates. The figure shows how a child-centred locus of control is characteristic of free play, but also how changes in the locus of control in a play activity change the nature of the activity. This change occurs in the learning outcomes as the activity progresses from a learner-centred to a teacher-centred locus of control, as well as the learning process that is associated with each type of play.

The two most prominent forms of play are young learners' free play and adult-guided play (Weisberg *et al.*, 2013:106). These two forms of play have mostly been the emphasis of present research in education. Free play is a term used not only to describe the play of the young learner, but also the voluntary and flexible play they engage in. Free play usually involves pretend play and depends heavily on the previous experiences and interests of the young learner (Wallerstedt & Pramling, 2012:5-15).

According to Weisberg *et al.* (2013:104), the locus of control in free play lies with the young learner. The learning experience is owned by the young learner, and they are responsible for establishing their own learning framed by the contexts of their play; the teacher only enhances the learning experience by being a co-player or demonstrating novel methods to interact with the material available (Fischer, Hirsch-Pasek, Newcombe & Golinkoff (2013:1872–1877).



**Figure 2-1 Free play to adult-guided play (developed from Weisberg *et al.*, 2013:106-108)**

Pramling-Samuels and Johansson (2006:49) observed that when play is considered separate from the learning experience, it might be of little or no value; this is supported by Ashiabi (2007:206), who confirms the research showing that play can assist learning by letting young learners to build onto previous experiences and understanding, and by interacting with

their peers as well as the environment. Interestingly, in free play, young learners focused more on the sensory resources that were available to play with: wooden blocks, goop, clay, sand water and Lego. This leads one to believe that although a structured curriculum rich in cognitive stimulation is needed and leads to school readiness, free play focussing on the young learner's exploration allows the learner to be creative. Both these skills are needed to equip and prepare a young learner to conform to the rigorous academic standards of any pre-school (Gascoyne, 2012:56–57).

Malaguzzi (1994:52) suggested the importance of the "image of the young learner", which aligns with Fleer's (2010a:14-15) argument that pedagogical play be utilised in early childhood settings to reinforce learning. According to them, play should be relatively open-ended and exploratory to the extent where focussed interaction between the adult and the young learner should make sure that learners are actively involved in shaping and constructing their own future.

### **2.3.3 Sensory processing and play**

According to both Moyles (2015:15–19) and Schaaf and Mailloux (2015:5), impaired sensory processing is a condition that is not fully understood, despite being highly prevalent amongst learners who are unable to process sensory stimuli efficiently. All successful learning experiences come from our ability to process and make sense of information that is derived from our nine senses (as described in section 1.5.2.1) (Star Institute, 2018:1-5; Noddings, 2017:39). Young learners require sensory experiences and teachers who are willing to put accommodations in place that differ in most cases from the traditional support mechanisms (Hughes, 2014:190). Miller and Almon (2009:35) and Veitch, Bagley, Ball and Salmon (2006:384) observed that all the sensory systems develop through interacting in real world experiences and in a multi-sensory environment. As a result, limited exposure to the natural environment will have an unfavourable impact on the sensory development of the young learner.

Miller and Almon (2009:42-45) report that more people are aware of sensory processing and its importance in the early teaching years than previously. Van Oers and Duijkers (2013:511-534) further observe that in some ways schools are becoming less sensory responsive, as occasions for outdoor and energetic play have been radically reduced. According to Weisberg *et al.* (2013:39-45), Bergen (2002:1-12) and Miller and Almon (2009:42-45), young learners have become the passive recipients of knowledge. This has resulted in decreasing the amount of time young learners spend on play (Bergen, 2002: 1-12; Miller & Almon, 2009:42-45). Schools are under significant pressure from parents and educational systems to prepare the

young learner for formal academic schooling, thus leaving the young learner with less time to experience the world through a variety of senses.

Research by both Ayres (2015:7-8) and Kranowitz (2005:248) proved that sensory processing can be vastly improved when enjoyable and organised playing opportunities are developed and implemented by the teacher. Ayres (2015:53) observed that if a healthy relationship exists between play and sensory processing, the frequency and number of adaptive responses increase. If a young learner's sensory processing develops normally, the young learner is able to organise their play better. Through better organised play, they are more likely to be effective in their schoolwork and learning, whether in the school or in other environments (Ayres 2015:53).

Of significant importance to my study are the statements by Ahn, Miller, Milberger and McIntosh (2004:287) and Kandel, Schwartz and Jessel (2000:393-396) that sensory processing in humans is foundational to learning, perception and action. Ayres (2005:50–51) postulated that if all the senses fail to be used in play, the child can develop a dysfunction in some or all of the sensory systems. These dysfunctions can negatively affect not only development, but also functional abilities in the behavioural, emotional, motor, and cognitive domain of the young learner.

Bundy (2002:339) and Burleigh, McIntosh and Thompson (2002:165) emphasised that the typical school environment holds physical, mental and social provocations that frequently cause considerable distress to young learners with impaired sensory processing. Burleigh *et al.* (2002:165) and Miller and Summers (2001:247–274) observed that these young learners may have problems with social questions long before entering school due to difficulties resulting from sensory processing impairments. These impairments become more obvious after the young learner enters a pre-school or kindergarten environment. Kinnealey, Oliver and Wilbarger (1995:444–451) showed that problems resulting from sensory processing impairments may continue into later life, with associated social and emotional hurdles.

It must be emphasised that this study only considers sensopathic aspects of sensory processing, i.e. visual and tactile senses, and not the other senses.

## **2.4 Theories on Early Childhood Development and Early Childhood Education**

Theories reflect the time and context in which they emerge. They arise from asking questions and observing patterns of behaviour. They further guide us in making policies and assist us in making decisions. When we are interpreting theories and concepts we need to take into account the influence on the quality and care provided to young learners in the early years (Conkbayir & Pascal, 2016:3). Fleeer (2013:100–108) states that theories not only shape our views, but they also provide guidance and structure for our work.

Johnston and Nahmad-Williams (2009:20) and Excell and Linington (2015:191–192) state that Froebel made the biggest contribution towards the development of young learners. Froebel is regarded as the “Father of Kindergarten” (1787-1852). He regarded play as the highest form of human development. Vygotsky (1896-1934), a socio-culturist, viewed play as the key factor in learning, but also saw play as generating an area of potential development within which young learners operate at their highest level of functioning.

Bruce (2004:141) described Piaget’s play as involving the senses and movement, as well as developing the imagination and ruling our behaviour. According to Branscombe, Castle, Dorsey, Surbeck and Taylor (2014:144), Bruner, a cognitive theorist, showed that young learners who had interacted with materials during free play had superior problem-solving abilities than young learners who had not played with any materials. This concept of young learners learning through play has not only been broadened, but has also been examined and explored by teachers and adapted to how teachers teach through play.

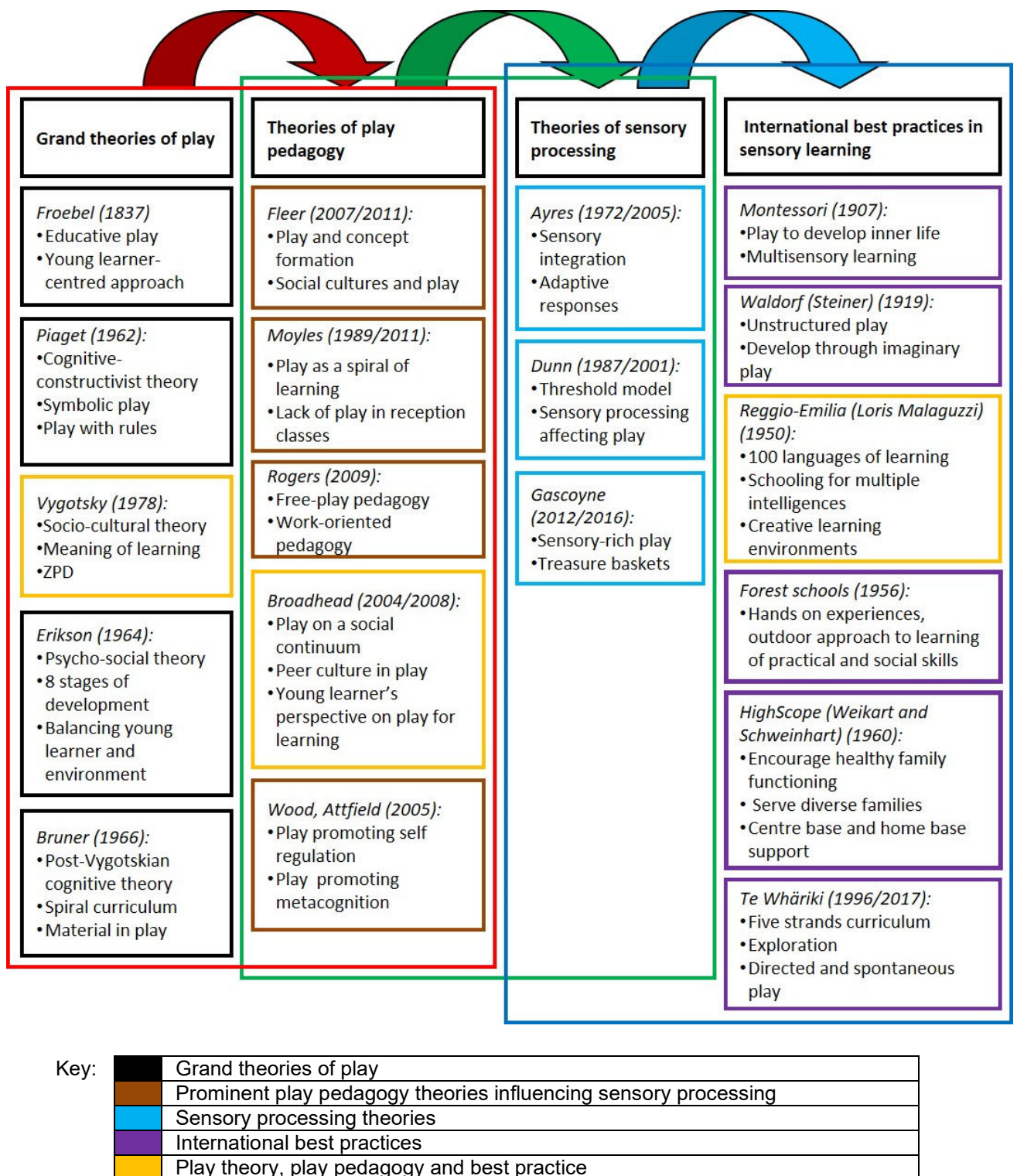
Piaget’s social constructivist theory and Vygotsky’s culturist theory have shaped and influenced how play is perceived today. Their influences are prominent in every aspect of young development practice. ECE and the practice and influences on learning remain an evolving and interactive area of study, and every new area of development draws on some aspect of the great theorists’ influences and theories. These theories have had a significant impact on play pedagogists such as Fleer, Moyles, Broadhead and others.

At a sensory processing level, Ayres and Dunn have provided a solid theoretical base for sensory integration or processing by expanding on the interaction between senses, providing an integrated information set that underpins the young learner’s learning and adaptive behaviours. In the sensory processing frame of reference, the outcome of sensory integration or processing leads to successful participation in daily activities, with a key consideration that learners are able to make adaptive responses to constant variations of sensory stimuli from the environment. Gascoyne has also provided valuable theoretical grounding for sensory-rich play.

The following sections describe the most prominent grand theories of play and the considerable influence they have had on establishing prominent play pedagogy theories. This will be followed by a discussion of the influence play pedagogy had on six international best practices in ECE. I will conclude my discussion of these models by demonstrating how prominent sensory processing theories evolved, and I present a conceptual framework and discuss the best practices developed.

Figure 2-2 illustrates the relationships between these theorists and the modern methodologies and the progression between the theories used in this study. While this is not a chronological progression, it illustrates a logical flow of ideas across theoretical boundaries.

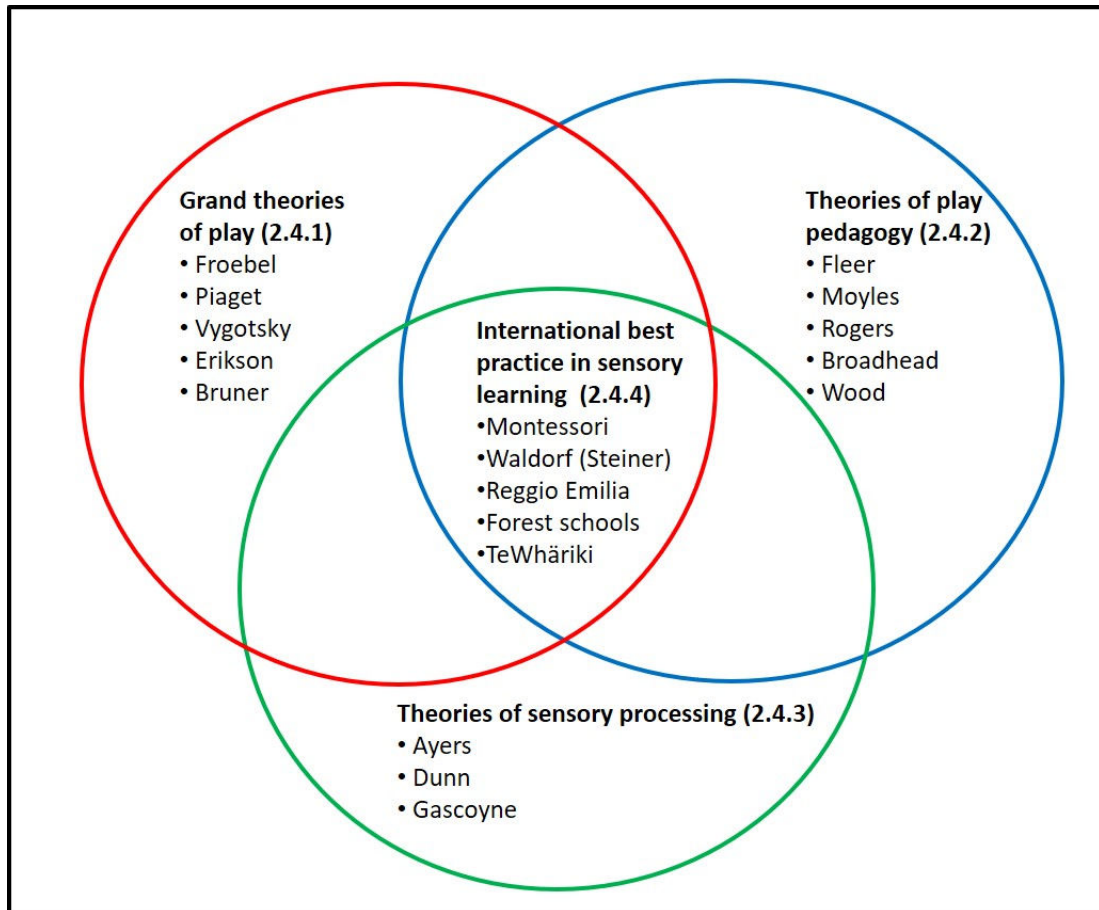




**Figure 2-2 Theories of play, play pedagogy and sensory processing**

The boundary colours are used indicate the influences between theorists as a logical flow basis.

This study focuses on how sensopathic-focussed teacher-led sensory play pedagogy influences young learners' sensory processing. As shown in the background (see section 2.2), the conceptual framework that applies to this study is the confluence of play, play pedagogy and sensory processing, as shown in Figure 2-3 below.



**Figure 2-3 Confluence of theories**

The diagram shows how the classic or grand theories of play, play pedagogic theories and sensory processing theories feed into sensory learning, best exemplified by a number of school concepts. The various theories and their influence on sensory processing and sensory learning as applied in international schools are examined in subsequent sections.

## 2.4.1 Grand theories of play

### 2.4.1.1 Friedrich Froebel

Friedrich Froebel not only introduced the concept of play in school, but his philosophy of education continues to influence early years teaching practice even today (Conkbayir & Pascal, 2016:21; Mooney, 2013:53-55). Froebel, much like Piaget, believed that young learners'

learning was intrinsically motivated by their imagination and creativity (Conkbayir & Pascal, 2016:24–25; Brock *et al.* (2014:17–24). Gascoyne (2016:6) states that Fredrich Froebel emphasised and acknowledged sensory play and learning through the senses as a tool for learning. Gray and Macblain (2015:34-35) and Conkbayir and Pascal (2016:27) noted that Froebel viewed the natural world and the use of natural materials as an important element to support play in the natural world. Senses were developed and stimulated at the same time as learning occurred when using natural materials.

Conkbayir and Pascal (2016:27) affirm that Lev Vygotsky held ideas similar to those of Froebel, as both not only encouraged symbolic and imaginative play, but also regarded this form of play as an indicator of the level of young learners' development and growth. Follari (2015:37) and Gray and Macblain (2015:82) likewise argue that Froebel advocated play-based learning in a natural environment where young learners would actively engage with natural materials, developing skills needed for early learning.

Froebel emphasised the benefits of indoor as well as outdoor play and incorporating natural objects in play materials, which then also contribute to enhancing the sensory development of the young learner (Gray & Macblain, 2015:34). Pestalozzi also promoted natural environments in the early and developmental years and was greatly influenced by Froebel's ideas. He specifically based some of his ideas around Froebel's outdoor and free play as learning environments.

Some concepts, such as Forest Schools and treasure baskets, are an interpretation of Froebel's ideas (Gray & Macblain, 2015:3). Bruce (2004:56–67) states that Froebel's influence will remain everlasting in early learning practices, especially for his contribution to the sensory play, play-based learning and early learning environments.

#### **2.4.1.2 Jean Piaget**

Piaget was arguably one of the most noteworthy theorists in child development (Johnston & Nahmad-Williams, 2009:27). One principle underpinning his theory was constructivism (Halpenny & Pettersen, 2013:1). Athey (1990:33) states that constructivists are child-centred teachers interested in how the child processes and constructs their knowledge. Halpenny and Pettersen (2013:2) describe this process as dynamic, generating continuous thoughts, changes and movement. Miller (2002:73) states that Piaget insisted that teachers should mainly provide "guidance and resources" so that young learners, as "little scientists", can teach themselves. Rousseau, Pestalozzi and Froebel emphasised the child's activity, reinforcing one of the key principles underpinning Piaget's work (Halpenny & Pettersen, 2013:150).

Piaget identified four major stages of cognitive development. The first stage is sensory motor play (between 0-2 years) and describes the importance of infants exploring and investigating

the concrete world and learning through their senses (Conkbayir & Pascal, 2016:67; Fler, 2013:109; Halpenny & Pettersen, 2013:37). Babies need to explore and manipulate objects during this stage (Gopnik, Meltzoff & Kuhl, 2000:50). According to Gascoyne (2016:7), this Piagetian view has clear parallels with sensory play and in particular with “treasure baskets”, which are a selection of “treasures” picked for their unusual qualities and perfect for exploration. Piaget (1962, cited in Santrock, 2016:162-163) suggested that processing of sensory information starts when stimuli such as sounds and colours are received (or ignored). Many stimuli are experienced, but only a certain number can be processed (Conkbayir & Pascal, 2016:66).

### **2.4.1.3 Lev Vygotsky**

Gray and Macblain (2015:98) and Flewitt, Cremin and Mardell (2016) state that Vygotsky’s socio-cultural theory of the cognitive development of the child was decades ahead of its time. Smidt (2009:7) identifies two themes underpinning Vygotsky’s work, namely context and culture. Casaro (1992), cited in Johnston & Nahmad-Williams (2009:28), claims Vygotsky firmly believed that to be able to comprehend the nature of a young learner’s development, it could not be separated from the social context: young learners’ cognitive development was not an isolated process, but took place within a matrix of interaction with their peers (Gray & Macblain, 2015:93; Gordon-Biddle, Nevarez, Roundtree-Henderson & Valero-Kerrick, 2014:42).

In his analysis of young learners’ play, Vygotsky emphasised the development of symbolic and imaginative play in the young learners’ cognitive development and development of self-regulation (Bodrova & Leong, 1996:81; Gray & Macblain, 2015:103). He recognised play as a leading cause of development of higher mental functions. Playful activities allow young learners to go beyond the level of skills previously achieved through the interaction with a more experienced peer or adult and with culturally specific peers (Bodrova & Leong, 1996:83; Fler, 2013:114; Gray & Macblain, 2015:98).

Vygotsky developed the concept of the Zone of Proximal Development (ZPD) in the various levels of cognitive development and potential development achieved through interaction with adults (Gray & Macblain, 2015:103; Gordon-Biddle *et al.*, 2014:42; Johnston & Nahmad-Williams, 2009:28). In play, a young learner always performs beyond his effective age, above his day-to-day conduct (Olusoga, 2014:43). The ZPD creates a perfect opportunity for assisting young play to develop into mature play and learning (Gray & Macblain, 2015:100; Johnston & Nahmad-Williams, 2009:28).

Gray and Macblain (2015:98) state that Vygotsky’s theory did not advocate a fixed approach to development, but that Vygotsky believed development was progressive and tended to follow an incremental pathway. Smidt (2009:94) and Gray and Macblain (2015:98) agree that

Vygotsky was more flexible in recognising that a young learner may move backwards or forwards between stages of development as their thoughts mature.

#### **2.4.1.4 Erik Erikson**

Erik Erikson, a psychosocial theorist (Gordon-Biddle *et al.*, 2014:103; Jackman *et al.*, 2015:5–6), based his theory on development that occurs within the system caused by an imbalance between internal psychological factors and external social factors (Gordon-Biddle *et al.*, 2014:103; Van Heerden, 2011:31). Erikson postulated that human development progresses as a sequence of eight stages through which each person passes, with each stage growing from the previous one, and that each stage has a “positive” pole, such as trust, and a “negative” pole, such as mistrust (Santrock, 2016:19).

Erikson’s view of sensory development is important for this study. This development occurs in his first stage of human development, which he describes as the development stage of “Trust vs. Mistrust” (Gordon-Biddle *et al.*, 2014:103). Erikson argued that if too much trust is developed during infancy, it can lead to sensory maladjustment. Against this, too little trust can lead to withdrawal from a stimulus. If the correct proportions of trust and mistrust are developed, better sensory adjustment should result (Santrock, 2016:20).

#### **2.4.1.5 Jerome Bruner**

In the 1960s, Bruner contributed significantly to the change in the area of cognitive development of the child (Brock *et al.*, 2014:136); Conkbayir & Pascal, 2016:88). His work was greatly influenced by Vygotsky and Piaget. Johnston & Nahmad-Williams (2009:33) also mention that Bruner, like Vygotsky, placed a high value on the importance of language development in cognition.

Bruner (1960, cited in Johnston & Nahmad-Williams, 2009:117–118) built on Vygotsky’s idea of the ZPD, postulating that in the ZPD the learner is participating in more advanced mental processes even before they have achieved mastery over them. Bruner used the term “scaffolding” to describe the way in which the adult (or experienced peer) shapes the learning process through interaction with the learner, building on top of previous experiences (Johnston & Nahmad-Williams, 2009:117–118). Adults can mediate learners’ play to allow scaffolded learning and development through co-construction and sustained shared thinking (Bodrova & Leong, 1996:143; Olusoga, 2014:45).

Bruner’s theory advocates the young learners’ cognitive development through experience and interaction, which makes young learners co-constructors and supports their learning and cognitive development through engaging in problem-solving (Johnston & Nahmad-Williams, 2009:33). His theory also posits that young learners’ learning is preceded by three types of

knowledge: enactive, iconic and symbolic representation (Brock *et al.*, 2014:136; Gordon-Biddle *et al.*, 2014:50; Smidt, 2011:22). Bruner advocated a spiral curriculum that enables the child to revisit the same cognitive schema continuously, but in an upward spiral, as a means of helping young learners to develop and explore material to gain a deeper understanding of the material (Smidt, 2011:86; Gordon-Biddle *et al.*, 2014:50).

Bruner believed that play experiences provide the child with opportunities not only to explore and engage in their world as preparation for a realistic social life in today's society, but also regarded play as beneficial for cognitive development (MacNaughton, 2003:43). Bruner's ideas about supporting the development of young learners' individual competencies have influenced teachers to support the learning environment that fosters a collaborative exploration and problem-solving skills (Gardner, 2001:92).

## **2.4.2 Theories of play pedagogy**

The following discussion examines six prominent play pedagogy theorists who influenced play-based pedagogy in early childhood curriculums, placing special focus on sensory elements in the play environments. The theorists discussed in this section provide the basis for my analysis.

### **2.4.2.1 Marilyn Flear**

The conceptual play theory developed by Marilyn Flear in 2010 focuses on the interrelationship between play and the child's learning and development (Flear, 2013:22). The purpose of conceptual play is to support conceptual formation development and is likely to help kindergarten teachers to handle the academic component of the kindergarten curriculum effectively (Flear, 2011:58).

Flear divided the development of play into three main views: a developmental view, a critical or poststructuralist view and a cultural-historical view (Flear, 2010b:245–263). Flear (2011:225) postulated that most of the scholars conceptualise and interpret play from a biological and maturational developmental point of view rather than a cultural-historical one. The biological interpretation views play as intrinsic, with the stages of progression influenced mainly by the age of the child, unlike the cultural-historical view, in which the progression of play is determined by the mediating role of adults and the social interaction of the child. The complexity of the activity the child produces is indicative of the child's growth and maturation. This places a high value on the child's development and focuses mainly on the interaction between the child's experiences in their social and their cultural environment (Agbagbla, 2018:58).

Flear's theory is underpinned by Vygotsky's original literature on play and his theory of imagination to demonstrate how play-based programmes could help young learners build their conceptual thinking. Imagination is traditionally seen as an activity removed from reality and is

also perceived to be contained inside an individual, as an individual construct (Vygotsky, 1980:16).

Fleer (2011:58) explains that higher forms of consciousness emerge when play becomes complex. Then the focus – which was initially on the imaginary situation – shifts to the rules. The inversion of rules in imaginary situations makes it possible for young learners to spend more time outside the imaginary game, paying attention to the rules that guide the play, rather than inside of the play (Agbagbla, 2018:61; Howard *et al.*, 2013:33).

#### **2.4.2.2 Janet Moyles**

Moyles (2015:14) suggested that everything is possible in play. During play, imagination is not disregarded and free flow does not take precedence above thinking. Moyles (2015:16–17) also stated that play is flexible and frequently not subject to externally imposed objectives. Play not only offers the young learner freedom and choice, but also command over some parts of their lives - experiences which they are seldom offered in a world inevitably led by adults. Play provides a framework within which young learners' voices really becomes distinct (Moyles, 2013:2).

According to Moyles (2015:17) play is nature's way of enabling the development of a range of concepts, skills, and knowledge of the world and other people. Moyles (2015:17) further posits that play equates well with learning, as learning can be scaffolded and meta-cognition enabled through the young learner's ability to learn and understand through his own play. When a concept is understood, play allows young learners the opportunity to rehearse, practice, revise, replay and re-learn (Moyles, 2015:17).

A practical aspect Moyles (2015:21) suggests is that teachers need to see *themselves* as “playful” in managing the young learners' play experiences, but have to be pedagogues at the same time. To address this problem, Moyles introduced the play spiral theory (Moyles, 2015:14), similar to the conceptual framework of Jerome Bruner. Moyles based her theory on the premise that young learners be allowed to play freely and to then slowly move them into more structured play. The play spiral starts with free play (also known as child-initiated play), which allows the young learners to discover new ideas and fashion their own reality through play. As soon as young learners show that they are prepared to play with more structure, the teacher guides their explorations to more structured activities using thorough observation of their free play (also known as teacher-led activities) (Moyles, 2015:21).

The teacher's style therefore respects the contributions of the young learners, but at the same time allows for the young learners to take ownership of the activities, thus making play pedagogies imaginative and innovative, both in a teaching and learning sense (Moyles, 2015:19).

### **2.4.2.3 Sue Rogers**

Rogers (2011:5) argues that “play” in the traditional sense is perceived as the opposite of play in a learning environment. She argues (2011:6) that play has progressively become a device for future learning and for gaining academic proficiencies. These two diverse imperatives need to be addressed in the classroom in a balanced way, else the dynamics are skewed and the outcomes unfavourable. Rogers’ theory is underpinned by Vygotsky’ socio-cultural theory.

Rogers subsequently (2011:43) describes play and pedagogy in the early years as not just a matter of what young learners learn, but how they learn. She emphasises the significance of the interrelation between teachers and young learners as valuable and important for effective learning to occur (2011:44–45).

Rogers’ view of play suggests that each player is intrinsically motivated to learn and that reactive adults should respond to young learners’ interests and actions. This implies that teachers’ perception and provision of play should vary considerably across contexts and sites and could also be described as a continuum, ranging from indirect preparation for play to direct participation in play (Pyle & Danniels, 2017:276). These differences reflect those which Wood (2009a:22) already described, which span from young learners having unrestricted choice of play resources, activities and partners to teachers selecting materials, activities and partners.

Anecdotal evidence suggests that the purpose of the reception year has shifted. Previously, this year was seen as a transition period towards programmes with specific academic outcomes; now the first year of school classes are adopting a more formal “primary school” pedagogy rather than the pedagogy of play which was previously associated with prior-to-school settings (Rogers & Evans, 2007:154; Walsh, Sproule, McGuinness, Trew, Rafferty & Sheehy, 2006:202). Teachers have many activities available, but little free choice because the activities are programmed strictly according to the curriculum and every young learner is required to be prepared for school (Rogers, 2011:37).

Rogers (2011:37) proposed a play-based continuum where play activities move between unstructured and highly structured play activities as outliers, with child-initiated and focussed learning activities as the path between them. This is similar to Figure 2-1. Rogers’ (2011:37) concerns about play in the reception class or formal class is a debate that has not fully been resolved even in today’s ECE circles. The end goal should inevitably be enhancing the development of the young learner to higher-order thinking skills and meta-cognitive skills.

### **2.4.2.4 Pat Broadhead**

Broadhead conducted extensive research about learning and teaching and the complex relationship between them to understand playful learning. Broadhead’s research focuses on open-ended play and its links with the growth of sociability and cooperation (Broadhead,



2004:79-81). Broadhead has become an expert in researching young learners playing together with the resources and materials available to them (Broadhead & Burt, 2012:7).

Her research has confirmed the benefits of open-ended play on the growth, development, enhanced sociability and cooperation skills in the young learners that were observed (Broadhead, 2010:44). Her careful observation of young learners has made it possible for her to deduce that young learners not only have the innate ability to become experts at playing together, but also to engage creatively with the materials and resources available to them. Broadhead's research furthermore includes a study of how play becomes more cooperative and intellectually challenging if young learners are confronted with open-ended play materials instead of traditional play materials. Young learners found the open-ended play materials more flexible and intellectually stimulating and allowed them to create their own themes around the materials offered (Howard *et al.*, 2013:44).

Play activities can seem quite disorganised and chaotic to the onlooker, and Broadhead developed the Social Play Continuum (SPC) to show the level of order the play contains (Broadhead, 2006:193-194). Broadhead noted that the SPC requires the observer to record specified, observed characteristics of play. The SPC made it possible to observe that increased levels of cooperative play, problem setting and solving and joint goal setting were achieved and that the young learners were involved in a wide range of highly engaging play (Broadhead, 2006:194-195).

Broadhead and Burt (2012:21) observed many benefits of playful learning and pedagogies in learning experiences. They agree that through careful observation, teachers could manipulate the delicate balance between teacher-led group work and play and free flow or child-initiated activities. Broadhead and Burt (2012:21) moved away from the term "role play" because they argue that not all young learners' play is about assuming a role, but rather engaging in "open-ended play", which in itself implies the internalising of real-life experiences. That said, they argue that playful pedagogy and playful learning alternate throughout the young learner's day and cannot be pinpointed to a specific activity and a specific time of the day.

Broadhead and Burt (2012:142) concluded through their observation that young learners are creative in their play activities, especially when confronted with open-ended materials and playing in an outdoor environment. Similar ideas have emerged from different reference points - these ideas not only support the view that young learners take control of their play and their learning in an early-year setting, but also recognise the delicate equilibrium between teacher-led and child-initiated activities in everyday learning (Broadhead & Burt, 2012:142). Through playful pedagogy learners are able to explore and discover more naturally.

#### **2.4.2.5 Elizabeth Wood**

The properties of play are powerful, and young learners sometimes enter a different state of consciousness if they are intensely absorbed in play. Play comprises cooperative, interpersonal activity, which is culturally, socially and historically positioned. Through shared activity, young learners act more competently in different settings, such as home or school, indoors or outdoors or even “virtual” or “real” worlds) and with different resources (social and physical) (Howard *et al.*, 2013:18–19).

Wood (2013:20) argues that educators can exploit these qualities of play by creating integrated methods. These approaches merge the child-initiated activities with the benefits of adult-directed activities. An integrated approach to play-based learning assumes the view that play in an early childhood context is regulated to some degree by the environment (indoor or outdoor), the syllabus, the ratio of teachers to learners, the available materials, the instructions, the morals, principles and practices of the teachers (Wood, 2013:20).

According to Howard *et al.* (2013:21), this proposed integrated model incorporates flexibility inside a developing cycle. The ability to move between areas or zones to allow the teacher to respond to learners’ activities and needs, and to associate curriculum goals with the young learners’ play goals creates a sense of “balance and adaptability” between the adult and the young learner. An environment that provides flexibility between activities as well as materials used, adult-led or child-initiated activities, not only communicates understanding of the needs of the sensory-impaired young learner, but also flexibility. Integrated pedagogies provide the possibility to guide the sensory-impaired learner to reach a more complex landscape through play (Howard *et al.*, 2013:18-19).

#### **2.4.3 Theories of sensory processing**

Please note again that in my study, sensory integration will be referred to as sensory processing but encompasses the concept of Ayres’s sensory integration.

##### **2.4.3.1 Jane Ayres**

“Sensory integration” as a theory was postulated by Dr. A. J Ayres, and was first published in 1975. According to Ayres, revised in 2005 (Ayres, 2005:7), sensory integration (or “processing” in this study) is the neurobiological actions within the body which allows the central nervous system to process and organise sensory input for further activity. The “activity” could consist of the perception of the body or the environment, an adaptive response, a learning process or the engagement of a particular neural behaviour (Ayres, 2005:7). As a result of sensory processing, all the elements of the nervous system cooperate to allow a person to interact effectively with

their environment. According to Ayres (2005:7), the brain is like a “sensory processing machine”.

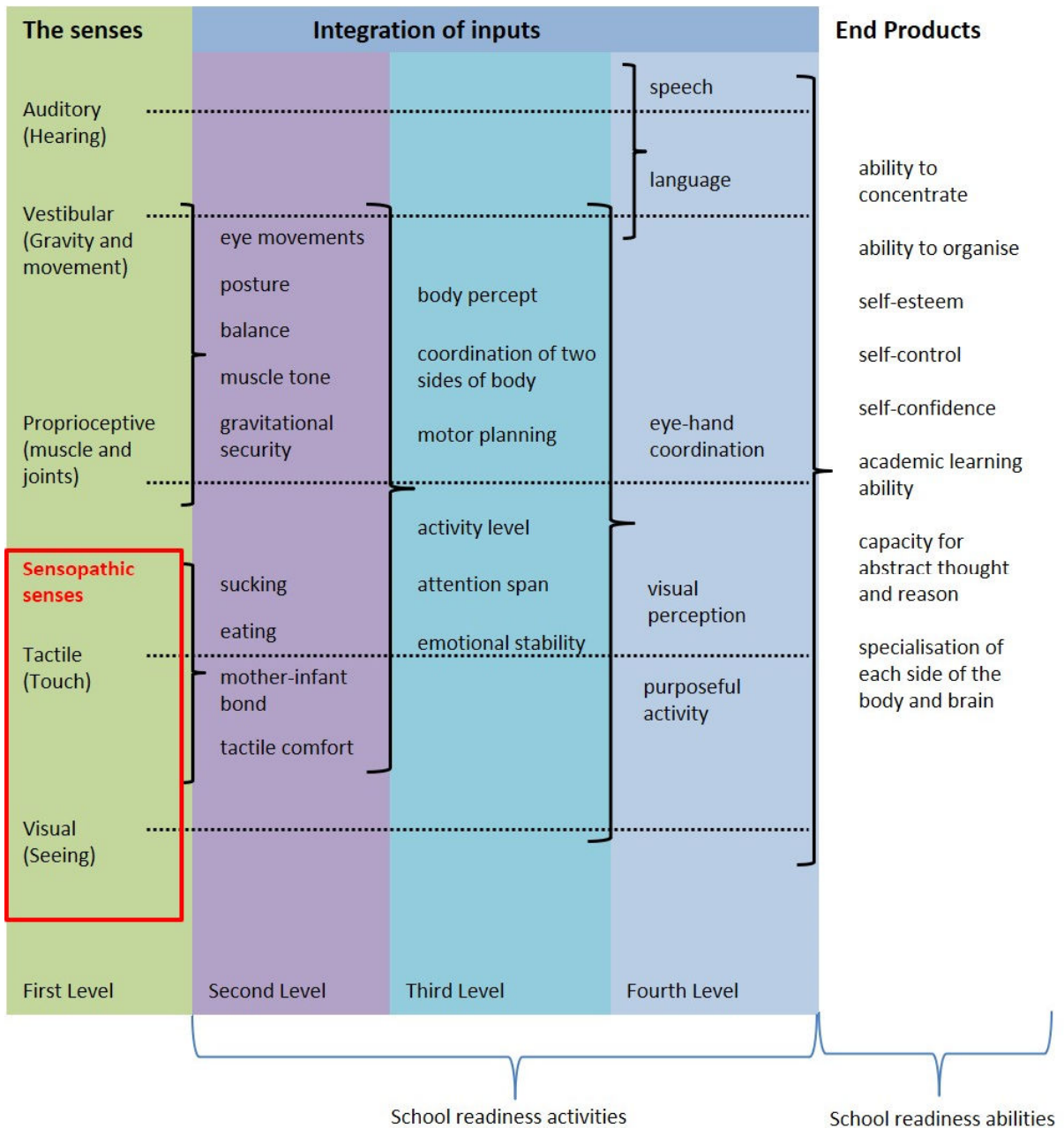
Although every young learner is born with this capacity, they must develop sensory processing by interacting with many things in the world and adapting their brains and their bodies to many physical challenges during the early learning years. This might result in a challenge, or it might be an exciting potential for everyday life (Ayres, 2005:2). Cantu (2002:41–47) described sensory processing as an extremely complex task, as 80% of the nervous system is engaged in coordinating and processing sensory stimuli. Kranowitz (2005:9-12) found that the inability to modulate, discriminate, coordinate and organise sensory information effectively leads to impaired sensory processing. Ayres’s theory can be visually presented as shown in Figure 2-4, which illustrates the various levels of sensory processing associated with the senses as well as the end products of successful processing.

**First level of sensory processing:** Touching and being touched have a very important influence on infants throughout their lives – with their touch systems, bodily contact forms brain sensations and the first emotional attachments are established. Harlow (1958) and Harlow (1959), as cited in Ayres (2005:56), showed that this emotional attachment is primarily tactile in nature. This tactile emotional attachment formed is also referred to as the “mother/infant bond”.

Vestibular and proprioceptive inputs develop the young learner’s control over his or her eye movements, and the young learner will develop the ability to focus on an object or follow it as it moves. This development assists reading skills on a higher level. If vestibular and proprioceptive systems are poorly developed, most young learners will not have a good foundation, and so movements may seem stiff and irregular, the young learner’s balance may be poor, and his or her muscle tone may be low. Gravitational security is the conviction that one is safely tied to the earth and will always have a safe haven. Insecure development of a sense of gravity leads to development into a person lacking the emotional security that comes from good tactile processing and emotional modulation. An underdeveloped vestibular system will lead to young learners feeling threatened in their world (Ayres, 2015:56–59).

**Second level of sensory processing:** Proprioceptive, vestibular and tactile functions are the bricks required to build a wall for emotional stability; in the event that these three sensory systems do not function properly, the young learner will react poorly to their environment. Body maps will be stored in the brain incorrectly, and the young learner might find organising and sorting daily activities challenging. Inadequate coordination of the left and right sides of the body is often noticed in young learners’ play and manifests as vestibular disorders. A poorly organised nervous system will drive a young learner into many poorly planned movements,

which leaves them troubled and disorganised when playing and engaging with the environment (Ayres, 2015:56–59).



**Figure 2-4 Ayres' theory of sensory processing (adapted from Ayres, 2005:55)**

**Third level of sensory processing:** Sensory processing is a continuous process, and each level of processing makes the next level possible. Young learners presented with certain types of previously mentioned disorders will be slower in their overall development and processing speed. The young learner's activities at this level of processing have to become much more personal; they should do things that begin, continue and end, and they ought to be able to

complete the process through to the purpose they desire. Young learners with sensory integrative dysfunction, however, cannot follow something through to the end because there are too many things that confuse, excite, distract or upset them (Ayres, 2015:56–59).

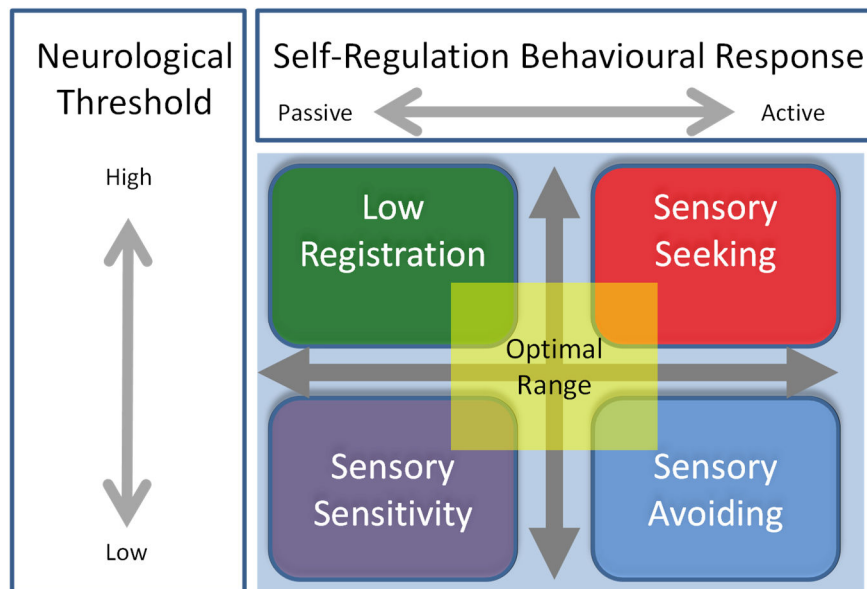
**Fourth level of sensory processing:** At this level it is imperative that the two sides of the brain work together and communicate. The young learner whose sensory processing is underdeveloped will tend to use both sides of the brain, and poor communication between them will prevent the two sides of their body from working together properly. The ability to organise and concentrate at this level is important since the young learner must now deal with many more things and sensations. The brain that cannot handle these sensations will not be able to organise letters and numbers. Self-esteem, self-regulation and self-confidence are very important in relating to other people, but these feelings themselves do not come without a significant amount of sensory and neural processing beforehand. It is clear that the dysfunction of sensory processing will lead to an impaired learning experience for the young learner; “splinter skills” will result that compensate for poor sensory processing, and this learner will be unable to keep up with the ever-increasing demands of everyday life (Ayres, 2015:56–59). A splinter skill is analogous to a person being able to play a certain piece of music from listening to it but being unable to read music. It will therefore not be sustainable in the longer term.

As can be seen when compared with the requirements for school readiness (see section 1.5.3 on school readiness), there is a high correlation between the end products as defined by Ayres and the requirements as stated by du Preez (2018:8).

#### **2.4.3.2 Winnie Dunn**

Sensory processing denotes the way in which the brain organises sensations for the execution of tasks – it is an unconscious process that classifies and prioritises sensory impulses in order to allow the body to respond to stimuli. There seems to be a consensus in the literature that certain activities assist in the development of sensory processing, as it is an active, dynamic process that is the outcome of adaptive interactions with the social and physical environment (Ayres, 2015:7; Dunn, 2001:24; Gascoyne, 2016:85; Schaaf & Mailloux, 2015:7).

Dunn (1999:24) developed a threshold model for sensory processing, shown in Figure 2-5. This shows how sensory processing is affected by a neurological threshold, which in turn affects behavioural response. This interaction allows classification of subjects based on their level of response and neurological threshold.



**Figure 2-5** Dunn's threshold model of sensory processing (adapted from Dunn, 1999:24)

If we cross these dimensions we obtain four sensory processing types, as indicated in the coloured blocks in Figure 2-5, when we refer to the neurological threshold and the behavioural response scales on the left and top of the figure respectively (Dunn, 1999:24). Optimal learning takes place close to the axis crossing (indicated by the yellow range in Figure 2-5, and one of the fundamental aspects of my study is to examine the use of play pedagogy to manage the extremes of sensory processing styles (the edges of the model) to enable learners develop closer to the centre into the optimal range.

The characteristics of the thresholds corresponding to the colours used in Figure 2-5 encompass the following:

- Low registration (high neurological threshold): Subjects in this area are termed insensitive or disconnected. These learners do not register environmental signals and need noticeably clear directions. Their behaviour typically consists of passive behavioural response, which results in them being somewhat unmindful to activities that are not specifically involving them.
- Sensory avoidance (low neurological threshold): Sensory stimulus disturbs these subjects; they attempt to limit their exposure to new input and the number of situational changes they have to deal with. In terms of behavioural response, they tend to respond passively and are inflexible, obstinate and remote.

- Sensory seeking (high neurological threshold): Subjects termed sensory seekers require and physically enjoy elevated intensities of sensory stimulation. They are energetic, engaging and passionate and regard on newness or novelty highly, which may disrupt social situations. Behaviourally, they have an active response and they tend to abandon stimulation changes or new activities once the initial freshness of an activity has worn off.
- Sensory sensitive (low neurological threshold): These subjects are described as more sensitive people, noticing more sensory actions than their counterparts, and more likely to regularly remark on them. Behaviourally, their responses are passive, and they are distractible. They can be assisted through participation in structured sensory activities to avoid them being inundated by unstructured and unsettling stimuli.

Dunn associates these sensory processes with styles of personality and proposes that sensory preferences are a foundation of the manifestation of temperament and disposition. These processes are inputs to the learning process. Ideally a learner will be school ready if all four of these quadrants are in balance, for example in the middle of the model, in the optimal range as indicated in her model (Dunn, 1999:24).

#### **2.4.3.3 Sue Gascoyne**

Gascoyne (2012:6) states that definitions of sensory play are like definitions of play - unusually evasive for something that is so fundamental in young learners' growth and development. According to Gascoyne (2012:6), sensory play is regarded as play that engages multiple senses. She postulates a continuum of play rather than a set of activities.

The sensory play continuum can provide a framework for observation as well as the description of play opportunities for young learners across the ages. It can also be used to gain deeper insight into the young learners' play in each of the three stages. Figure 2-6 is a graphical representation of the play continuum, showing the stages of play in the continuum and the roles of the adult in directing play in each stage.

When planning sensory-rich experiences for young learners, Gascoyne (2016:19) cautions against the use of material that will appeal to all the senses, as too many sensory-rich materials might be too overwhelming for the senses. In selecting the activity and the material, the adult's role is to guide and to know which sensory stimulation to encourage and to support and which to avoid.

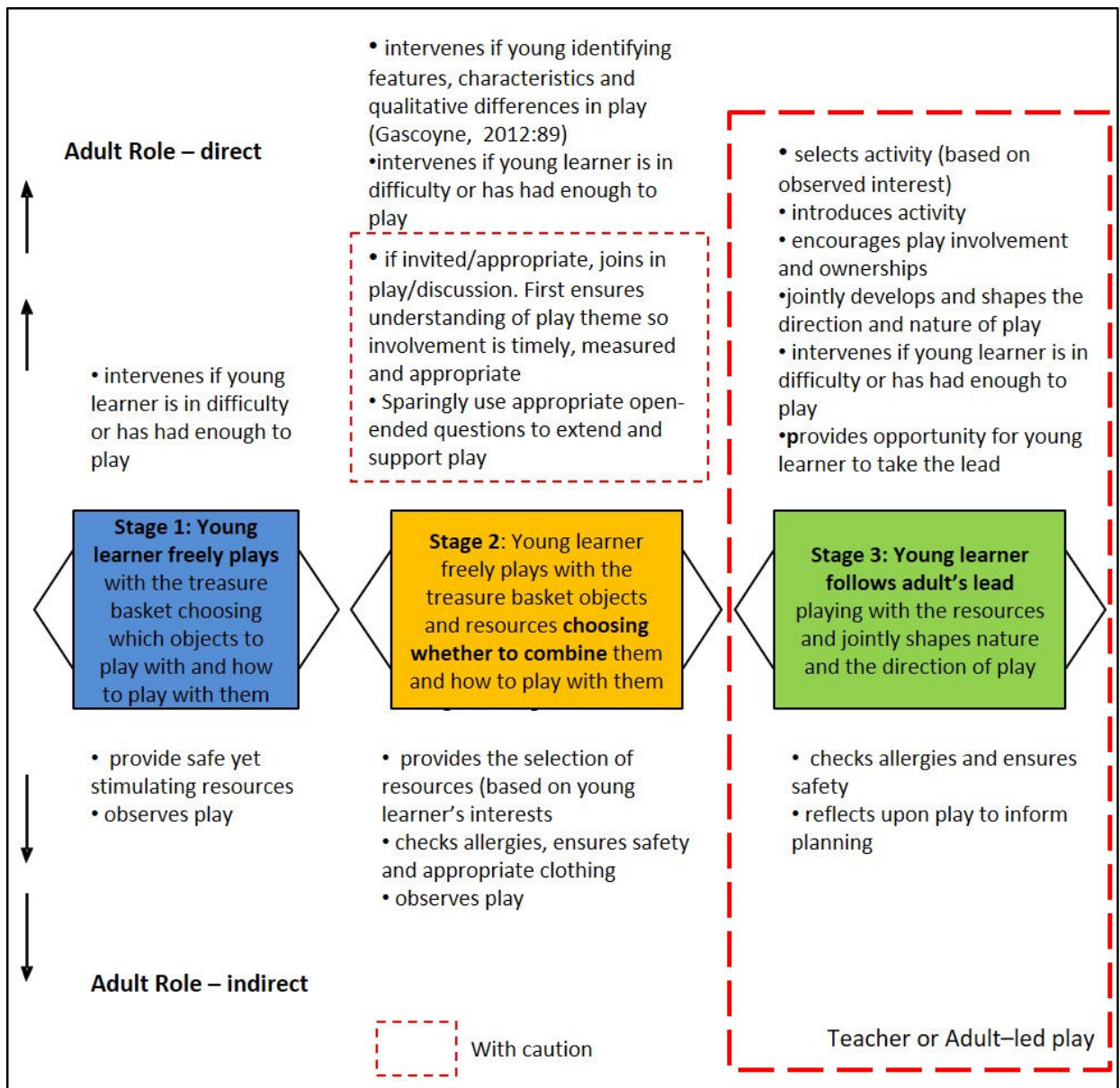


Figure 2-6 Gascoyne's continuum of play (adapted from Gascoyne, 2012:157)

#### 2.4.3.3.1 Stage 1: Free play

In stage 1, the practitioner checks whether all the objects used are safe and in good condition. This stage provides learning points, where young learners' creativity, problem-solving ability and communication skills are noted. Adult supervision is a necessity, although intervention must be avoided, and observation is the main focus. New items should be added to the selection of toys from time to time, and young learners' choice of objects must be noted. This should also be an introduction point for mixed-age play. The teacher must not judge, but should attempt to understand the play and the future potential of the learners.



#### **2.4.3.3.2 Stage 2: Combining resources**

The practitioner should offer a selection of resources alongside to other resources such as water, sand, marbles and mirrors. The aim is to provide a selection of objects rather than the full set. The practitioner must ensure that the selection offers an array of different functions as well as a difference in appearance and properties. These resources can be offered indoors or outdoors. The main learning point is for the practitioner to observe how young learners play with the resources and how the distinct properties of each are explored. During this stage, the selection must be offered next to the water, sand or other medium, and not in it. The learner must choose the combination of the resources. The practitioner observes and only intervenes to ensure safety. The aim is to extend play into the ZPD, where education is extended beyond what young learners would achieve through independent play (Vygotsky, 1980:85).

#### **2.4.3.3.3 Stage 3: Adult-initiated play**

In stage 3, learners should perform simple adult-initiated activities with objects. The activities might be chosen by the learners themselves, or others may fit well with the topic of focus provided. The success of this level depends on the skill of the adult or teacher to select an activity that captures young learners' interest and the facilitator to take ownership of the activity. The adult or teacher must be proactive and encourage and support questions, discovery and thinking. Through facilitation the adult or teacher builds upon young learners' interests and developmental levels to assist young learners to move to the ZPD. A number of learning points present themselves in this stage – the adult or teacher must encourage engagement from learners and take special notice where learners move from the familiar to the unfamiliar during the activity. They must observe whether learners naturally relate to the objects without prompting and observe how young learners engage with the object as well as the activity.

The adult or teacher must bear different learning styles and each young learner's individual sensory profile in mind. Observation is valuable for future engagement with objects, and it is imperative that the adult or teacher does not rush this part of the observation. During this stage, the adult or teacher must apply a number of rules. Firstly, the aim is for the young learner to take ownership of the activity rather than an adult retaining control – the teacher must create an enabling environment by keeping the activity playful and fun and offer opportunities for choice. It is also important that the teacher provide the opportunity for learners to revisit the activity without adult involvement. This encourages high levels of engagement as well as compositional play (Papatheodorou, 2010, cited in Gascoyne, 2012:110). The adult or teacher must also observe subsequent play for signs of play or learning being extended and offer support if needed.

## 2.4.4 International best practice in sensory learning

This section reviews current early education models that incorporate aspects of Piaget's theory in their teaching philosophy. Some of the better-known practitioners are the Reggio Emilia and Montessori pre-schools, who maximise opportunities for sensory awareness. Learning occurs through gaining of "an awareness of scale, colour, texture, sound and smell, light, [and] micro-climate" (Bishop, 2001:78).

A key area of concern for Moyles (2015:56) remains the fact that young learners in the early years are losing contact with play and nature. Young learners are currently spending too much time indoors, engaged with the virtual world, and less with the natural world that is of vital importance for sensory processing (Save Childhood Movement, 2014). Moyles (2015:56) further mentions the growth in popularity of the Danish Forest Schools. Amongst the benefits mentioned of the connection with nature are the enhanced communication skills and the added creativity which the young learners are exhibiting. The Danish Forest Schools are based on the belief that young learners learn through movement and applying their senses with little or no direction from teachers.

### 2.4.4.1 Montessori schools (Maria Montessori)

After Montessori's graduation from university in 1896, her clinical observations guided her to investigate how young learners learn. She subsequently not only posited that young learners have a virtually effortless capability to soak up knowledge from their environment, but they also have a tireless interest in manipulating materials (Brock *et al.*, 2014:75; Gordon-Biddle *et al.*, 2014:58–59). This had already been promoted in the 1600s by Comenius, who was the first to recommend sensory experiences rather than formal teaching for young learners (Gascoyne, 2012:6). She started a pre-school based on her ideas in Rome in 1907, mainly focussed on children with special needs or from disadvantaged backgrounds.

Montessori schools' pedagogy is based on Montessori's belief in first training the senses through multisensory experiences and then developing the child's intellect (Seldin, 2017:17). She was convinced that young learners have inborn qualities and are naturally driven to learn, and therefore postulated that teachers should adapt to the learner's pattern of learning (Brock *et al.*, 2014:75). Montessori schools further follow the idea that young learners also learn through being involved in physical activities and that pre-school years are a critical time for the development of their minds (Jackman *et al.*, 2015:53; Seldin, 2017:177).

Montessori maintained that a properly prepared classroom environment facilitates enjoyable, yet challenging activities where young learners are able to understand complicated ideas by utilising multi-sensory, self-correcting resources (Jackman *et al.*, 2015:53; Seldin, 2017:62).

Montessori schools' curriculum is designed and chronologically sequenced to coincide with the child's "sensitive periods" of development. After the child has been introduced to the materials, they are free to use the materials whenever they like and for as long as they wish, totally undisturbed by others (Jackman *et al.*, 2015:53; Seldin, 2017:174). The material is self-correcting, didactic and designed to teach a specific lesson. Seldin (2017–190) states that Montessori reasoned that the developed senses provided the foundation for literacy as well as for mathematics and the sciences. Sensorial exercises focus on sensorial discrimination. Skills are sensorial in nature and encourage young learners to learn through their senses.

Wood and Attfield (2005:30) conclude that although Montessori's approach is at times thought to be against "notions of freedom, creativity, play, fantasy and self-expression", young learners are granted the freedom not to be placed into inflexible age groups or ability ranges of a particular age. Typically, by the age of six, young learners have learnt from one another although they have developed individually and according to different ability levels (Brock *et al.*, 2014:75).

#### **2.4.4.2 Waldorf schools (Rudolf Steiner)**

Rudolf Steiner was the founder of Waldorf Education. The central focus of Waldorf education is to understand every person's background and place in the world, as members of humanity and world citizens (Johnston & Nahmad-Williams, 2009:25). Steiner introduced the philosophy of anthroposophy: the wisdom of the human being. Anthroposophy is primarily concerned with the acknowledgement and development of spirituality in the person as well as in the universe.

The philosophy of anthroposophy encourages each individual to seek the deeper meaning of life and the schools focus on each student's developmental needs. A unique feature is that the Waldorf teachers stay with their learners from the first grades through to the eighth grade (Gordon-Biddle *et al.*, 2014:65).

The Waldorf-Steiner theory of development posits that learning occurs in three rounds of seven-year phases, in an ascending spiral of knowledge, similar to Bruner's spiral (see section 2.4.1.5). Steiner's model emphasised the need for unstructured play, suggesting that normal teaching should not commence until the child has reached the age of seven. Steiner furthermore maintained that young learners learn and grow through imitation and doing, and that development through imaginary play is the most important method through which young learners grow not only physically and intellectually, but also emotionally (Brock *et al.*, 2014:79).

Waldorf schools value the physical environment and use outdoor materials to stimulate the senses just as with indoor materials. Steiner believed that everything that can be perceived by the senses must be addressed to allow the activation of the inner creativity of each child following his programme (Gordon-Biddle *et al.*, 2014:66).

### 2.4.4.3 Reggio Emilia (Loris Malaguzzi)

Loris Malaguzzi opened an elementary school in the town Reggio Emilia in Italy in 1950. He believed young learners had a right to learn rather than a need to be taught. He furthermore maintained that young learners could think independently for themselves (Brock *et al.*, 2014:71). Malaguzzi's system became known as the Reggio Emilio approach and was built on a long tradition of collective life in communities bonded together by common needs and practices (Smidt, 2013:18).

The Reggio Emilia approach is the extension of Malaguzzi's theories in practice (Wingert, 1991). It not only considered but integrated the beliefs and ideologies of the great theorists, such as Piaget, Vygotsky and Bruner (Gordon-Biddle *et al.*, 2014:59), but also philosophers like Frances and David Hawkins (Smidt, 2013:21).

Reggio Emilia is based largely on the premise that young learners should seek answers through asking questions, supported by interested and appropriately educated others (Smidt, 2013:18). Smidt (2013:53) also notes that Malaguzzi believed that young learners have at least 100 languages with which they articulate, amongst other words, motion, art and building. Malaguzzi also claimed that young learners not only grow cognitively, but also gain a communicative competence through these abilities (Edwards, 2002:82).

In Reggio a planned curriculum is not used, as Malaguzzi was convinced that learning would then be limited by that curriculum (Brock *et al.*, 2014:78; Gordon-Biddle *et al.*, 2014:59). The philosophy of Reggio Emilia's methods places imagination at the centre of young learners' learning (Brock *et al.*, 2014:78). The environmental factors are recognised as assisting the child's expressive, communicative and cognitive languages (Edwards, Gandini and Forman, 1993:1993).

The Reggio approach is based on the following principles:

- Emergent curriculum – Teachers build upon the interests of the young learners (Gordon-Biddle *et al.*, 2014:61; New, 2003:38; Wurm, 2005:67).
- Representational development - In the Reggio Emilia approach, graphic art acts as a tool for cognitive, linguistic and social development (Gordon-Biddle *et al.*, 2014:61; Wurm, 2005:91–92).
- Cooperation – Cooperative group effort, whether big or small, is regarded as beneficial to improve cognitive development. (Gordon-Biddle *et al.*, 2014:61).
- Teachers as researchers - The part of the teacher in the Reggio Emilia method is multifaceted. Teachers become learners alongside the young learners (Edwards *et al.*, 1993, cited in Gordon-Biddle *et al.*, 2014:61).

- Documentation and showcasing - Documentation of young learners' work in progress is considered an essential instrument in the learning activity for teachers, parents and young learners (Wurm, 2005:108).
- Environment - Significant care is devoted to the appearance and ambiance of the classroom in the Reggio Emilia system, to the point where the environment is considered the third teacher (Gordon-Biddle *et al.*, 2014:61; Wurm, 2005:38). Sensory stimulation is maximised for young learners to obtain "an awareness of scale, texture, smell, sounds, light and microclimate as a result of the arrangement of space through the use of mirrors, transparency, reflectance, colour textures and acoustic qualities" (Bishop *et al.*, 2001:78).
- Material – All material used is appealing to the senses, varies in colour and texture and can be man-made or natural. Textures are used to make young learners "see" the colours, tones and hues as well as helping the young learners to "feel" the similarities and differences in texture. The materials can be revisited throughout many projects to help young learners see and experience multiple possibilities (New, 2003:38; Roopnarine & Johnson, 2009:225).

Reggio Emilia's philosophy has been criticised for the absence of a written curriculum, which makes it difficult to be accountable in a larger community. However, supporters of the Reggio Emilia method claim that the complete recording of the curriculum process is always open to public scrutiny, providing the needed transparency (Brock *et al.*, 2014:78).

#### **2.4.4.4 Forest Schools**

Forest Schools were inspired by Froebel and originated in Sweden in the 1950s, then spread through Scandinavia. In Denmark it became a significant portion of the Danish Educational Programme (Brock *et al.*, 2014:80). The first Forest Schools were founded in the United Kingdom in 1995, where young learners were given the opportunity to discover the woodland environments (Gascoyne, 2012:7). This realisation of the significance of nature and the outdoor environment has been echoed in the evolution of early years policies (Gascoyne, 2012:7).

In Forest Schools, the outdoor environment is used in a calculated way as a part of young learners' acquiring of useful and social skills. These schools promote and model experiences where young learners can explore, take risks and be challenged, yet still benefit from good health and physical, social, personal, and emotional development and well-being (Brock *et al.*, 2014:80; Solly, 2015:21).

The benefits of play in outdoor environments to improve the sensory development of young learners was also highly valued in the nursery schools operated by the McMillan sisters' in the early 1900s (Brock *et al.*, 2014:80). Lately, the worth of young learners being able to access natural spaces (the greener the better) has been demonstrated by an abundance of research

indicating not only health, but also emotional and behavioural advantages (Gascoyne, 2012:7; Solly, 2015:21).

Solly (2015:141) concludes that each season and weather type have its joys and challenges for outdoor sensory stimulation. Forest Schools is a practice that provides the opportunity to young learners to develop self-learning through natural play and positive outdoor experiences, facilitated by a forest school leader (teacher) whose primary role consists of the provision of a safe and secure learning setting. The forest school leader must constantly observe the group and environment and adapt sessions to the needs of the group to guide, nurture and facilitate positive behaviour towards each other and the environment (Little, 2014:3).

The Forest Schools use learner-centred methods to produce an environment for growth and learning. Little (2014:5) notes that the characteristics of these processes are:

- A learner-centred pedagogical approach responding to the needs and interests of learners.
- Play and preference are essential parts of the learning and development process.
- Each learner and leader must practise reflection to ensure the development of emotional intelligence. The leader's observations feed into scaffolding experiences.

#### **2.4.4.5 High/Scope (David Weikart and Larry Schweinhart)**

The High/Scope curriculum was developed under the leadership of David Weikart in 1960 (Brock *et al.*, 2014:76). High/Scope was intended as an intervention program for low-income and at-risk learners, but currently the High/Scope programme aims at the full range of young learners from baby, toddler, pre-school and foundation phase to adolescence – adjusting to the specific requirements and circumstances of their learners - their situation and their community. The programme is a cognitively-oriented curriculum and based on Piagetian theory to some extent (Jackman *et al.*, 2015:56).

The curriculum is based on a “plan-do-review” progression of actions. Young learners plan what they want to do, execute the plan and afterwards reflect on their accomplishments. This entails that they have close interaction with each other, with reflection on their activities to increase their understanding of what they had learnt. Young learners learn best when they experience the world around them with a curriculum characterised by high-quality key learning experiences. Young learners are furthermore urged to make autonomous choices based on these specific experiences to improve confidence in personal learning (MacNaughton, 2003:95). Daily programmes make provision for large and small group activities as well as outside play (Hohmann, Banet & Weikart (1995) in Jackman *et al.*, 2015:56).

Anning (2005:25) and Edward (2009), cited in Jackman *et al.* (2015:56), observe and emphasise that the High/Scope “plan-do-review” system may be particularly effective in satisfying cognitive as well as socio-affective priorities.

The plan-do-review pedagogy has been applied with great success and can also be successfully combined with other curriculums such as the Curriculum Guidance for the Foundation Stage. Both these pedagogies provide opportunities to introduce sensory play pedagogy in their daily programme through introducing sensory activities during the planning stage, such as when heuristic play is used for the young learners setting out on the sensory exploration of the features of objects (Brock *et al.*, 2014:77). The High/Scope method emphasises crucial experiences in which young learners have sufficient scope for active exploration within the classroom and emphasises the High/Scope Child Observation Record which is a summary of the teacher’s daily observations. These are all exclusive features of the High/Scope approach (Jackman *et al.*, 2015:56).

#### **2.4.4.6 Te Whāriki**

Te Whāriki was developed in 1996 by Helen May and Margret Carr and forms the early childhood National Curriculum of New Zealand (Ministry of Education, Government of New Zealand, 2017). It was updated in 2017 with the changes aimed at strengthening the focus on biculturalism, the significance of language, culture and identity, and the inclusion of all young learners (Ministry of Education, Government of New Zealand, 2017). In the Māori language Te Whāriki means “woven mat for all to stand on” and aims to standardise diverse education programmes while simultaneously creating space for cultural diversity.

The curriculum allows educators the freedom to adjust the curriculum to suit their local environment. The programme acknowledges a socio-cultural viewpoint on learning that respects New Zealand’s cultural diversity. According to Podmore and Carr (1999, cited in Brock *et al.*, 2014:81), Te Whāriki curriculum empowers young learners to mature as capable and self-assured learners and communicators. May (2004:16) states that in many ways Te Whāriki theory draws on some core elements of theorists such as Piaget, Erickson, Bronfenbrenner, Vygotsky and Bruner.

The five aims for the young learners which are addressed in the curriculum serve as the principles interwoven with the five strands:

- Wellbeing – The health and wellbeing of the learner is encouraged and of principal importance.

- Belonging - Young learners are placed in an environment where the associations with their family and the wider society are acknowledged and where – importantly – limits for appropriate behaviour are put in place.
- Contribution – Young learners are acknowledged as individuals and they understand that they can learn regardless of their age, gender and environment.
- Communication - Young learners acquire verbal and non-verbal methods of communicating from their own culture as well as from others.
- Exploration - Direct and impulsive play are both valued, as expressive play is considered to assist young learners to become comfortable in their bodies; according to Podmore & Carr (1999, cited in Brock *et al.*, 2014:81), they develop processes for learning about their world.

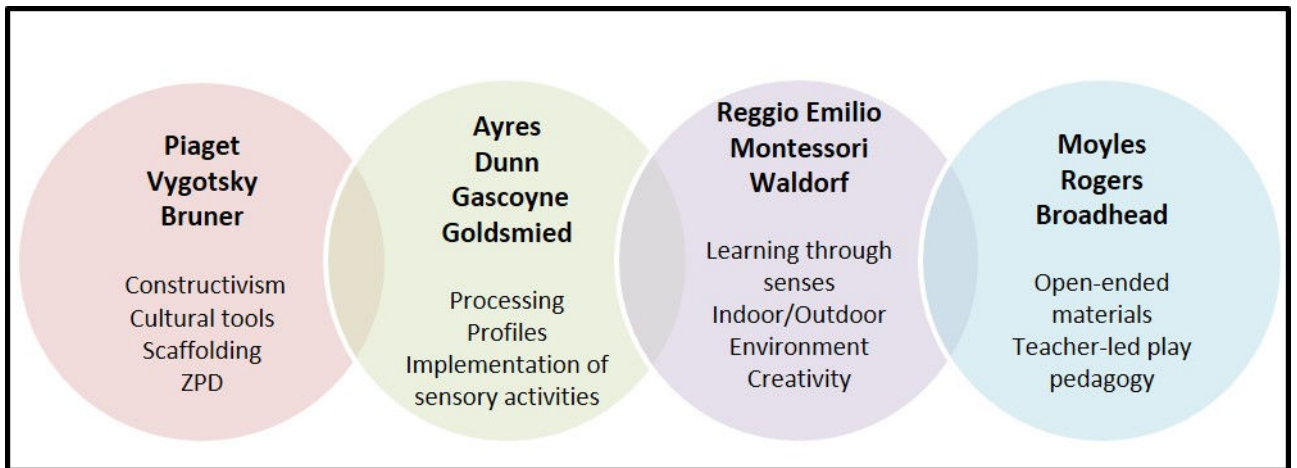
All the principles interwoven in the strands are important for the development of a child's emotional, cognitive and social development. The exploration strand is of particular interest to my study. Play is valued as important, meaningful and spontaneous. As May (2004:18) posits, through play one develops assurance in the control of one's body. She explains that young learners learn strategies for active exploration and that these strategies are learnt through active play in safe and enticing environments. May (2004:19) also maintains that young learners develop frameworks to make sense of their world through child-initiated play.

The development of a learner should not be seen as a series of sequential steps, but rather as a helix that considers developmental delays, spurts and diversity as well as common phases - an approach supported by Moyles' (2015:288) thinking. Te Whāriki aims at achieving goals by a series of progressively more complex visits to familiar material rather than through young learners advancing from one grade to the next. Teacher responsibilities in delivering Te Whāriki follow a more “universalist approach” than a traditional approach.

#### **2.4.5 Conclusion**

The theories of early childhood development and education all contribute to the object of my study, with some degree of commonality between them, as shown in Figure 2-7. However, as can be seen from the graphic representation, no single theory adequately describes the phenomenon I am investigating.





**Figure 2-7 Theories on early childhood development and education**

Due to the absence of a single theory that would underpin my study, I developed a unique relational structure that draws on the component theories discussed in this section.

## 2.5 Conceptual framework

Vithal and Jansen (2010:19) define a conceptual framework as being a less mature explanation for an event or phenomenon than a theory would be. Since no single theory provides a complete foundation for my study, I drew on the grand theories of play, theories of play pedagogy and international best practice to inform my play pedagogy. I further used the sensory processing theories to represent the sensopathic component. This satisfies Vithal and Jansen's (2010:19) requirement that a conceptual framework should be used to link multiple key concepts or principles without being developed into a complete theory.

In order to develop the conceptual framework, I made assumptions based on the areas where theories overlap as shown in Figures Figure 2-2 and Figure 2-7 in order to fuse the theories and to represent my understanding on sensopathic-focussed sensory play pedagogy. This process is illustrated in Figure 2-8, which indicates the combination of theories within the sensopathic arena to provide a conceptual framework for the study.

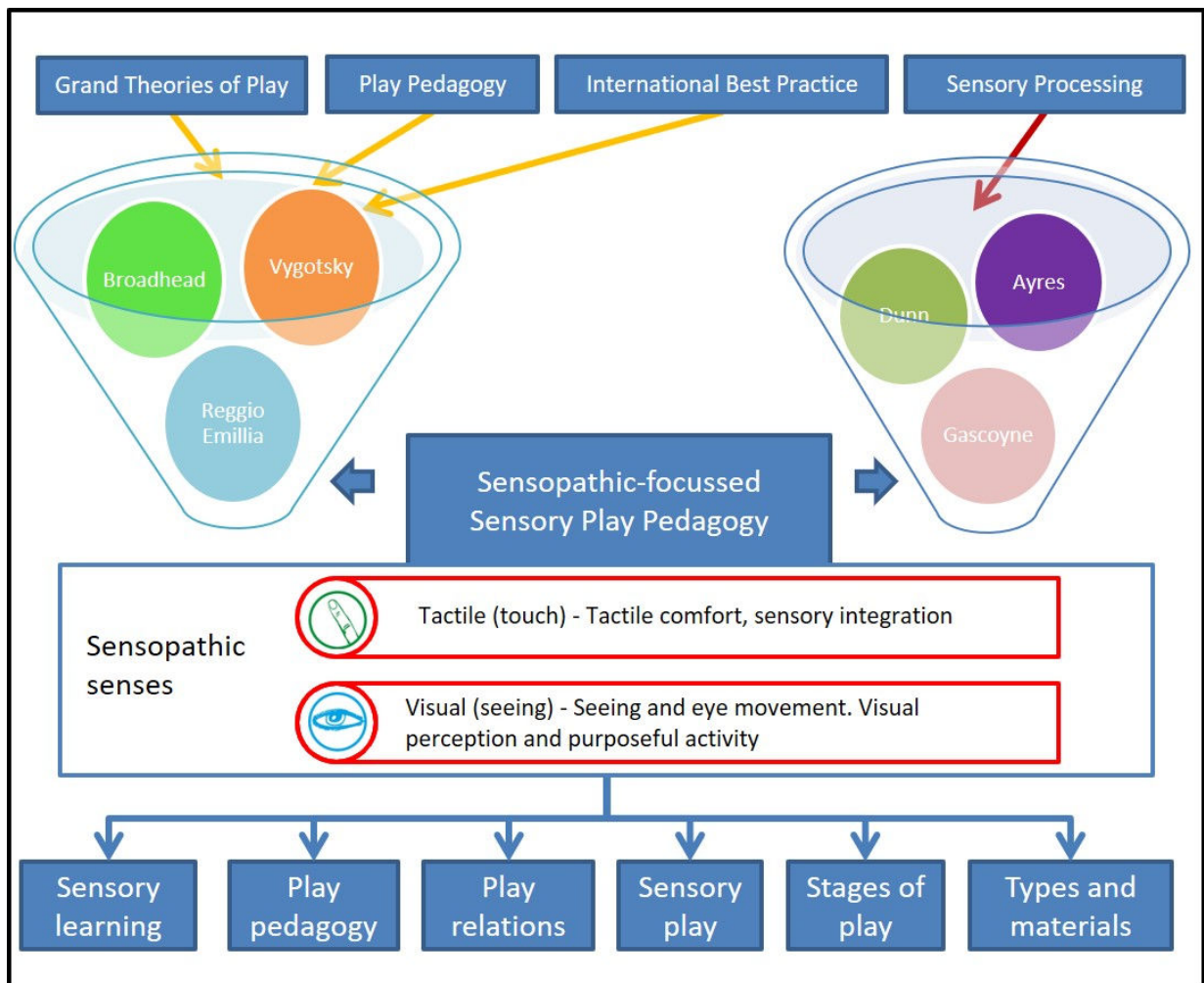


Figure 2-8 Conceptual framework synthesis

## 2.6 Sensory play

When sensory play is defined, the rich historical background it originated from needs to be taken into account. According to Gascoyne (2012:6), John Comenius in the 1600s was the first to promote sensory experiences rather than formal teaching for young learners. Jackman, Beaver and Wyatt (2015:228) observed that we are born with two essential skills in life: reflex and sense. From the start young learners are able to learn and develop through their senses. Ultimately our senses act as learning portals. Our challenge is to assist young learners to make meaning of the information and connect it with previous experiences and past knowledge. Essa (2011, cited in Jackman *et al.*, 2015:228) postulated that young learners learn best by experiencing sensory activities that allow them free exploration in the various parts of the curriculum and across a variety of frequent explorations of the world around them.

Voss (2016:1) defines sensory play as any activity that stimulates young learners' senses: touch, smell, taste, sight and hearing. Sensory play provides the young learner with an

opportunity to explore and use natural processes to investigate and discover new sensations while playing. Voss (2016:1) further states that sensory play enhances the young learner's development. Through investigative play in a sensory rich environment, young learners' holistic development is enhanced and developed.

Sensory play is naturally appealing to young learners; it is commonly done outdoors, as it is intrinsically messy, which naturally appeals to most young learners. Young learners need no instruction when playing with sand, mud and water - they are naturally programmed to engage in sensory play. It is the adults that have forgotten the sense of wonder that such open-ended materials inspire. On the whole, an abundance of sensory-rich play opportunities are all around us and they are freely and cheaply available too (Gascoyne, 2012:10). These areas are never static and change as the developmental level of the young learner's sensory involvement with the environment changes (Gestwicki, 2017:133).

Gordon and Browne (2011:345) describe sensory awareness as self-discovery through the use of the senses. Young learners also learn to work together around the sand box and sensory table, enhancing social abilities. Ayres (2005:6) showed that many of the foundations of learning are shaped through the interaction with objects. Sensations can be perceived as nourishment for the brain; they supply the knowledge required to guide the body and mind.

Previous generations experienced sensory play naturally while exploring the great outdoors and playing with household objects. Today, we must be aware of the limited access our young learners have to these sensory experiences; adults and teachers have to be more attentive to the creation, planning and provision of these sensory experiences for young learners to be able to run barefoot, be outdoors, make mud pies and smell rose petal perfume.

### **2.6.1 Sensory play and learning**

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). However, case study corroboration suggests that sensory processing therapy does influence a child's play (Schaaf, 1990:68), although the form of play influenced seems to be restricted to gross motor play (Watts *et al.*, 2014:42). With the link between play and learning established in previous sections, the primary research question is intended to show the link between play (in the pedagogical sense) and sensory processing.

Watts *et al.* (2014:42) note in their review that a number of key studies indicate that a young learner's development could be influenced by the way that they process and utilise sensory information, and that it has a substantial bearing on their capability to play. Their sensory processing also has an impact on the way they learn, participate and interrelate with others and

communicate their emotions. Their senses become building blocks for maturing other abilities, including the six parts of development shown in Dunn's model and discussed in section 2.4.3.2.

As I described previously in section 2.4.3.1, more than 80% of a person's nervous system is engaged in the processing or organising of sensory stimuli, and thus the brain can principally be seen as a "sensory processing machine". Although none of us are born with completely developed sensory systems, most young learners are reasonably adept at integrating sensory data by the six years of age. 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, all of this enveloped in a kinaesthetic environment.

A range of neurological tolerances or axes is a central feature of Dunn's model (Dunn, 1999:24), (see section 2.4.3.2). As an example, persons with a low threshold for a stimulus will notice a low-level input, while persons with a high threshold may miss the stimulus. The other central feature is self-regulation, which Dunn (1999:24) places on the same continuum, but on a separate axis, where a person would be either passive or active with regard to their reaction to sensory stimuli. Where the threshold and reaction axes intersect, Dunn proposes four forms of sensory processing: sensory seeking, sensory avoiding, sensory sensitivity and low registration (Watts *et al.*, 2014:38). Educators should note that the young learners may therefore be *hypersensitive* (oversensitive) to certain forms of sensory input and seek less stimulation, while other young learners may be *hyposensitive* (lacking sensitivity) to sensory input and seek more stimulation.

The first of four stages of development of sensory processing based on Dunn's model starts at about two months of age (Kranowitz, 2005:68). The child must develop the ability receive and process essential information from the environment and to separate out any unnecessary information that does not need urgent action. Young learners who have problems efficiently processing the range of sensory input exhibit particular behaviour with regard to their particular difficulties. These are discussed below, with emphasis on sensopathic senses.

#### **2.6.1.1 Touch**

The hypersensitive learner seeks to avoid touching or being touched by objects and people. Typical behaviour is a hyperaroused response to getting dirty or to some textures of clothing or to certain textures in food. Hyposensitive learners are often unaware of sensations. Their behaviour pattern includes self-inflicted discomfort, not being aware of temperature or the texture of objects, playing in the mud, pawing through toys without purpose, chewing on inedible objects such as buttons or toys, brushing against walls and furniture and bumping into others on purpose.

### **2.6.1.2 Sight**

Hypersensitive learners may become frenzied if they find too much to look at, such as words, toys, or other learners. Typical behaviour includes covering their eyes or the exhibition of poor eye contact, being distracted when crayoning or working at their desks, overreaction to intense light and an attitude of hyper-vigilance (being alert and watchful). Hyposensitive learners on the other hand may seek to feel objects to learn about it as their visualisation is poorly coordinated. They would as a rule exhibit behaviour that misses essential visual prompts, for instance other people's facial expressions, gesticulations, roadside signs, or indeed written instructions.

### **2.6.1.3 Sounds**

The hypersensitive learner would typically cover their ears to attempt to block sounds or voices and will be annoyed by sounds like a vacuum or blender that would not be a nuisance to others. Hyposensitive learners could disregard voices and show difficulty in obeying verbal instructions. They might not listen to themselves or speak at an inappropriately loud volume. In addition, they may like loud background sounds such as the TV or radio or they may often hum to themselves.

### **2.6.1.4 Smells**

In the case of olfactory senses, hypersensitivity results in the learner's objection to odours, for instance a ripe banana, that other learners do not notice. Hyposensitivity will more often than not result in learners that ignore unpleasant odours that other people notice, and they may sniff food, people and objects.

### **2.6.1.5 Tastes**

The hypersensitive young learner might strenuously object to specific textures and the warmth of their food. They may retch easily and frequently when they eat. Hyposensitive learners might lick or seek to savour inedible substances such as Playdoh or blocks. They might eat very spicy or hot foods, or suck or chew objects to pacify themselves.

### **2.6.1.6 Vestibular (movement)**

The hypersensitive young learner seeks to avoid moving or being moved unexpectedly and might be apprehensive about heights and nervous when off-balance. They might also prefer to be earthbound and avoid running, climbing, sliding or swinging and might experience motion sickness in cars or elevators. Hyposensitive learners, on the other hand, might desire fast and spinning movements for instance swinging, twirling, and riding merry-go-rounds, and might not

get dizzy while experiencing these sensations. They might move continually, fidget and act like a daredevil.

#### **2.6.1.7 Body position (proprioception)**

The hypersensitive young learner could be rigid, anxious and clumsy. They may seek to evade playground events that need good body awareness. Hyposensitive young learners may slump and slouch while their actions could be awkward and imprecise. They may collide with objects, pound their feet or fidget.

#### **2.6.1.8 Whole body touch (kinaesthetic)**

Hypersensitivity results in a hyper-aroused response to an unexpected touch from another person, and learners may be hyper-vigilant. On the hyposensitive side, learners create supplementary sources of stimulation in order to attain an average degree of arousal or awareness, such as bumping into objects or others, fidgeting and vocalising.

#### **2.6.1.9 Bodily condition (Introspective)**

The introspective sense is involuntary and thus not subject to hyposensitive or hypersensitive stimulation.

#### **2.6.1.10 General**

Hypersensitive learners prefer routine and predictable activities, while hyposensitive learners act impulsively and disorganised and lack self-regulation.

### **2.6.2 Stages of sensory play**

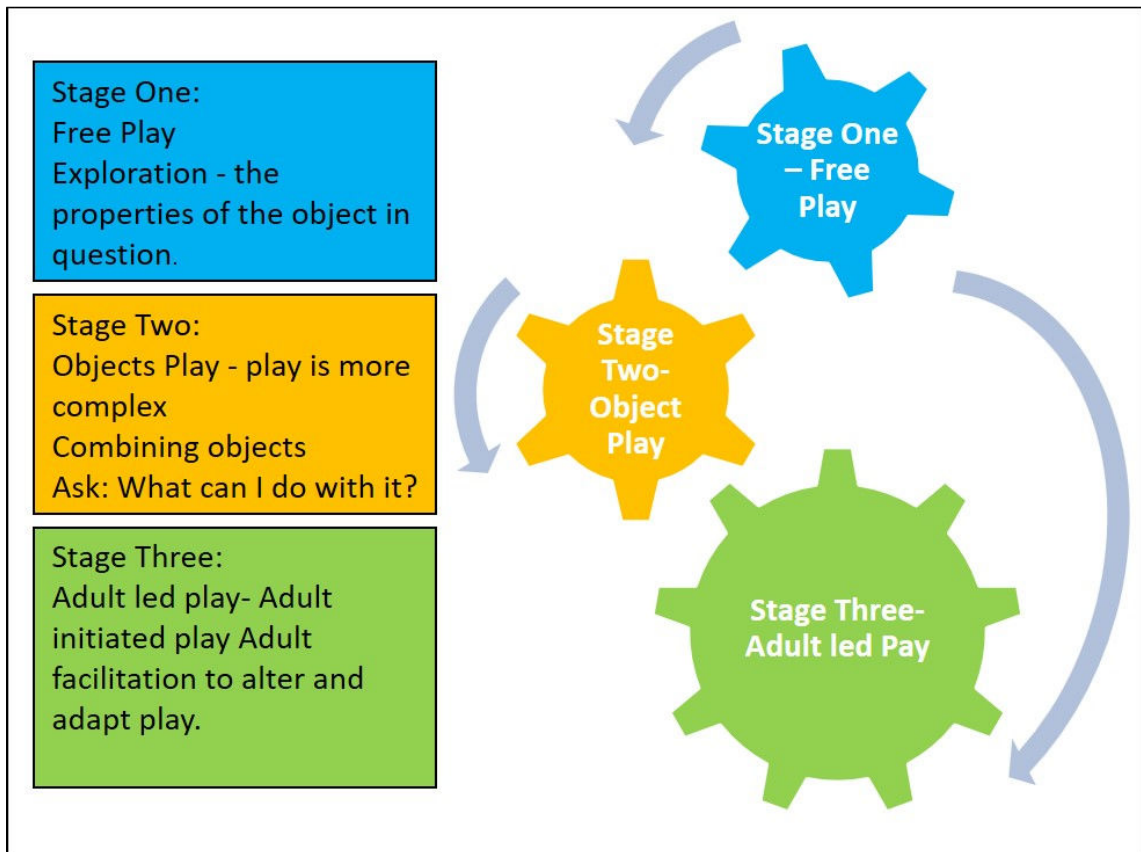
As shown previously in section 2.4.3.3, Gascoyne (2012:16) identified a three-stage sensory play continuum as a fluid play process, moving between stages. This is illustrated in Figure 2-9 below, showing the stages of play and the characteristics of each. While all three stages are important, the focus of this study is particularly aimed at stage three, adult-led play.

**Stage One** is Free Play: The first stage is based on exploration. What is the object? What is it like? In this stage the sensation of discovery becomes the emphasis, as each sense is utilised to explore the characteristics of the object being examined.

**Stage Two** is Object Play: As young learners get older, they are inclined to play in a more intricate style, combining items and other materials to ask, “What can I do with it”?

**Stage Three** is adult-led play. Adult-initiated play and adult enablement can be employed to change and adjust the areas of play. As young learners mature, play becomes more detailed in synchronisation with their age and degree of development or their familiarity with the material.

Young learners frequently progress from play with a single object to more intricate play with several objects. The stages of sensory play are visually illustrated by the diagram in Figure 2-9.

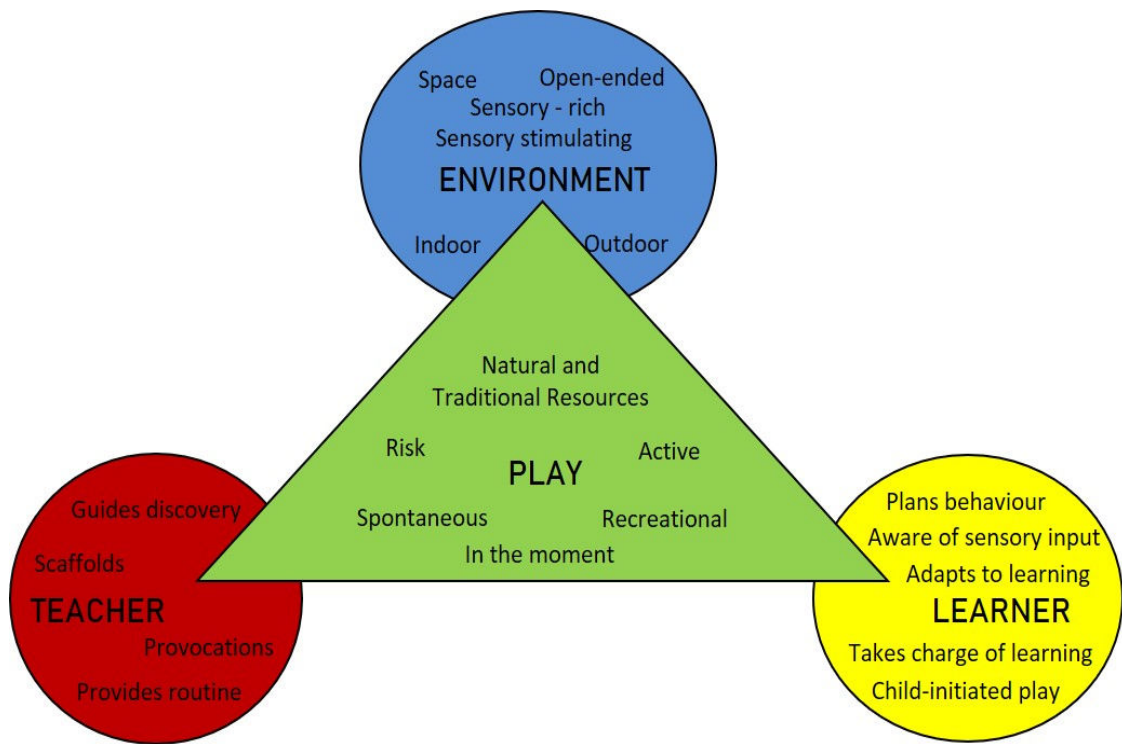


**Figure 2-9 Stages of play**

Sensory play not only stimulates cognitive development (Essa & Burnham, 2009:228; Schwarz & Luckenbill, 2012:33), but also links to Piaget’s sensory-motor stage and introduces the concept of cognitive disequilibrium that needs to be assimilated, accommodated and incorporated with old information (Duffy, 2004:2; Gascoyne, 2012:16; Jackman, Beaver & Wyatt, 2015:229).

### 2.6.2.1 Sensory play relationships

The relationship between the various role players in the sensory play continuum is shown in Figure 2-10. The figure illustrates that sensory processing does not evolve in isolation – it needs a setting in which to evolve, the learner to explore and the teacher to instruct, observe and guide.



**Figure 2-10 Interplay between environment, adult and child (Gascoyne, 2012:140)**

### 2.6.2.2 Sensory play and the learning environment

It should always be kept in mind that the intent of the sensory play session is to enable learning – whether directly or by improving the sensory processing of the subject. As such, it needs to interface with the pedagogy of the day, which takes place in an environment with limited resources.

Howard, Jenvey and Hill (2006:381) identified the physical environment as a significant element in young learners’ view of play activities as opposed to work and learning activities. Young learners more readily classify an activity as “work” if it is performed in the classroom and as “play” if that same activity takes place in an outdoor environment or on the playground. From these findings it is clear that additional research is needed to understand how young learners conceptualise the association between play and learn in their pre-school classrooms, where play and learning often occur simultaneously.

Gascoyne (2016:140) states that opportunities for sensory play are all around us and are often only limited by young learners’ and adult’s imagination. Jackman *et al.* (2015:221) comment that sensory play can take place indoors as well as outdoors. Gascoyne (2016:141), Gerathy (1990:1993) and Papatheodorou (2010, cited in Gascoyne, 2012:110) agree that the young learner provided with enough open-ended materials is more than capable and imaginative enough to create sensory-rich play experiences and to turn these into valuable learning



experiences. It has been noticed by teachers in South Africa that free flow between outdoor and indoor play is a great stimulant for innovation and creative problem solving in young learners (Engelbrecht, Nel, Nel & Tlale, 2015:10).

Sensory-rich play is perceived as taking up larger amounts of space than other types of play, which leads to the provision of space becoming a contentious issue. Broadhead (2004:30), however, noticed the reverse and stated that small- and large-scale provisions offer different qualities and both appeal to the young learners.

Riedman (1962:13) states that our senses are our only pathway to the outside world. Gascoyne (2016:11) implies that play also facilitates exploration and encourages young learners to develop sensory processing naturally while they play. The theoretical underpinning of sensory play does not only link to Piaget's theory of development, and Evans and Wells (2003:325) suggested the Attention Restoration Theory as a device for understanding the uplifting abilities of sensory play and the qualities of playing with natural materials. Their theory suggests that "exposure to nature bolsters one's cognitive resources by allowing the neural inhibition mechanism to rest and recover from use". This recovery is thought to take place because of the following four characteristics strongly linked with the natural environment (Evans & Wells, 2003:325):

- Fascination refers to nature's ability to permit our brain to relax.
- The feeling of being removed from day to day stress offers a "mental vacation".
- The magnitude of the natural environment provides abundant opportunities to be engrossed.
- If an environment is well-matched with a person's preferences it permits their level of concentration to diminish.

### **2.6.2.3 Sensory play and the adult or teacher**

Gerathy (1990:210) describes the part that adult or teacher in plays in sensory play as involving the promotion of curiosity, initiative, improvisation and the provision of materials suited to all ages and different developmental stages of the learner involved. McInnes, Crowley, Howard and Miles (2011:123) propose that the role of the teacher is not restricted to providing play opportunities; the teacher should also regulate the environment in a risk-averse culture. The adult or teacher must remain an ever-vigilant observer of the play activity.

Jackman *et al.* (2015:33-34) state that the purpose of observation during young learners' play includes assessing the young learners in their natural setting (seen as play). Observing young learners during sensory play gives the teacher an indication of their sensory profile, e.g. whether they exhibit sensory-seeking or sensory-avoiding behaviour. These observations allow

the adult or teacher to not only plan sensory play experiences, but also to plan opportunities for future learning experiences and afford teachers and parents with a comprehensive view of the young learner's progress over time.

Gray and Macblain (2015:95–96) note that Vygotsky believed that a person's shared social and cultural experiences help them construct their knowledge. Vygotsky claimed that these tools become imperative in developing a young learner's thinking and that these activities formed a bridge between lower-order (concrete) thinking to higher-order (abstract) thinking.

The theoretical underpinning related with the constructivist epistemology is the works of Piaget (2013), Bruner (1972) and Vygotsky (1980). These theorists provide various descriptions of cognitive development and constructivism – however, all of them believed that young learners are active in their acquisition of knowledge (Aronstam & Braund, 2015:1).

Nel *et al.* (2016:42) posit that Piaget believed otherwise - that knowledge is constructed through social experiences and it is therefore important that learners collaborate on an interpersonal level. Piaget's theories compel teachers to adopt a process-centred teaching approach, in which they facilitate and guide learning and discovery. Gray and Macblain (2015:95–96) and Gordon and Browne (2011:337) describe young learners as becoming the lone scientists who create their own sense of the world as a result of their explorations and are therefore building upon this knowledge and previous understandings.

Vygotsky recognised scaffolding in play as well as in classroom activities. Scaffolding is a teaching strategy to facilitate and support young learners in playful learning experiences in order for them to engage in high-level play in a manner that gives play and learning a meaning and developmentally appropriate benefit for them. According to Hammond and Gibbons (2005:12), scaffolding involves on-the-spot assessment of the young learner's capability to be successfully independent in the task at hand and goes beyond modelling or thinking aloud. The teacher thus observes and determines what the young learner can and cannot do. The teacher needs to consider the level of support or scaffolding the young learner needs. Scaffolding will therefore be different for each young learner and each play situation, and must also consider the part played by other children.

Gronlund and Rendon (2017:32) are of the opinion that if teachers observe young learners relishing their challenges without needing their assistance, they may consider providing provocations to further complicate what young learners are doing during play. Gestwicki (2017:87), as well as Gronlund and Rendon (2017:32–35), conclude that the two teaching strategies, i.e. scaffolding and provocations, work hand in hand. Teachers can engage with young learners in facilitating and supporting young learner-directed and open-ended play.

Excell and Lington (2015:15) note that the teachers' personal epistemology has an effect on their teaching practices and learning. Therefore it is fair to mention that the reception teacher ends up taking on many roles in the class to allow them to present young learners with a meaningful and rich learning experience in a culturally responsive and contextually appropriate environment. Creating a rich natural learning environment in this way is the most important task of the professional reception teacher.

According to Kranowitz (2005:245–260), the sensory-impaired learner often has enormous difficulty in the classroom. Their difficulty can be attributed neither to a lack of intelligence nor lack of willingness, but usually involves learners having difficulty knowing what to do and how to go about doing it. This might present them as being disorganised and unable to settle down to work.

Kranowitz (2005:245-260) furthermore notes that the school environment might be gruelling for the sensory-impaired learner for the following reasons:

- Pressure to perform and to conform.
- The ever-changing routines in the school environment.
- Excessive sensory stimuli in the environment, for example lights, sounds and odours.
- Insufficient sensory stimuli.
- Being misunderstood by the school administrators
- Many young learners might experience school as unsafe, risky and unpredictable.

Koomar, Kranowitz, Szklut, Balzer- Martin, Haber and Sava (2007:13) also emphasise that sensory-impaired young learners benefit from a predictable schedule and suggest that any changes in these learners' schedule or routine from that day need to be highlighted or discussed with them beforehand. Koomar *et al.* (2007:13) and Green and Chee (1997:100) further suggest the implementation of several organising techniques in the classroom and anticipating and preparing the learner in advance for any transitions that will help create a more sensory-friendly school environment.

#### **2.6.2.4 Sensory play and the learner**

Williamson and Anzalone (1996, cited in Yack, Sutton & Aquilla, 2002:22), describe sensory processing as occurring in the following five steps: sensory intake (awareness of sensory input), sensory registration (paying attention to the new sensory information received), planning and organising of behaviour (interpretation of sensory information), adaptive response and learning (deciding how to respond to the sensory message), and feedback (execution of a response).

Parham and Mailloux (1996:384) defined five specific functional impairments connected with sensory processing disorders:

- Diminished social skills and engagement in play activities.
- Diminished rate, length or intricacy of adaptive responses.
- Reduced self-confidence, self-esteem or both.
- Inadequate adaptive or day-to-day life skills.
- Weakened fine, gross and sensory-motor skill development.

Parham and Mailloux (2005:356-411) confirm that for persons with sensory processing impairments the distress, apprehension or disquiet that accompanies ordinary social situations and disturb daily routines compound that processing inability. Kranowitz's (2005:39) research highlighted that appropriate sensory processing would result in an organised brain, which forms our perceptions, behaviour, and learning. For the first 6-8 years of life this process occurs via a sequential and predictable progression. This means that when the average young learner enters the foundation phase in primary school, his or her senses are efficiently integrated permitting him or her to learn, participate and self-regulate in school and other environments.

#### **2.6.2.5 Sensopathic aspects**

The tactile organ is described by Gascoyne (2012:25) and Ayres (2015:40) as our skin. It is the first sensory organ to develop, even before birth, and it remains the organ responsible for the sense of touch. Typically, young learners' lives include plentiful visual experiences, whilst tactile experiences are more limited. Butterworth and Harris (1994:65) established that a baby of about one year old can recognise the equivalence of information picked up by different sensory modalities and that the sense of touch and vision work in unison. These are the basis for this study – focussing on sight and touch, or sensopathic inputs.

Brierely (1994, cited in Broadhead, 2004:7) reminds us of the multi-sensory synchronicity of the brain by the notion of “young learners’ exploring fingers [as] an extension of their eyes”. Gascoyne (2012:25) maintain that “[t]hrough the sensory exploration of the tactile sense we are able to gain information on the shape, size, texture, temperature and weight of the object”. We are also able to gain information on how we can hold and touch the object as well as the geometric properties such as size and shape.

A baby typically gains multi-sensory feedback through mouthing and exploring objects with their fingers and mouth. The baby is better equipped to grasp of the world around them through the sensory feedback that starts to develop. This relates to Piaget's theory, which proposes that play provides these experiences to an infant in his or her sensorimotor development stage to allow him or her to discover the world through his senses. Kurtz (2006:12) observed that the

nerve fibres between the eyes and the skin are myelinated at first, and this enables an infant to engage in sensory-rich explorative play, which is an essential element for promoting further brain development.

Sight is a complex sense that helps us investigate our surroundings and determine our positioning relative to objects around us. Sight reinforces what we learn through our other senses and assists the learner in determining what an object's properties are, such as size, shape and colour. It can also help the child recall whether an object is safe to touch, how it feels and how heavy it is (Kraemer, 2001:50).

According to Hanscom (2016:100), sight is one of the most important senses for survival. It allows smooth and accurate scanning for and of objects. Hanscom (2016:100) maintains that visual perception forms part of sensory processing, as it forms part of the registration, interpretation of and response to sensory stimulation in the environment and the young learner's own body. Visual perception contains much information that needs to be processed. Needless to say, if visual perception is not fully developed, then the play and learning experience of the learner will be impaired. This will inevitably have an effect on the acquisition of early learning skills.

## **2.7 Sensory play and pedagogy**

Young learners and play are often considered to go hand in hand; play is the natural way of learning. Researchers have become interested in how traditional theorists viewed sensory play and learning and how the ideas about early learning have been influenced (Grieshaber & McArdle, 2010:4). These researchers show that Comenius (1592-1670) believed that most learning was achieved through the senses, and that sensory education therefore should be prominent in early learning. He also believed that it should form the basis of all learning, as it engages all the senses, is freely available in the learning environment and young learners naturally gravitate towards sensory play experiences (Kashin, 2019:1). Although sensory play is everywhere, it is not picture perfect, and it is 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 in ECE which should not be overlooked nor disregarded.

Edwards and Cutter-Mackenzie (2013:327) describe play-based pedagogies as ranging from "open-ended and freely chosen" play to more teacher-oriented, play-based activities. Sensory play could be regarded as "freely chosen, open-ended" play, but needs to be embedded in pedagogy if it is to lead to the construction of knowledge and teaching of concepts. A healthy balance between sensory-based, open ended, child-initiated learning experiences and teacher-directed sensory play activities should be strived for when planning the curriculum. The result should be an educational and responsible, yet enjoyable experience for both the learner and

the teacher. In spite of the many studies that support play-based learning in ECE, it is no secret that in recent times play-based learning has gradually been replaced with more academic instructional approaches because of pressure on teachers to produce better academic results (Agbagbla, 2018:26; Pyle & Danniels, 2017:274; Rogers & Evans, 2008:16).

### **2.7.1 Types of sensory play**

There is a multitude of types of sensory play, and although a myriad of sensory resources has been identified, countless homemade and commercial resources are also available. Many people associate sensory play with messy play, and this attitude limits the application of sensory play and overlooks the enriching properties sensory play provides. More often than not, natural resources offer the most exciting and engaging resources, besides not generating any waste (Gascoyne, 2016:17). The following types of sensory play will be covered in this study: water play, sand play, treasure basket play, heuristic play, playing with loose parts and rough and tumble play.

Early childhood teachers facilitate and activate the young learners' active involvement in educational and scientific processes by providing materials and encouraging young learners to not only observe, but to predict, describe and theorise about what they are doing. This approach has been historically recognised and promoted by many theorists including Vygotsky (1980), Malaguzzi (1994) and others. This investigative approach has also been used in Reggio Emilia schools throughout Italy for decades (Gross, 2012:4-5).

#### **2.7.1.1 Treasure baskets**

Goldschmied (1989:9) created a treasure basket which had the senses at its core. She noticed the rich sensory value that commonly available household objects hold, initially for the younger and later also for older learners. Young learners do not only use their five senses to explore the objects, but also use their hand-eye coordination in playing with these objects, which offers them sensory stimuli in numerous ways.

According to Gascoyne (2016:162), a treasure basket is a sensory-rich collection of objects. The basket is made of natural material and brimming with materials chosen for their variety and sensory appeal and attraction. It is far better to include objects which have been selected for their own sensory merit than to fill the basket with objects of less or inferior quality. Natural items such as objects made from metal, stone, cardboard, wood, fabric, rubber and leather are preferred. Objects should have a mixture of colours, shapes and functions. Objects should also be able to move differently and have varying sizes, mass, textures and other characteristics.

All features mentioned above should collectively appeal to the senses for their own merit. Some of the characteristics of objects that will stimulate early learners' senses are:

- Sight: Different colours, forms, lengths, and shininess
- Smell: Different scents
- Sound: Ringing, banging noises
- Taste: Restricted, but possible
- Touch: Texture, weight, shape and temperature

(Gascoyne, 2016:24; Goldschmied, 1989)

If a cosy floor mat is available, learners' concentration and focus can increase, thus improving learning outcomes. Treasure baskets can cater for a wide range of ages, from babies to older learners, depending on the objects selected. Its appeal is that it is a portable resource that can be used for open-ended and unstructured indoor as well as outdoor play, and it can also be used as a sensory snack at specific times throughout the school day (Gascoyne, 2016:37; Gill, 2011:15-18).

### **2.7.1.2 Heuristic play**

The terms mean “discovery play”, and was devised by Goldschmied and Hughes (Gascoyne, 2016:28). The difference between a treasure basket and heuristic play is that while both are based on handling and playing with sensory-rich objects, in heuristic play the objects offered are an eclectic collection of similar objects instead of the different objects used in treasure baskets (Gascoyne, 2016:162). Heuristic play involves collecting lots of bags (20 or more), each containing a similar type of object. It offers the young learner an opportunity for uninterrupted exploring, and a large set of permutations for play (Gascoyne, 2016:38).

In a typical session, the room is cleared of any other toys. Small collections of similar resources are arranged on the floor, e.g. hoops, tennis balls and so forth. Several large tins and other containers are arranged for the young learners to use for sorting (Gascoyne, 2016:38). Heuristic play offers the opportunity to develop skills that are needed for grade R learners, such as flexible thinking, rearranging, and regrouping the collection and sorting objects in different bags (Gascoyne, 2016:38).

Heuristic play can be open ended, and young learner-initiated play leaves plenty of opportunities to engage in exploratory play. Depending on the activity, it can evolve into a child-initiated activity scaffold mediated by an adult in order to reach certain learning outcomes. A good principle to install and harbour in the use of both these activities is “Ubuntu”, which means “sharing and making sure the objects are in good order to use again.”

### 2.7.1.3 Other materials

Gascoyne (2012:83) has observed that sensory-rich play does not only naturally appeal to young learners, but also lends itself to independent learning, creativity and problem solving, and that the combination of natural resources with the learner's body enhances the play experience. Gascoyne (2016: 41) furthermore points out when other materials are introduced one should be sensitive and respectful in the choice of the material included. A middle ground should be found and the opinions of all the parties involved should be respected, especially if one is introducing foodstuffs. Gascoyne (2016:41) suggests that natural materials like grass, seedpods, petals and twigs might be more applicable than foodstuffs.

#### 2.7.1.4 Theory of loose parts

Nicholson (1971:30) introduced the Loose Parts theory and advocated the value of open-ended play materials to accord with the ideas and possibilities that develop in young learners' minds as they play. Playgrounds had become preconfigured spaces, with fewer opportunities for open-ended play. He held that all humans have creative potential and that loose parts in any setting offers enormous imaginative opportunities, unlike settings with fixed elements (Broadhead & Burt, 2012:31).

The theory of loose parts affirms that "In any environment, both the degree of inventiveness and creativity as well as the possibility of discovery are directly proportional to the number and kinds of variables in it" (Nicholson, 1971:30). Brown (2003:56-57) furthermore posits that the theory of loose parts increased flexibility in the environment and enhanced flexibility in the young learner, moving them closer to their developmental potential than would otherwise be the case.

Educators recognise the potential of loose parts in promoting learning and development in young learners in an increasing number of early learner classrooms today, incorporating a wide variety of loose parts into their environments. Nicholson uses the word "environment" in the all-inclusive sense, i.e. "a system of interactive parts that affect us" (Nicholson and Schreiner, 1973:19). He presents the sea as an excellent good model of a loose-parts environment, as it includes everything from sand to the rock pools that vary with the waves.

The use of loose parts as play objects offers many play possibilities. Importantly, they have multiple rather than single outcomes, implying that there is not a specific way to use items. However, Nicholson is of the opinion that this is not entirely a random process – his description of a lose-parts environment is that is has the form of organised confusion, where everything has a place (Nicholson & Schreiner, 1973:20).

Berry (1993:115) stated that through the introduction of loose parts dramatic play was stimulated, and an increased amount of time was spent playing with the addition of loose parts.



Parkinson (1987:12) notes that one of the features governing the degree of the young learner's play were the number of loose parts involved. Nicholson (1971:34) himself points out that the loose parts environment is an all-inclusive concept that consists of solid structures as well as any creative materials contained in it. He suggested a combined environment of loose parts and fixed structures to facilitate creative possibilities in young learners' play.

#### **2.7.1.5 Water play**

Significant opportunities for exploration and play are provided by using water (Gascoyne, 2016:30). Water is fun, fascinating and multifaceted, and young learners can play with water endlessly - sometimes it is difficult for adults to encourage young learners to leave the sink when a water table is not available (Gross, 2012:3). Water play provides indoor and outdoor sensory learning opportunities. Free play with water builds the foundation for understanding a multitude of concepts and provides a myriad of learning opportunities.

Through the addition of bubbles, complex concepts for exploration in areas such as the light spectrum and colour among other concepts are introduced (Gross, 2012:7). Variations in the temperature of the water increase its sensory appeal and generates a myriad of different sensory experiences not only of a ludic nature, but also of educational value for the player. The versatility and potential of water to be moulded and transformed is only limited by young learners' imagination and creativity. It is not only virtually endless, but provides and enhances stimulating opportunities for communication and critical thinking (Gascoyne, 2016:30).

#### **2.7.1.6 Sand play**

Few young learners can resist the magical and flexible qualities of sand (Gascoyne, 2016:27). Matterson (1975:42) emphasised some of the singular qualities of sand that not only have to be experienced, but also understood. He explains that dry sand has the ability to be poured and used to fill shapes, it is warm to the touch and shifts in interesting ways, acting more like a fluid than a solid in some ways. If one adds water, the attributes and textures of sand are altered, offering up the potential of not only construction and manipulation, but also for pattern-making and imprints. It also has the quality to change, if too much water is added, into a sloppy liquid that can produce splashing and slurping sounds. If the water dries up, the entire process can be reversed.

Sand is an open-ended material that gives the child the freedom to build developmental concepts. Sand play is suitable for both indoor and outdoor environments, and besides valuable opportunities for young learners to stretch their imagination, they also to learn cognitive, social and physical skills (Crosser, 2008). Sand play is strongly underpinned by Piaget's (2013) constructivist theory, which describes the child's inner drive to build and understand their own world as they play and interact with materials. Complex concepts become more accessible for

young learners through the freedom to play with sand, as it offers a wealth of play possibilities and sensory experiences (Crosser, 2008).

### **2.7.1.7 Rough and tumble play**

Huber (2017:12) defines Rough and Tumble Play (R&T) as play which uses the full body, including body contact with other individuals or body contact with objects. R&T involves all physical activities such as running, jumping and mock fights and exhibits close similarities with sensopathic-focused sensory play. Jarvis (2013:63) observes that R&T play creates a positive and emotional involvement amongst players and is often detected amongst young learners who are friends, but seldom between young learners who would otherwise have a relationship. This specifically distinguishes R&T from aggressive conduct. Tannock (2011:13) expands the definition of R&T play to include solitary activities, e.g. striking objects with feet or hands or an object such as a racket or a bat as well.

Huber (2017:14) states that both genders engage in R&T play, but Tannock (2011:15) acknowledges that boys tend to engage in R&T play significantly more often than girls. Jordan (1995) cited in Jarvis (2013:63), suggested to rather discriminate between gender-related R&T play on the grounds of “gendered language” as opposed to general play activity just based on gender. March (2000, cited in Jarvis, 2013:63) similarly discovered that when young learners participated in R&T play, both genders willingly engaged in the play, but the underlying narratives fashioned to frame the play showed gender alignment. Boys preferred to engage in justice intervention: pursuing, capturing and dealing with “bad guys”, while girls tended to use their make-believe capabilities to assist helpless people and one another.

Researchers such as Jarvis (2013:63–77), Olusoga (2014:40–64) and Huber (2017:10-11) have described and observed the many positive aspects R&T play contributes towards the development of the young learners in detail. Blatchford, Pellegrini and Blaines (2016:96) have made special mention of advanced social problem-solving skills and social intelligence amongst five-year-old boys who engaged actively in R&T play. Huber (2017:35) highlights advanced body awareness as well as the growth of self-regulation as other aspects that showed positive development through R&T play. The ability to self-regulate during these cycles of high activity or high arousal and low activity and low arousal forms a significant part of social-emotional maturation. As adults we do not necessarily give them enough credit for self-regulation, as Huber (2017:35) notes, based on a personal comment from Nancy Boler.

R&T play involves a lot of tactile tolerance. Tactile input (a cornerstone of sensopathic-focused sensory play) can be described as receiving input from another person as well as tactile tolerance in feeling objects and materials (Huber, 2017:40–41). According to Winnie Dunn ‘s sensory profile theory (described in section 2.4.3.2), not all young learners have the same

neurological threshold to process and tolerate the tactile input, and thus might either become tactile-seeking, or tactile-avoiding. Both these patterns of behaviour are elicited during R&T play. Through accurate observation and intervention, these behaviours can be replaced with tactile-tolerance experiences, which in turn enable the tactile-avoiding or tactile-seeking child to be more receptive to the sensory input and thus scaffold and assist self-regulation (Huber, 2017:43).

According to Willoughby (2011:9), another benefit of R&T play is that it is risky play that includes “emotional resilience”, “learning to be creative and resourceful, creative and inventive”, “awareness of the capabilities and the limits of their bodies”, and “the ability to assess risk”. Young learners are capable of assessing risk; this skill is important for their development and in learning how to trust others (Knight, 2011:16).

R&T play is not limited to the outdoor environment but can also be successfully conducted indoors. The benefits of R&T play are significant, as it can be incorporated with other open-ended sensory materials, including water and sand play as well as other materials, and natural and human-made loose parts. We need universal exploration and expression through play to develop sensory processing and accommodation in all young learners, regardless of their specific needs.

## **2.8 Conclusion**

Chapter two brought together the theories of pedagogy, play pedagogy, sensory processing and sensory processing improvement strategies. It also examined some of the best practice school systems in the world today. Referring to my primary research question, “How can sensopathic-focussed teacher-led sensory play in the play pedagogy context influence sensory processing?”, I am convinced it is possible to answer this question by drawing on the theoretical background, and moreover that the theories expounded in this chapter provide a guiding light.

The interpretations of the theories and the application by various practitioners and theorists have convinced me that the notion of improving the school readiness of Grade R learners is not only possible, but also feasible, if teachers are given guidelines and training. In the South African context, it would be naive to expect changes of the scope described in this chapter, but definite guidelines can be drafted that will allow teachers to identify learners with problems and enable them to address these problems where possible. One should however be careful not to expect teachers to replace the occupational therapist in this picture and any guidelines should take this into consideration.

### 3 Chapter 3: Research design and methodology

#### 3.1 Research design and methodology layout

The layout of chapter 3 is shown in Figure 3-1 below. It indicates the procedure followed in the research phase of the study.

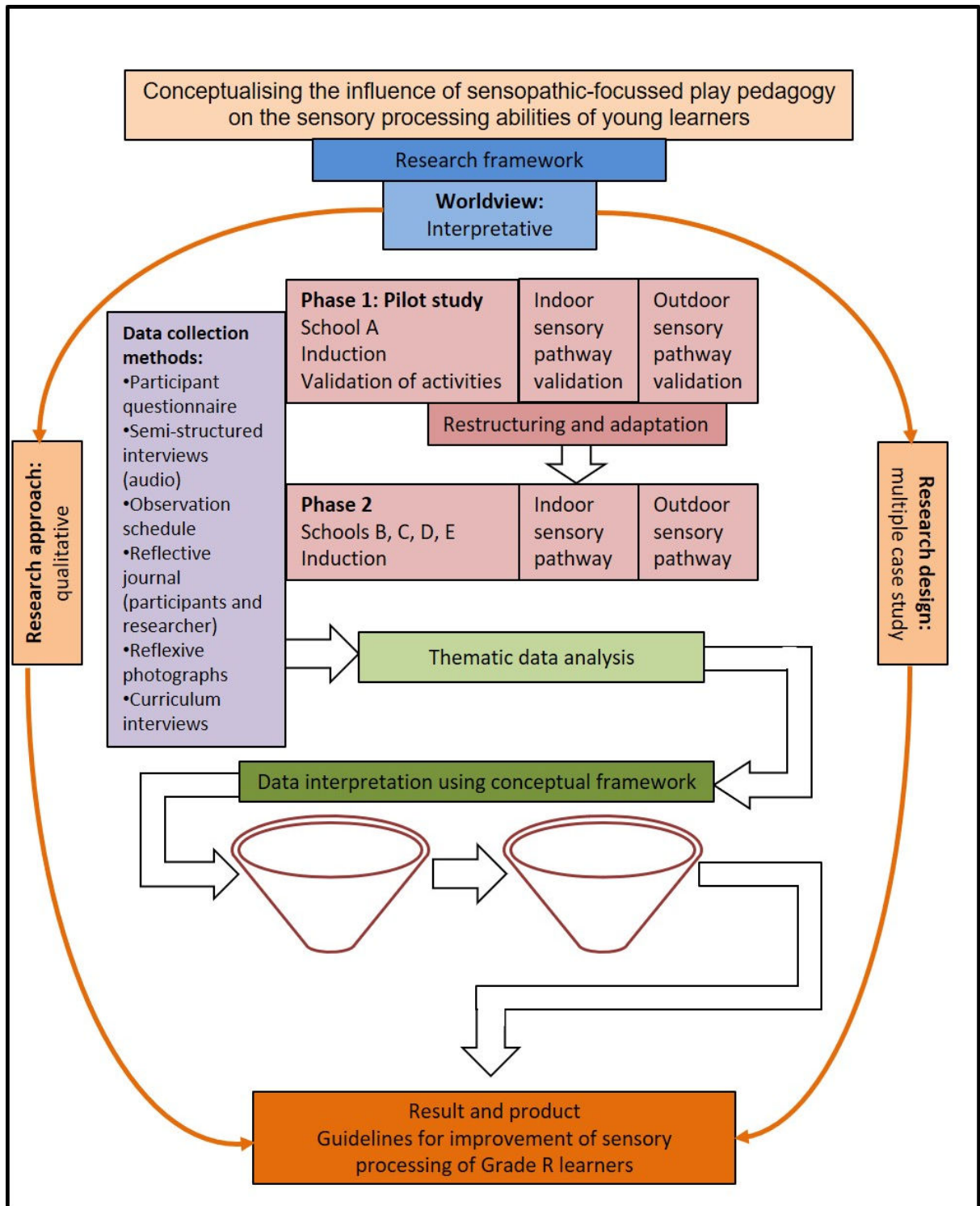


Figure 3-1 Research and design methodology layout

### 3.2 Introduction

Chapter two examined the conceptual framework developed for this study. Chapter three describes the research design and the methodology that was used to generate the data. I made use of a scientific process to qualitatively measure the research phenomenon – conceptualising the influence of sensopathic-focussed play pedagogy on the sensory processing of the young learner. To capture this unique worldview, I identified a qualitative method, using a multiple case study design to inform my comprehension of the material.

The mode of enquiry, the process of sampling participants and the choice of research sites are reported, as well as the physical process of generating the data in various phases and the tools used. Table 3-1 shows a summary of the methodology used, while Figure 3-1 shows the graphical layout.

**Table 3-1 Preview of the research methods and process**

Methodological framework	Methodological justifications	Practical implications
Phenomenon Worldview	Conceptual framework	Sensopathic-focussed play pedagogy
Research paradigm	Interpretivism	<ul style="list-style-type: none"> <li>• <u>Ontological assumptions:</u> Nominalist</li> <li>• <u>Epistemological assumptions:</u> No fixed truths, as reality and meaning are dependent on various factors.</li> <li>• <u>Assumptions about human nature:</u> Both determinism and voluntarism</li> <li>• <u>Methodological preferences:</u> Idiographic</li> </ul>
Research design	Qualitative	Principles <ul style="list-style-type: none"> <li>• Nature of human experiences</li> <li>• Tends to start with 'what', 'how'.</li> <li>• Exploring within the context of everyday life, and an individual's explanations and interpretations.</li> <li>• Interpretative and realistic, as it attempts to comprehend and elucidate beliefs and actions within the framework in which they occur.</li> </ul>
Research approach	Multiple case study	<ul style="list-style-type: none"> <li>• In-depth investigation of groups of individuals and events to explore the causes of underlying principles.</li> <li>• Descriptive and exploratory analysis of the groups and events.</li> </ul>
Research strategies	Sample and research site	<ul style="list-style-type: none"> <li>• Non-probability</li> <li>• Purposive technique</li> </ul>

Methodological framework	Methodological justifications	Practical implications
		<ul style="list-style-type: none"> <li>• Five schools in the Pretoria area chosen as research sites</li> </ul>
	Data generation technique and documentation method	<ul style="list-style-type: none"> <li>• <u>Observation</u> schedules to observe groups of individuals and specific events.</li> <li>• <u>Researcher's field notes</u></li> <li>• <u>Questionnaires</u> – captured by participants in Q-survey.</li> <li>• <u>Participants reflective journal</u> – captured by participants in Q-survey, which also allowed for photographs.</li> <li>• <u>Researcher's reflective journal</u></li> <li>• <u>Semi-structured interviews</u> – verbatim transcripts per participant to observe individuals in each session.</li> <li>• <u>Semi-structured interviews</u> – verbatim transcripts per participating school to curriculum and pedagogic policies</li> </ul>
	Role of the researcher	Non-participatory observation
Data analysis strategy	Deductive method	<i>A priori</i> coding tree <ol style="list-style-type: none"> <li>a) Four theoretical areas (statements)</li> <li>b) Fourteen categories</li> <li>c) Twenty-nine codes</li> </ol>
Quality assurance	Data verification method	<ul style="list-style-type: none"> <li>• Credibility</li> <li>• Transferability</li> <li>• Dependability</li> <li>• Conformability</li> </ul>
Ethical considerations	Institutional	<ul style="list-style-type: none"> <li>• Ethical clearance from Faculty of Education</li> </ul>
Research generalisations	Textual	<ul style="list-style-type: none"> <li>• Analytical</li> <li>• Logical</li> </ul>

Adapted from Agbagbla (2018:73–74); Creswell & Creswell (2018:7); Maree & van der Westhuizen (2009:20-32); Van der Walt & Potgieter (2012:222), Van Heerden (2011:63–64)

Table 3.1 above previews the research process. Each of the items indicated in the table will be discussed further in this chapter and in chapter 4. The chapter is concluded with an examination of the ethical considerations applied in the study.

### 3.3 Methodological framework

Nieuwenhuis (2016a:50) states that words are the only instruments we have to create meaning, and complex meanings can often only be defined in a particular or a specific setting. The meaning authors attempt to convey is sometimes influenced by their own presuppositions and views, which may cause the definitions they present to be partial and tentative. Hesse-Biber and Leavy (2011:35) describe the research framework as the link between our world view (philosophical standpoint) and the process (design and research method).

During planning for research, the intertwining of world views, design and methodology needs to be evaluated in order to find the correct approach. The research framework that connects these concepts is represented in figure 3-2.

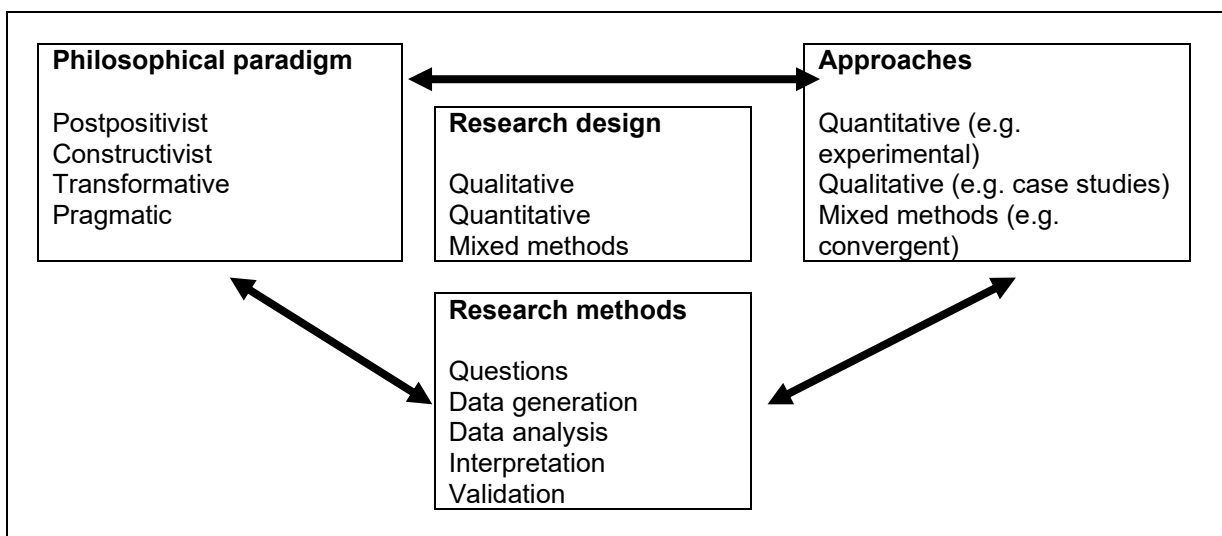


Figure 3-2 Framework for research (adapted from Creswell & Creswell, 2018:5)

### 3.4 Research paradigm

Creswell and Creswell (2018:5) define the term “worldview” as meaning “a basic set of beliefs that guides action”. These are also referred to as “paradigms” by Lincoln & Guba (1985:15) that characterise our thoughts about the world, but which we cannot show to be true. Our activities in the world, including any actions we undertake as enquirers, cannot take place without referring to these paradigms. For Nieuwenhuis (2016a:56), ontology is the answer to the question what truth or reality is, whereas epistemology is the answer to the question how we can know. For the purposes of this dissertation, I use the term “paradigm”.

A worldview is seen as a general philosophical orientation towards or lens through which the world and the nature of study are seen, which is influenced by researchers based on their own beliefs and experiences (Creswell & Creswell, 2018:6). They identify four specific paradigms,

namely post-positivism, constructivism (normally associated with interpretivism), transformative and pragmatism. The differences between these paradigms are shown in Table 3-2.

**Table 3-2 Paradigms (Creswell & Creswell, 2018:6)**

<b>Post-positivism</b>	<b>Constructivism</b>
<ul style="list-style-type: none"> <li>• Determination</li> <li>• Reductionism</li> <li>• Experimental observation and quantification</li> <li>• Theory verification</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Multiple participant understandings</li> <li>• Social and historical constructs</li> <li>• Theory development</li> </ul>
<b>Transformative</b>	<b>Pragmatism</b>
<ul style="list-style-type: none"> <li>• Political</li> <li>• Oriented to power and fairness.</li> <li>• Collaborative</li> <li>• Oriented to change</li> </ul>	<ul style="list-style-type: none"> <li>• Consequence of actions</li> <li>• Problem-centred</li> <li>• Pluralistic</li> <li>• Real-world practice-oriented</li> </ul>

Paradigms thus serve as organising principles by which reality is made intelligible. Schwartz and Ogilvy (1979:1) regard paradigms as frameworks that enable us to present a coherent narrative by portraying a world that has meaning and function, but remains culturally subjective.

### 3.5 Interpretivist paradigm

According to Creswell and Creswell (2018:7), constructivism is most often combined with interpretivism. Nieuwenhuis (2016a:62) notes that interpretivist research offers a precept on a situation and analyses the situation under study. The research generated provides insight as to how a specific group makes sense of the events that they encounter. The observed meanings are varied and multiple, guiding the researcher to examine the complexity of interpretations rather than reducing meanings onto a few groupings or concepts. The intention of the researcher is to make sense of the interpretations and to generate or inductively form a theory (Creswell & Creswell, 2018:8). Nieuwenhuis (2016a:62) states that one of most significant advantages of the interpretivist method is not only the richness, but also the depth of descriptions and explorations it provides. In truth, the strength of good qualitative research is the thick descriptions it produces.

From the above it can be seen that the best fit for my research is interpretivism, as my goal is to make sense of the association between sensopathic sensory processing and school readiness and to generate a theory to guide implementation of certain guidelines in schools. My study was therefore performed as an interpretive investigation, aimed at in-depth



understanding of the conceptualisation of the influence of sensopathic-focussed play pedagogy on the young learner in the environment of the phenomenon and the ability of the participants to construct meaning based on observations, and the study of the subjects in their social contexts as well as the research participants' perceptions (Nieuwenhuis, 2016a:60). Interpretive studies are based on the understanding of events by examining the connotations that people assign to them. Mukherji and Albon (2015:25) also note that an interpretivist position emphasises gaining a detailed insight into an issue rather than an ability to make generalisations about the world.

### **3.6 Research design**

Gough (2002) posits that the concepts used in research pertain to a multifaceted set of human behaviour and understanding and can rarely be condensed to simple, static and explicit definitions. The difference between a quantitative (scientific) and a qualitative (social) enquiry is that in the former grounded procedures are used to extend knowledge that a community of scholars in that discipline regards as valid and reliable.

Constructivist and interpretivist paradigms are described by Creswell and Creswell (2018:17) as most often adopting qualitative approaches encompassing observation of behaviour. They further state that in a qualitative approach, the researcher's goal is to establish the meaning or interpretation of an event or phenomenon from a group of participants, and one of the essential elements of generating data in such a way is observation of the participants' behaviour while engaged in activities.

Social sciences (as opposed to physical sciences) do not have a universally accepted approach, but the rich research traditions cannot be ignored, and the chosen methods of enquiry must rest on rational justification; this entails that every piece of qualitative research must be informed by certain philosophical, methodological and technical criteria that make it scientific. Hence Hesse-Biber and Leavy (2011:15) state that qualitative research provides a comprehensive landscape encompassing diverse viewpoints and practices for generating information. As a result, Snape and Spencer (2003:22) conclude that the methodology, goals, participants, theories and paradigms underpinning qualitative research can be a diverse set of ideas encompassing various approaches in order to research a social phenomenon.

According to Nieuwenhuis (2016a:53) qualitative research is distinguished by its reliance on language-based rather than mathematical data and makes use of meaning-based interpretations instead of statistical or experimental methods of data analysis. It is also true-to-life, as it concentrates on the natural surroundings where interaction takes place. Qualitative research uses open, exploratory research and places emphasis on understanding phenomena. Hartell and Bosman (2016:30) note that the researcher poses a question in a qualitative study,

and not a hypothesis or goal. The differentiation between the various research designs with their characteristics is shown in Table 3-2 below.

**Table 3-3 Research designs (Creswell & Creswell, 2018:12)**

Quantitative	Qualitative	Mixed Methods
<ul style="list-style-type: none"> <li>• Experimental strategies</li> <li>• Non-experimental methods such as surveys</li> <li>• Longitudinal designs</li> </ul>	<ul style="list-style-type: none"> <li>• Narrative research</li> <li>• Phenomenology</li> <li>• Grounded theory</li> <li>• Ethnographies</li> <li>• Case study</li> </ul>	<ul style="list-style-type: none"> <li>• Convergent</li> <li>• Explanatory sequential</li> <li>• Exploratory sequential</li> <li>• Complex designs with embedded core designs</li> </ul>

As this is a qualitative study and generates primary textual data by way of case studies and observation results from participants, this is classified as an empirical study (Hartell & Bosman, 2016:26). Data was generated through interviews and observations, but due to ethical considerations, I could not report on any private information I observed. As researcher I have had first-hand experience in the observation of the participants and any unusual aspects or different behaviour were noticed during the observation by the participants.

### 3.6.1 Research approach

The research was based on case studies. The goal was to obtain an in-depth understanding of a small number of cases set in real-world contexts (Nieuwenhuis, 2016c:107). Nieuwenhuis defines the case as an event or activity of some sort occurring in a circumscribed context. Joubert (2016:135) notes that case studies are often best at answering the “how” and “why” types of research questions and that a multiple case study approach is more than a methodology.

A case study consists of one context with one case (Joubert, 2016:144–145). However, since I examined a number of sites (contexts) with multiple participants per school, it made more sense to have a case study for each school, resulting in application of the multiple case study approach. This would constitute a multiple case study design with a single analysis per case study. Advantages of this approach are that the application is across multiple contexts, and it also allows for better quality due to its suitability for triangulation.

In this research I made use of multiple case studies to enable me to explore differences within and between cases, but also to replicate findings across cases. This enabled me to examine events within each specific setting and also across multiple settings (Nieuwenhuis, 2016c:107).

As Mukherji and Albon (2015:106) note, multiple case studies also allow for generalisation to a wider population. It should also be noted that in multiple case study analysis the focus is on the instrumental, i.e. the “case” is an instrument or device that the researcher uses in order to understand a wider phenomenon in greater depth, and the case is used as a means to an end (Mukherji & Albon, 2015:105).

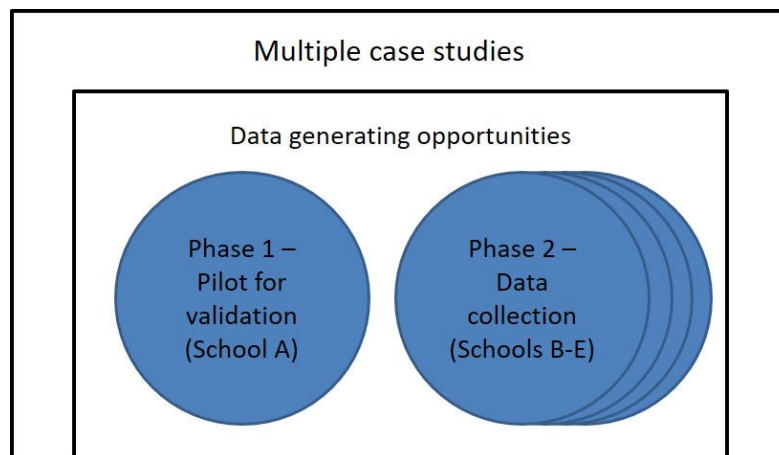
Table 3-4 provides a classification for this particular research study based on Joubert’s description (Joubert, 2016:143)

**Table 3-4 Case study classification (adapted from Joubert (2016:143))**

Type of case study and research question	Aim of multiple case study	Method of data generation
Multiple cases used to understand practice or education. For this research inquiry the researcher aimed to understand how play pedagogy can improve sensory processing of Grade R learners.	Understanding the teaching and learning process, rather than evaluating it. The results of the data are then used to strengthen practices and refine policy.	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Semi-structured interviews</li> <li>• Reflective journals</li> <li>• Software survey system (Q-Survey)</li> </ul>

Figure 3-3 shows how multiple case studies have been applied, with the Phase 1 pilot study used to validate the data generation as well as to contribute data. Phase 2 provided the bulk of the data for the research project, as is further discussed in section 3.5.

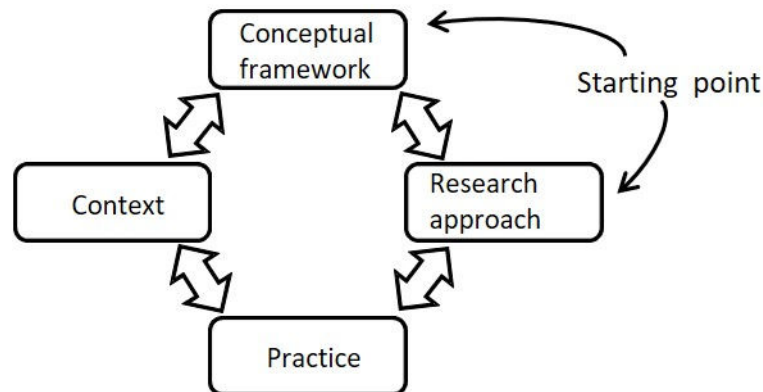
I analysed the data generated from the case studies using themes deduced from my research questions. These themes were used for a thematic analysis of the data.



**Figure 3-3 Multiple case study approach**

The relationship between a multiple case study approach and conceptual framework is often mutually supportive and the relationship is depicted in figure 3-4 (Joubert, 2016:151). The figure

shows that either the conceptual framework or the research can be the starting point of the case study. It thus supports the use of the conceptual framework to frame the research approach, while allowing the research approach to influence the conceptual framework.



**Figure 3-4 Relationship between case study and conceptual framework (adapted from Joubert, 2016:151)**

Figure 3-4 illustrates how the information gleaned from a case study can influence the research into other aspects or directions. It can also affect the practice flowing from the research into a particular context.

### 3.6.2 Sampling method

The research sites were specifically selected to provide a wider base than just play-based schools. This is an example of purposive sampling, as Ritchie, Lewis and Elam (2003:79) note, members of a purposive sample are selected to represent *inter alia* a group or category as a key condition.

For this study I applied six key criteria for non-probability purposive sampling as described by Miles and Huberman (1994:27) and Nieuwenhuis (2016b:85). The descriptions and applicability of the criteria to this study are shown in Table 3.5 overleaf.

Patton (2015:265) describes the various types of purposive sampling, with stratified purposive sampling defined as constituting a hybrid approach. In this approach, the selected groups display variation on a particular phenomenon (their application of play-pedagogic principles for this study), but also provide common traits. This describes the research approach in this study fairly well. Importantly, while research sites were chosen in this way, participants in the study were selected from qualified teachers employed at the chosen sites based on the criteria discussed in section 3.6.3.

**Table 3-5 Purposive sampling criteria (adapted from Nieuwenhuis, 2016b:85)**

Criterion	Description	Applicability to this research focus
1	The sampling strategy should be relevant to the conceptual framework of conceptualising the influence of sensopathic-focussed play pedagogy on the young learner and the research questions.	All of the schools selected have some degree of play-based experience, with some significantly more than others. This provides a window on the research questions from a variety of lenses and angles.
2	The sample should be likely to generate rich information on the influence that sensopathic-focussed teacher-led play pedagogy has on the sensory processing abilities of young learners.	The selected schools have varying degrees of play-based pedagogic influences on their curricula and thus provide for a varied approach, varied facilities, and varied levels of experience.
3	The sample should enhance transferability of guidelines that can be formulated for implementing sensopathic-focussed sensory play pedagogy in policy and practice.	The selected sites are from a spectrum of schools with different curricula and thus offer a window on the problem from a variety of viewpoints. This enhances the transferability of the findings.
4	The sample should produce credible descriptions of the influence of sensory processing on the school readiness of Grade R learners	The selected schools are currently operational, and their curricula have been implemented for a period of time. This ensures that the research offers a window on their day-to-day activities and are thus true to real life.
5	The sample should take ethical preconditions into consideration	The ethical conditions are covered by the ethical application, including the informed consent of the schools, participating teachers and guardians of learners.
6	The sample should be feasible in terms of money, time and accessibility	The sites were chosen to provide a good representation of the inclusion criteria. All schools chosen are in Pretoria and thus contributed to accessibility, ease of transport and logistics with the sensopathic pathways and efficiency in terms of time and cost.

### 3.6.3 Research sites

The site selection aimed to introduce a measure of variety into the research process, but not to the extent that results between schools could not be reasonably compared. While the quintile

classification provided some guidance, this was only applicable to government schools. In order to introduce variety as well as to expand on the use of play-based techniques, it was necessary to base the sample on private schools with more international curricula.

The research itself followed a two-phase approach. In the first phase, the research model was validated with a single independent private school. During this phase, the field research was tested and verified on a process level to ensure that the methods employed were effective. During phase two, the validated model was applied to four different independent private schools.

- **School A – pilot study (Phase 1)**

School A is a CAPS based independent school in the eastern suburbs of Pretoria. The school is proud of its heritage, as it was founded as a pre-school in 1937. They offer a high level of education, using plenty of time to play. Learners who have attended the school are successfully integrated in the school of their choice, whether private or model C (i.e. state) schools, in Grade One.

Each of the classes has a qualified teacher as well as an assistant and no more than 25 learners per class. The total of number of learners in the school varies between 125 learners and 130 learners at any given time. The teachers' qualifications range from either a four-year diploma in pre-primary teaching or a Bachelor of Arts degree in primary education. The assistants have been with the school for at least four years, and although not all have a tertiary education or diploma in early childhood care, most of them have attended many in-house workshops and training courses on ECE. The teachers are all registered members of the SACE (South African Council of Education).

The school has only one Grade R class with 15 learners. The medium of instruction is English, and the school attracts learners from diverse cultures and ethnicities and language backgrounds. They therefore have a speech therapist available to assist with language stimulation and language enrichment, should it be required by any of the learners whose first language is not English. The school prides itself on a rich curriculum, which consists of indoor as well as outdoor activities that help build and develop the pupils' fine and gross motor skills and stimulate creativity.

- **School B**

School B is a privately owned pre-school situated in the Eastern suburbs of Pretoria. It was established in 1972 and its mission is to create an environment that is conducive to any learner's development, not only emotionally, socially and cognitively, but also physically. The school pursues and prides itself in upholding solid Christian norms and values and tries to instil in its learner's loyalty and responsibility as well as a healthy sense of adventure. The school

accommodates young learners from the age of three months up to Grade R. The curriculum followed is CAPS compliant and incorporates play programmes. The school caters for diverse cultures, but learners are predominantly Afrikaans. The Grade R class consists of 13 learners.

There is a single teacher with an assistant for the Grade R class. The teacher has the required qualifications, including a tertiary degree in teaching.

- **School C**

School C is a private, co-educational, independent school using a play-based curriculum, located in the south of Pretoria. The medium of education is English. The school attracts a culturally and ethnically diverse population of learners.

The pre-school is part of a three-tiered school consisting of a pre-school (Grades 000 to 0), a preparatory school (Grades 1-7) and a high school (Grades 8 – 12). The pre-school has four classes per grade with approximately 25 learners per class. There are approximately 300 learners in the pre-school phase. Grade 0 consists of four classes with about 25 learners each. Each class has a qualified teacher with a minimum qualification of a three-year ECE diploma or a four-year Bachelor of Arts (ECE) degree and a teaching assistant, who assists the teachers with small-group activities. Each teacher is a member of the South African Council of Education (SACE).

The pre-school programme offers learning opportunities that prepare the child with concepts and skills for formal learning. The school requires learners to actively participate in developing all aspects of the learning process. Learning opportunities are structured and incorporate an assortment of experiences, activities and media. Multiple methodologies are used to develop the individual pupils' skills at an age-appropriate level, taking each individual child's abilities into consideration.

- **School D**

School D is an independent school with an international play-based curriculum in and is also located in Pretoria. It is an English medium micro-school <sup>2</sup> which follows a combination of

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<sup>2</sup> A micro-school is defined as the modern version of the one-room schoolhouse where class sizes are typically smaller than that in most schools (15 learners or fewer in a classroom) and there are mixed age level groupings. It falls in the area between home schooling and traditional schools.

traditional (such as the US NAEYC) and Montessori teaching methods and principles. Mind Moves<sup>3</sup> methods have also been incorporated in the stimulation programme.

The school is a high-quality educational facility and offers services to learners from pre-school to Grade 3. There are four full-time teachers, each with an assistant present in their class. The teachers' qualifications are varied, but all of them have a tertiary education in Early Childhood Development as well as training in the Montessori method of teaching. All the teachers are registered at SACE.

The use of an international curriculum attracts a diverse population of young learners from a variety of cultures and ethnicities. The school's program is designed to allow young learners to learn through play, while encouraging and noting individual interests. Teachers support the development of independence and provide opportunities to increase a learner's ability to communicate and develop active listening and expressive language skills.

- **School E**

School E is an independent school focussing on the learning and education of each individual learner in a “whole person, whole brain” approach. The school caters for learners from Grade 00<sup>4</sup> – Grade 7. Each grade consists of two classes of learners, and each class is led by a teacher who is assisted by a teacher's assistant. The classes typically consist of 20 – 25 learners, and the medium of teaching is Afrikaans. The school is located in a suburban area, and most of the school's learners are from the immediate vicinity.

The school 's stated aim is twofold: to develop each learner as an individual as well as holistically in their environment. They place a high value on each learner's emotional development and wellbeing. Their mantra is that “a happy child is a learning child”, thus dovetailing neatly with play theory. In order to achieve these outcomes, the school is continuously researching international best practice, for example the Finnish school system, as

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<sup>3</sup> Dr. Melodie De Jager's Mind Moves is a sensory-motor based programme which makes use of physical movement to support sensory processing as a platform for learning. It was started in 2007 with the Mind Moves Institute.

<sup>4</sup> In South Africa Grade R (Reception year) is mandated by the South African Schools Act (Act 84 of 1996) regulation 5 (4) (a), as explained in section 1.5.3.3. Grade R is also known as Grade 0 in certain private schools. While not formally defined, certain schools define years prior to Grade R or Grade 0 (in descending order) as Grade RR/00 (3-4 years of age) or Grade RRR/000 (2-3 years of age). While these “grades” have no standing in law, it is a convenient way of referring to age brackets for pre-schools.



well as local tendencies in early childhood education and implementing the latest research in their programme.

A “whole brain” approach is implemented when teaching in this school. This approach requires stimulation of as many parts of the brain as possible when learning takes place, thus enabling learning to be functional and effective rather than just pushing information down learners’ throats. Teaching is practical and “hands-on”, and paper-based activities are only used to entrench core skills. This practical approach to teaching new content not only enables learners to comprehend and apply new content differently, but also lays a solid basis for learning in later grades.

The schools were selected by virtue of their representative curricula with regard to sensory development and their willingness to participate. Table 3-6 summarises the selection of schools. As noted in section 3.4.4, the participants were recruited from the teachers at the various schools.

**Table 3-6 Participating schools**

School	Phase	Representing	Participants
School A	1 (Pilot study)	CAPS school	1
School B	2 (Data generation phase)	CAPS, play-based	1
School C	2 (Data generation phase)	IEB, play-based school	3
School D	2 (Data generation phase)	Combination of traditional, Montessori and Mind Moves	1
School E	2 (Data generation phase)	Combination of Finnish and play-based curricula	2

### 3.6.4 Selection of participants

Teachers at each school were recruited for participation based on their background (exposure to play pedagogy and experience in general) and willingness to participate. This is a mixture of stratified and self-selected sampling (Mukherji & Albon, 2015:237).

The basic requirements for a teacher to become a participant were the following:

- At least 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.
- Practical experience comparable to the above.

The participants were inducted into the data generation process and encouraged to participate in analysing the data, as well as to participate with the researcher in the development of the guidelines for implementing play.

### **3.6.5 Research assistants**

During the field research phase I made use of four research assistants. I selected the assistants from the second-year Bachelor of Education student group at the University of Pretoria and I used them to assist me in field preparations by transporting and setting up the sensopathic pathways for use during sessions. Their primary responsibility was to assist me as researcher with physical tasks during the research in the field.

The assistants had a background in pedagogy due to their studies, and during their induction I also provided them with the theoretical background and the contextual framework of the study based on my literature study. It is important to keep in mind that the research assistants were not participants, did not participate in any activities except on a logistic level and did not contribute any observations, opinions or comments. They were allowed to assist the participants as necessary to execute the sensopathic pathways.

I used the opportunity to ensure that the research assistants understood the phenomenon being studied and that they benefitted from observing the research study.

### **3.6.6 The role of the researcher**

Johnson and Christensen (2014:240) note that the researcher can (amongst others) either be a participant in some way, or an observer only. On a practical level, my role became that of an observer as participant, as I had to guide the participants to some extent. This role limited my time as part of the group and allowed me to act more like a witness to the study, and I could maintain a neutral stance on the outcome and remain objective. In addition, I could document events while they happened. For my study it was especially important to observe sensory activities incorporated in indoor- and outdoor activities and the transition from child-initiated (or learner-initiated) play to teacher-led play pedagogy.

In my study it was important to avoid the following pitfalls (Cohen, Manion & Morrison, 2018:377):

- Journalism, that is selecting the more prominent features of the results, thus shaping or influencing the full account.
- selective reporting, or conformational bias, which selects the evidence supporting a specific deduction, thus distort the overall case.

- pomposity, which is endeavouring to extract or generate weighty theories from relatively unimportant data items.
- blandness, which refers to unquestioning acceptance of the participant's ideas, or only considering the facets of the case study that participants agree with instead of areas where they might differ.

As the researcher I played the role as defined in Maree (2016:44) and entered into a collaborative partnership with the participating teachers. My role as an observer and participant was to record phenomena accurately while delving deeper into the phenomena. I designed the assessment baseline, collected data from the participating teachers, compiled the case studies and analysed the results.

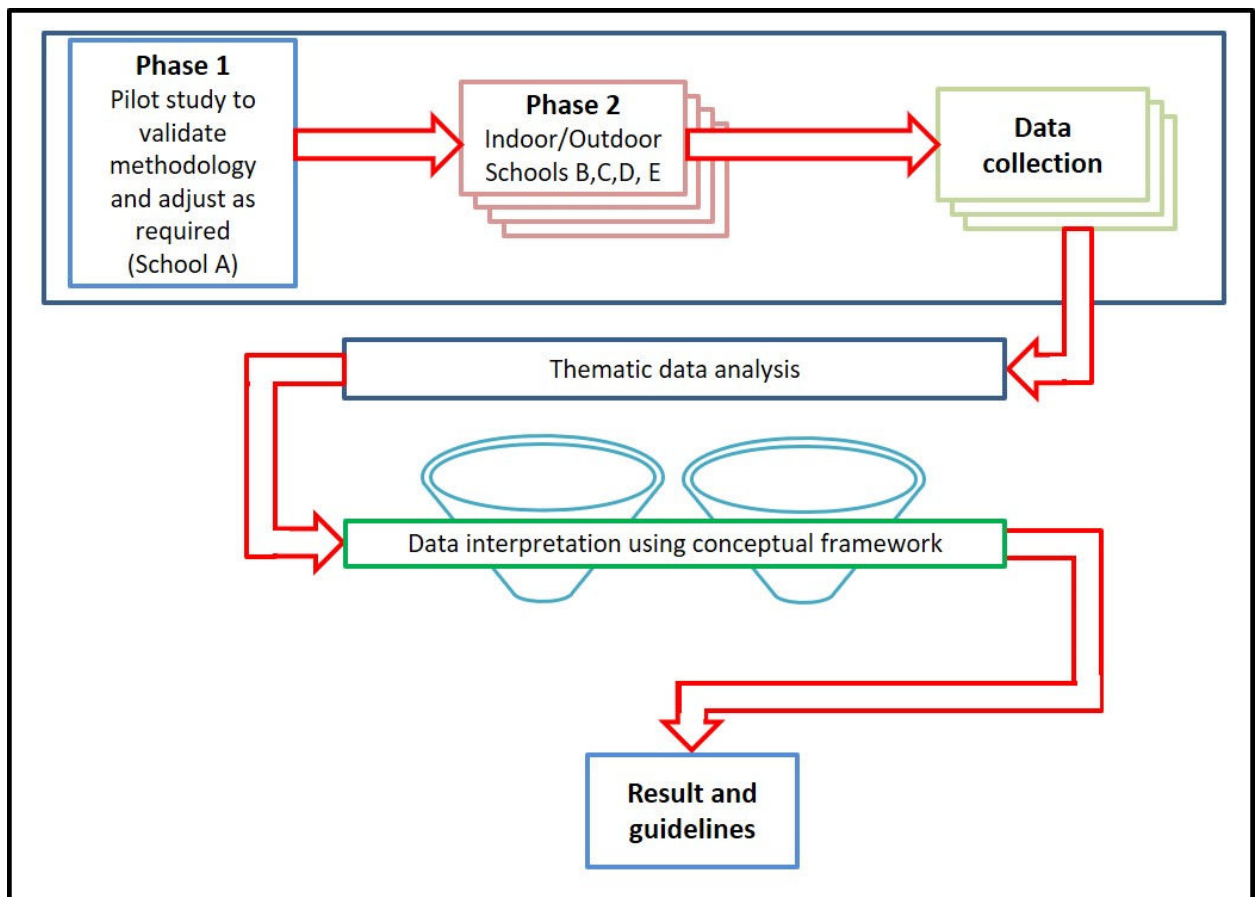
### **3.7 Data generation**

#### **3.7.1 Data generation process**

Figure 3-5 overleaf shows the data generation process, ending in the analysis and interpretation. The process of collecting data is divided into two phases, with Phase 1 consisting of a pilot study and Phase 2 forming the bulk of the generation phase. This is further discussed in section 3-4.

The research process was based on observing teachers applying the principles from a number of play-based pedagogic programmes on the Grade R learners. In other words, the research consisted of the following actions:

- Observation of teachers applying the principles mentioned above – I observed the participants while conducting a sensopathic walkway (indoors as well as outdoors) to determine the extent that sensory processing principles were applied in the school.
- Examining the facilities in the classroom – I was able to determine what sensory materials were available in the classrooms to perform play-based activities and teacher-led play.
- Examining the facilities on the playground – I was able to determine what facilities and sensory materials the playground offered to perform play-based activities and teacher-led play.
- Obtaining the thoughts and ideas of the teachers in workshops – This provided me with insight into the experience of the participants during the interviews, but also during the induction courses, where the research method and possible outcomes were discussed. This was especially important in phase 1, as it allowed me to “fine tune” the semi-structured interviews.



**Figure 3-5 Data generation and interpretation process**

- Encouraging the teachers to use the questionnaires and reflective journals, where they reflect on their own experiences and thoughts – I provided the participants with guidelines on compiling the questionnaires and reflective journal and showed them how the journal was captured on QSurvey, the software program supplied (QSurvey is discussed in section 3.7.2.5). This allowed participants to use mobile devices or laptops to complete their journals.
- Encouraging the teachers to take photographs (reflexive photography) that illustrate their reflections and provide context for interviews – I explained the rationale of reflexive photography and its importance for reflective journals. During the induction programme I trained them in using QSurvey to upload photographs captured during the sensopathic pathway execution.
- Engaging with teachers using semi-structured interview questionnaires enabled me to obtain the reflections and thoughts of teachers on the research project, as well as their insights and suggestions for guidelines for teacher-led sensopathic play.

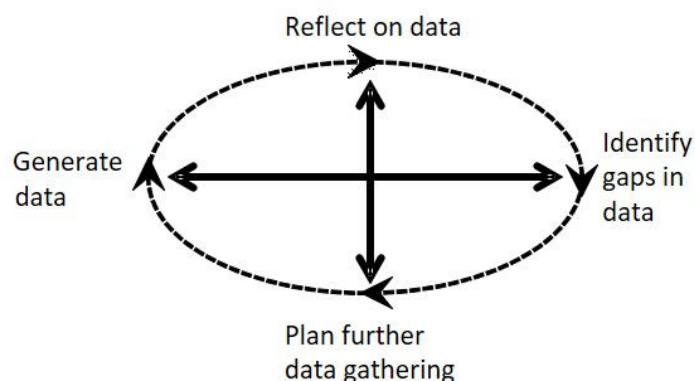
The research objects are therefore the teachers, not the young learners, and the involvement of the teachers is based on observing them and their contributions. Teachers were not required to conduct any research, and their contributions are their skills, experience and insight in the effect of sensory impairment on school readiness and the benefits of sensory play.

The participant observation was based on observing teachers interacting with learners during sensory processing activities; the learners themselves were not observed. The observation concerned the teachers' approach and the activities they pursued, not the reaction of the learners.

The data gathering process took place in two phases as described in section 3.7.4. In the first phase, the process, observation sheets, interview structure and analysis were verified in a pilot phase with one school and modified and updated as required. In the second phase, the way that teachers applied sensory processing principles was investigated at four selected schools where play-based activities formed part of the curriculum. Both phases contributed to the data gathered.

### 3.7.2 Methods of data generation

The primary data sources are the observations of the participating teachers during the implementation of teacher-led play. and conducting semi-structured interviews with the participants. The process itself is an adaptive process, where the results and reflections may drive additional data requirements. Nieuwenhuis (2016b:87) provides the following illustration (Figure 3-6) of the process of generating data, reflection and examination, illustrating the iterative nature of the process:



**Figure 3-6 Iterative process of data generation (adapted from Nieuwenhuis, 2016b:87)**

Figure 3-6 also illustrates how the reflection on the data generated invariably shows the gaps in the process, which allows the researcher to introduce additional tools, or to expand the tools used to improve the process.

### **3.7.2.1 Observation**

Observation is defined as the action of systematically documenting the behaviour of participating subjects during activities without the necessity of questioning them or otherwise communicating with them. Observation is used as a method of generating qualitative data as it enables the researcher to obtain a more complete insight into and comprehension of the event phenomenon being observed (Nieuwenhuis, 2016b:90). Creswell and Creswell (2018:188) note that observation is useful in the way that it allows the researcher to record events as they occur and can be used to explore subjects that participants may feel uncomfortable discussing. They also note that it has certain drawbacks; the researcher may be seen as intrusive, or may not have good observation skills. In addition, private information may be observed, but not reported on from an ethical point of view. Yin (2014:106) also notes that observation may be selective, as the observer is only looking at one subject at a time. In addition, reflexivity may be at issue, that is the fact that actions may proceed differently because they are being observed (Yin, 2014:106).

The data generation strategy was to obtain primary qualitative data from observation records (observing sensory walkway sessions) completed by myself and the participants using QSurvey (see section 3.7.2.5). Initially I performed a literature study to examine the effect of play on sensory processing and the methods of play that are useful and how these fit into the play pedagogy context. These results were used to develop a play-based pedagogy assessment system against which to observe play in Grade R classes. The assessment system used coded observation sheets to enable accurate documentation while the observation was taking place. Recording the sessions using video was an option, but the benefit did not outweigh the ethical considerations. As noted previously, I observed the sessions as an observer and participant. The observation schedules are shown in Appendix C.

### **3.7.2.2 Semi-structured interviews**

The aim of semi-structured interviews in the qualitative research process is to understand the world that the participant sees. These interviews are often an important source of information, although it is subject to them being applied correctly (Joubert, 2016:113). The interviews with the participating teachers at the conclusion of the observation phase were semi-structured, and the participants had more freedom to offer their insights into the process, as described by Nieuwenhuis (2016b:93). I recorded the interviews as audio files which were later transcribed.

There are certain advantages and disadvantages associated with interviews. According to Creswell and Creswell (2018:188), interviews are most useful where the researcher wants to manage the subject and course of questioning and to allow the persons being interviewed to provide context. However, they regard as the most significant drawback of interviews the fact

that the information is filtered by the participant. Yin (2014:106) confirms this and notes the possibility of reflexivity – the interviewee providing the information that the interviewer wants to hear. In these cases, the researcher's presence may bias responses.

### **3.7.2.3 Reflective journal**

A reflective journal is a common tool used in qualitative research and is especially useful as an additional support to the data generation process (Joubert, 2016:117). The journal is also a useful tool to keep the researcher cognisant of the impact of all impressions on the study, including the researchers' personal subjectivity and possible bias. However, Creswell and Creswell (2018:188) remind us that while the use of a document such as a journal allows the researcher to record the words and language of the participant, the respondents are not necessarily articulate and perceptive to an equal extent. The journal does allow the researcher access to information that the participant has given attention and thought to, but the researcher may need to interpret the information in the correct way (Creswell & Creswell, 2018:188). Yin (2014:106) agrees and notes the possibility of biased selectivity in the event that the journal or report is incomplete.

Mayan (2001:14) reminds the researcher to do the following:

- Document the impressions as soon as possible to prevent forgetting them.
- Avoid conversations regarding the impressions before they are documented.
- Avoid editing while documenting the impressions.

The participating teachers and I used a journal with pre-formatted questions and prompts to allow teachers to enter their reflections directly on electronic media using a computer. QSurvey (see section 3.7.2.5) was again used as a generating platform. The platform also allowed participants to upload photographs as part of the reflexive photography (see section 3.7.2.4) requirement.

### **3.7.2.4 Reflexive photography**

Reflective photography was used as one of the methods of data generation. In this method, participants take photographs of the aspects of the research that they believe support the aim of the research. Once available, these photographs are used to lead a reflective discussion in which the participants who created the images lead the interviews and describe the meaning, significance and context of the images, as well as their perspectives and understanding thereof (Joubert, 2012:454). The images were uploaded onto the QSurvey platform as part of the reflective journals in order to enrich the discussions. The transcripts and images of these discussions were added as sources of data when applicable.

Creswell and Creswell (2018:188) warn that photography, amongst other media, may be very difficult to interpret if there is a lack of context, although it does provide participants with a method to share their own reality.

### **3.7.2.5 Software data generation tool – QSurvey**

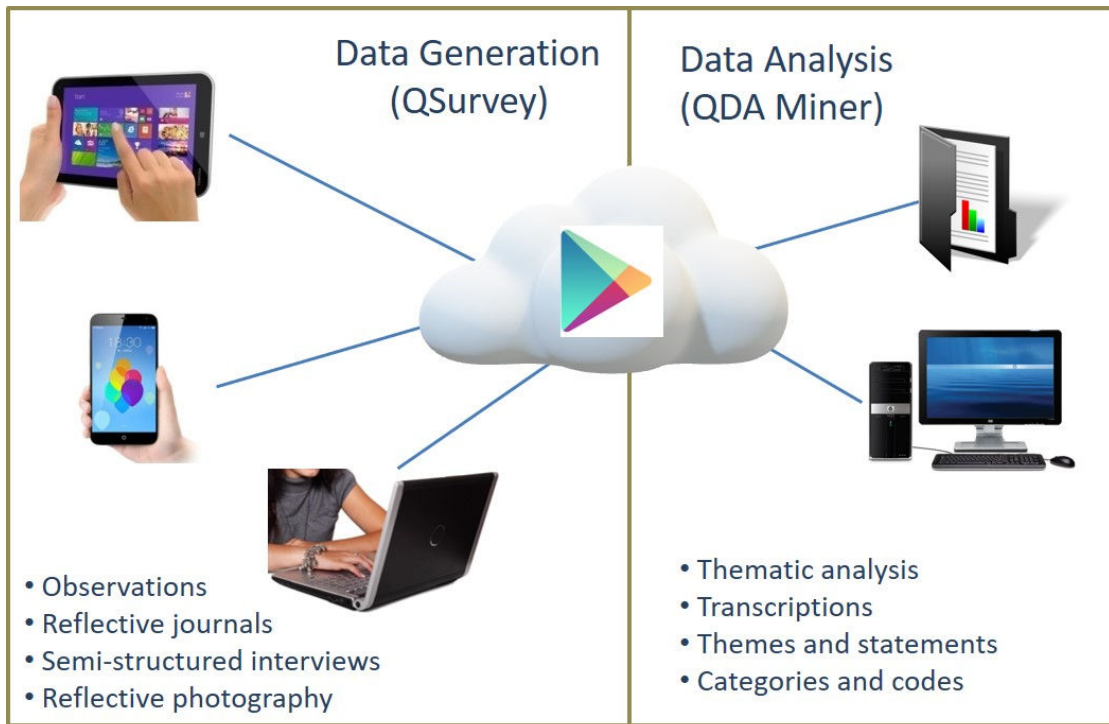
In order to save time in collecting data, as well as to reduce the amount of transcription, the data generation made use of electronic media where possible. As shown in Figure 3-7, the observation schedules and reflective journals were encoded on QSurvey, which allowed participants to log their observations and upload photographs from their mobile phones, tablets or their laptops.

QSurvey is a cloud platform that allows the user to set up, distribute, collect and analyse questionnaires electronically. The website can be found at <https://www.qsurvey.qa>. Each participant received an emailed web link with separate links to their own survey and reflective journal to complete online. This allowed the researcher access to data in a short time frame. The semi-structured interviews were done on the same basis, but led by the researcher, and the results were also logged directly onto QSurvey. Additional details on QSurvey are provided in Appendix F.

The use of QSurvey not only reduced the response time, but also made it easier for the participants to record their responses with a minimum of effort. With the analysis tools available on the program, thematic analysis was also significantly easier, as the information could be sorted electronically.

The security of the system is high, and the privacy of data is well protected. To ensure the integrity of data, the system uses encryption, security tokens, trusted authenticator modules and hashed passwords. In addition to network monitoring, data is also stored locally. A third party is not allowed access.





**Figure 3-7 Data generation and analysis tools**

### 3.7.3 Sensopathic pathways

To observe the way in which teacher-led activities can affect the sensory sensitivity of learners, a simple sensopathic sensory pathway (referred to as a sensopathic pathway in this research study) was set up. The pathway itself is an “obstacle course”, consisting of both indoor and outdoor activities that engage the senses of learners in order to challenge any sensitivity to their sensory processing.

All learners who were interested and had parental approval participated in the sensory pathways. It must be noted that the pathway was not used as a measure of the learners’ sensory processing, but rather as a measure of the participants’ application and appreciation of play pedagogy principles during these activities. Specifically, the goals of the pathway were the following:

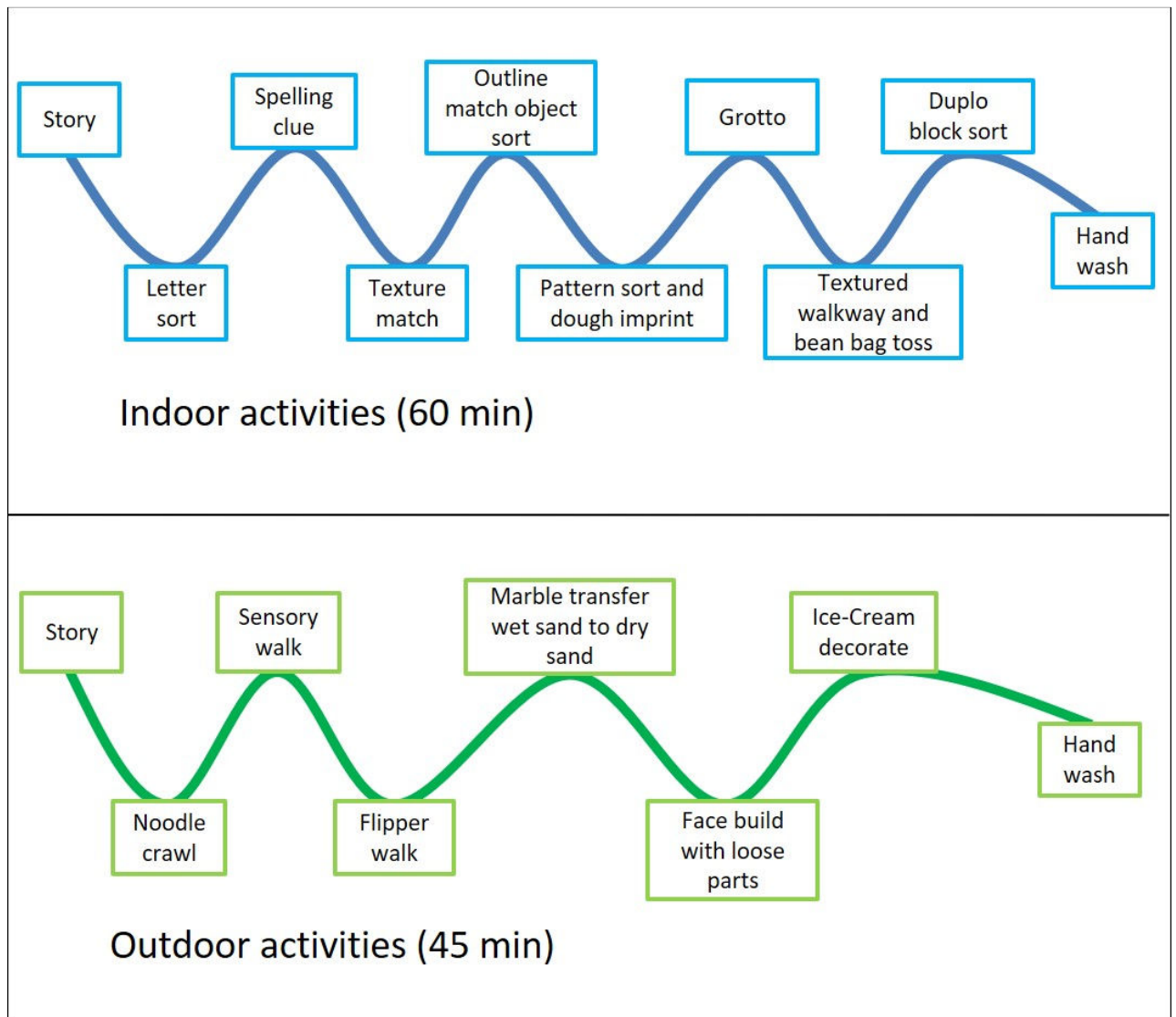
1. To determine how the participants applied sensory play principles with learners.
2. To determine the participants’ familiarity with sensory play.
3. To determine the participants’ appreciation for the links between sensory play and school readiness.
4. To provide participants with an opportunity to reflect on the sensory activities in order to provide inputs to the guidelines.

The activities in the course were similar to those proposed by Kranowitz (2003:23–56, 126–147) and underpinned by the theories of Vygotsky, Ayers, Dunn and Gascoyne (see sections 2.4.1.3, 2.4.3.1, 2.4.3.2 and 2.4.3.3). Since this research project focussed on sensopathic senses (tactile and visual), the pathway also focussed on these senses.

During the implementation I made use of four assistants to set up the pathway and to assist participants during the execution. This allowed me to be less participatory and to observe the process in more detail.

The pathway shown in Figure 3-8 is the final version, as the initial pathway was amended after the pilot phase. The original pathway is detailed in Appendix D. Two standard pathways were designed – an indoor pathway and an outdoor pathway, as illustrated in Figure 3-8. The pathways consist of various sensory-rich environments, with varying textures and visual stimuli.

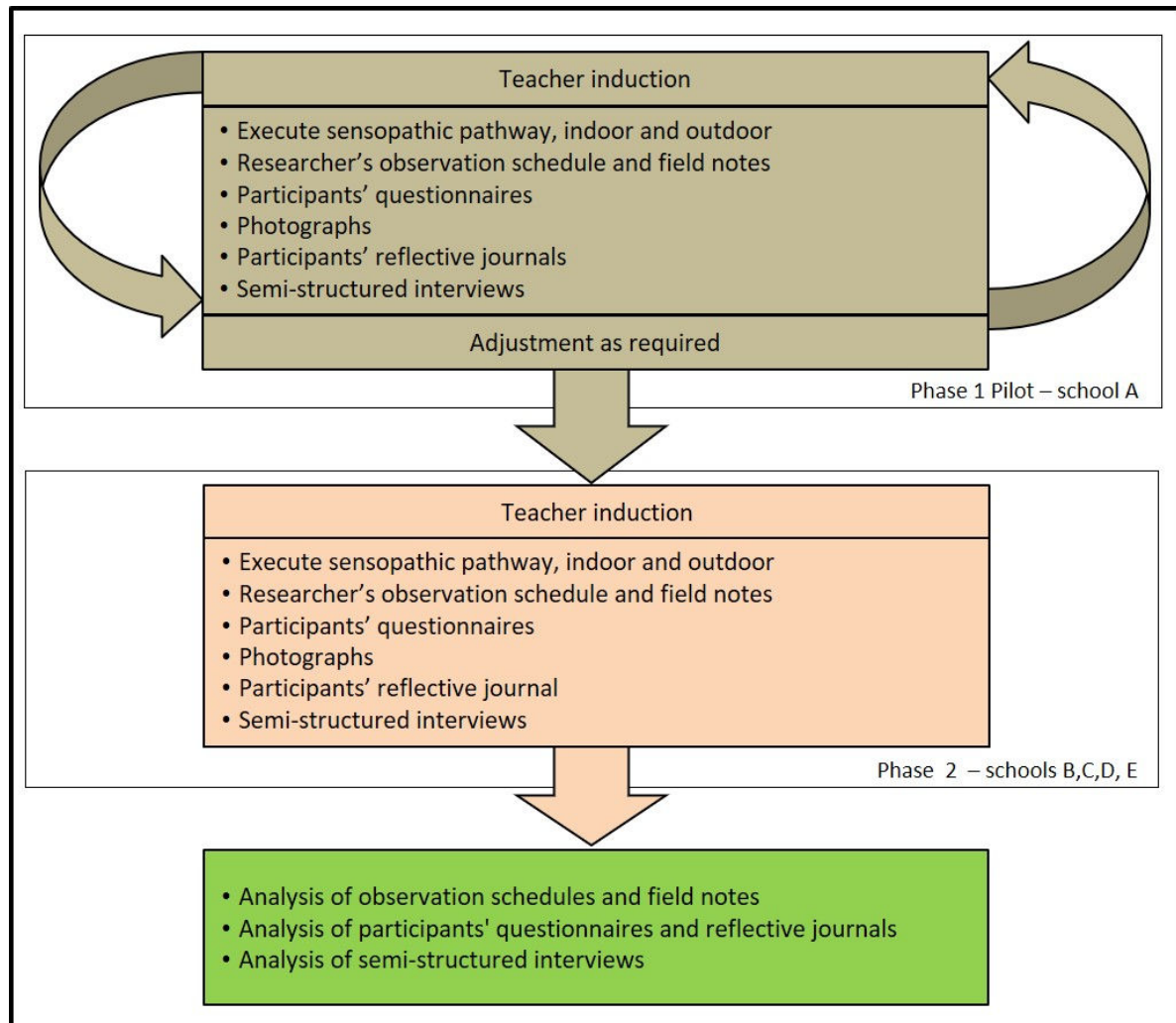
Details regarding the physical setup and methods used are provided in Chapter 4.



**Figure 3-8 Sensopathic pathways**

### 3.7.4 Data generation phases

Data was generated in two phases, as previously described, in order to provide a process that was manageable and would provide data that could be readily analysed as a result of the format and systems used, such as QSurvey. Phase 1 was a pilot study, intended to validate the conceptual framework, the sensopathic pathways and all data generation processes. After consideration of Phase 1, the process could be adjusted to ensure that any problems experienced with Phase 1 (the pilot study) could be resolved and the process adjusted accordingly for Phase 2, the main data generation phase. Figure 3-9 illustrates these phases.



**Figure 3-9 Data generation phases**

Phase 1 was intended as a validation or pilot phase that would allow me to make sure that the concepts for the field data generation worked correctly, and that the participants (teachers) also understood the theoretical underpinning. The intention was to ensure that the participants understood what was expected of them and that the data generation tools worked properly. I

used the information collected during this phase to optimise and validate the data generation process.

During Phase 1 (the pilot study) I provided the participants with an induction to allow them to correctly place the context of the investigation in the conceptual framework and provided them with training to use of the data generation tools. The process was intended to be iterative, to allow the experience of the participants to also steer the investigation.

During Phase 1, my emphasis was to make sure that all the participants grasped what I expected from them and understood the process. I also obtained their feedback during this process in order to adjust the model where necessary.

As noted previously, the emphasis of Phase 1 was on the validation of the context of the conceptual framework, the execution of the sensopathic pathways and the data generation tools. Phase 1 was also used to ensure that the information provided to participants was effective and not only gave them the “how” of the data generation process, but also the “why”. I regarded this aspect of the process as important, as it supported the participants’ career development.

After completion of Phase 1, the process was amended somewhat, specifically focussing on the induction package (which provided the theoretical background), some practical changes to the sensopathic pathway and changes to the semi-structured interview questions. Some changes were also made to the data generation tools, especially the electronic format of the journals.

Phase 2 (data generation phase) was virtually identical to phase 1 (the pilot study), with the most significant difference being the changes to the sensopathic pathways. As mentioned previously, the use of QSurvey allowed participants to respond quickly and easily, and I was able to use the responses to optimise semi-structured interviews to allow for unanticipated results.

As was the case with Phase 1, I followed an induction process during Phase 2 to ensure that all participants understood the theoretical underpinnings of the research, understood how to observe the learner’s response in the sensopathic pathway and could properly use the tools and applications provided to give feedback. During the induction, teachers were specifically informed of the reasons for the various activities. These included discussions of the play theorists’ main ideas and concepts, the role of sensory activities in learner development, materials suitable for sensory activities and the role that the environment plays as the so-called “third teacher”, as well as the different approaches towards play pedagogy and its application in practice.

After discussion of the background, I explained the process to be followed to the participants, during which the sensory elements in the curriculum were accentuated and discussed further. It also focussed on identification of the teachers' experience of sensory-impaired learners, specifically regarding hypo- or hypersensitivity, sensory-seeking or sensory-avoiding learners and the teachers' experience and ideas about the effect and impact of these on the learning experience.

Phase 2 consisted of further generation of data. During this process, participants observed learners executing the sensopathic pathways and noted their reactions to the various stimuli. These were then noted in the observation sheets and journals and intuitively correlated with the learners' development.

The data generation phase consisted of the sorting of the electronic responses using the tools provided by QSurvey (see section 3.7.2.5) and fed directly into the data analysis detailed further in section 3.7.2.5, as the information could be sorted easily and rapidly without having to wait for transcriptions.

### 3.7.5 Summary of data generation methods

The various data generation methods are summarised in Table 3-7

**Table 3-7 Data generation methods**

Data generation technique	Documentation method	Contributors
<b>Phase 1 – Pilot study (school A)</b>		
Observation	Observation schedule QSurvey questionnaires	<ul style="list-style-type: none"> <li>• Participants (teachers)</li> <li>• Researcher</li> </ul>
Interviews (semi-structured)	Verbatim transcriptions	<ul style="list-style-type: none"> <li>• Participants (teachers)</li> <li>• Researcher</li> </ul>
Reflective journals	QSurvey journals	Participants (teachers), researcher
Reflexive photography	QSurvey and other photographs	Participants (teachers)
Field notes	Notes and observation schedules	Researcher

Data generation technique	Documentation method	Contributors
<b>Phase 2 (schools B, C, D, E)</b>		
Observation	Observation schedule QSurvey questionnaires	<ul style="list-style-type: none"> <li>• Participants (teachers)</li> <li>• Researcher</li> </ul>
Interviews (semi-structured)	Verbatim transcriptions	<ul style="list-style-type: none"> <li>• Participants (teachers)</li> <li>• Researcher</li> </ul>
Reflective journals	QSurvey journals	Participants (teachers)
Reflexive photography	QSurvey and other photographs	Participants (teachers)
Field notes	Notes and observation schedules	Researcher
Reflective journal	QSurvey journal	Researcher

### 3.8 Data analysis

The method I used to analyse the data generated is discussed in depth in section 4.5. To summarise, data analysis in qualitative research is a textual analysis, as the subject matter, whether transcribed interviews, questionnaires or field notes, are all a form of text (Engelbrecht, 2016:117).

The process of content analysis is essentially the action during which many words of text are classified into many fewer categories (Cohen *et al.*, 2018:668). Once data has been generated and organised, qualitative data analysis requires a suitable analysis frame (Schreier, 2014:174), obtained by coding the data, which allows for a systematic data trail. This is known as a coding frame.

To develop the coding frame, the analysis can be approached from two directions – in the first direction, the data is viewed as either supporting or not supporting a concept (deductive analysis), while in the second direction the concept is generated from the data (inductive analysis). Inductive coding is also commonly referred to as “emergent” coding and deductive coding as “a priori” coding (Stemler, 2001:2). In simpler terms, deductive analysis can be seen as “top down” and inductive analysis as “bottom up” (Mayring, 2014:104).

Deductive analysis is the most suitable approach for the purposes of my study, in which I examine the data to determine the support of my conceptual framework.

### **3.9 Quality assurance**

It is important that researchers state the steps they take to ensure the quality of the data. These concepts are not the same as the conventional connotations, but rather refer to accuracy and credibility (Creswell & Creswell, 2018:199). Qualitative validity refers to the process that a researcher uses to make sure that the conclusions are precise, while qualitative reliability refers to the consistency of the researcher's approach across different case studies (Gibbs, 2007:91).

The measures outlined in the following sections are intended to ensure quality in the qualitative sense and also to relate the steps I took to protect these attributes.

#### **3.9.1 Trustworthiness**

In qualitative research, trustworthiness is defined as the accuracy or plausibility of research (Creswell, 2016: 191). It should be noted that the measures undertaken to ensure quality and validity are common to several aspects, as noted below. To ensure the trustworthiness of my study, I used quality criteria based on the following:

- Multiple cases
- Multiple participants
- Multiple sources (observation schedules, reflective journals, interviews) from each participant

This approach allowed me to ensure that any inconsistent results would become obvious by comparing the results from the various cases and participants. By becoming familiar with the various forms of data, I could determine whether the patterns I saw were indicative of the consistency of results or whether they indicated consistency or bias.

#### **3.9.2 Triangulation and crystallisation**

Creswell (2016:191) states that triangulation refers to presenting findings from a variety of sources in order to establish the themes used. In qualitative research, triangulation occurs as a matter of course during the process of coding, in which the researcher examines various sources of information, such as documents, and finds substantiation for themes. Rule and Vaughn (2011:109) caution that triangulation by itself may not provide a truer (or more valid) perspective, but simply a greater breadth of perspectives. Crystallisation directs the view to the multi-faceted character of reality, where supplementary sources and methods provide additional aspects, instead of necessarily validating a single position, as indicated by triangulation (Rule & Vaughn, 2011:109). I collected data from multiple sites with multiple participants to enable triangulation and crystallisation as discussed in section 3.6.1 above

regarding trustworthiness. I followed the same process of comparison between sources across cases.

### **3.9.3 Dependability**

Nieuwenhuis (2016c:124) notes that in qualitative research, “dependability” is used in preference to “reliability”. This is demonstrated via the research design and how it is implemented, as well as the working detail of generating data and the reflective assessment of the project. Joubert (2016:139) further recommends that dependability should be assured using the following steps:

- Providing the raw data of the research to the potential applier of the research, as far as ethical principles allow.
- Ensuring that the raw data is correctly transcribed.
- Verifying findings with participants in the study.
- Inviting peer review, such as study leaders and external reviewers.
- Detailing descriptions of the event, context and research process.
- Reflecting on the researcher’s role and the research process and providing field notes to the potential applier.
- Describing ethical dilemmas and considerations.
- Using triangulation and crystallisation.
- Generating data up to saturation point.
- Recognising and documenting the limitations of the study.

I used workshops to verify findings with participants, as well as triangulation and crystallisation, as described in 3.9.2, to ensure dependability. I also completed my own reflection and discussed my findings with my supervisors. I furthermore examined the limitations of my study and suggested additional areas of investigation which were not covered by this research study.

### **3.9.4 Confirmability**

Lincoln and Guba (1985:319) note that confirmability is defined as the degree of impartiality or the level to which the outcomes of a study are moulded by the participants, rather than by the bias or purpose of the researcher - in other words the extent to which the findings could be confirmed or substantiated by others. In qualitative research the assumption is often made that each researcher adds a fresh and possibly unique viewpoint to the study, which does tend to reduce the confirmability. However, triangulation, crystallisation and researcher reflection are



all strategies that can be used to increase confirmability, as well as a critical study of perspectives (Joubert, 2016:139). I used the respondents' reflective journals as well as my own field notes to verify that the contexts provided by the participants were correctly captured.

### **3.9.5 Transferability**

Lincoln and Guba (1985:316) define transferability as the degree of generalisation that the results of a study will allow, and note that in fact they may not be generalisable. Joubert (2016) cites Seale (1999:42-45), who agrees that the level of generalisation in qualitative research is not always important and an unrealistic requirement. If the researcher describes the event in comprehensive and sufficient detail (thick description), the reader can decide for themselves whether the findings of the specific research apply to other cases. I have provided rich detail in the case studies to allow the potential user of the research to determine if the level of transferability meets with their own requirements. Lincoln and Guba (1985:316) again note that it is not the duty of the researcher to supply a measure of the degree of transferability, but to provide the information that allows potential users of the research to judge the level of transferability for themselves. All the source material for this research study, subject to ethical constraints, is available to other researchers. As noted, it is not for me to say whether these results are transferable to other research studies – other researchers need to determine the level of transferability by evaluating the material for themselves.

### **3.9.6 Credibility**

Credibility speaks to the “believability” of the study. Lincoln and Guba (1985:313) note that satisfying the credibility condition necessitates confirmation that the outcomes of qualitative research are trustworthy or plausible from the point of view of the research participants. Joubert (2016:138) notes that qualitative researchers must consider that there is no single or final truth, as researchers regard the world, reality and knowledge differently. She notes that other measures to enhance credibility may include frequent discussions between the researcher and her superiors, the researcher's reflective notes and member checks.

Credibility is further enhanced through the use of thick descriptions of the phenomenon under scrutiny (Nieuwenhuis, 2016c:123). To safeguard the credibility of my work, I ensured that complete debriefing sessions were held with all participants and that their reflective journals included their contributions to the sessions.

### **3.9.7 Reflexivity**

Gibbs (2007:91) notes that reflexivity is the recognition that the product of qualitative research inevitably reflects some of the background, milieu and predilections of the researcher. However,

in the scientific model good research is objective, accurate and unbiased, a situation that is inconsistent with reflexivity. Therefore, to minimise bias, the effects thereof must be understood. This leads to a focus on validity as reflexive accounting. Researchers should be explicit about their preconceptions, and how their interpretations and understanding may have changed. The process must be open for peer review and audit.

I have attempted to address the issue in my own reflective journal and to critically assess my own integrity and the integrity of the data. I have also discussed my own biases and my influences with my study leaders.

### **3.10 Ethical considerations**

During a research study, participants must be treated with respect and confidentiality (du Plessis, 2016:73). Since research in the educational environment concerns humans, it is imperative that they receive the respect owing to them.

The ethical approval of a study is of course contingent on the implementation of ethical relationships and procedures, which are also crucial properties of the quality of research. The ethical basis of this study has been approved by the University of Pretoria (reference: EC 17/10/01). Performing a research study in an ethically rigorous fashion thus improves the quality of research and adds to its trustworthiness (Rule & Vaughn, 2011:111).

#### **3.10.1 Autonomy**

Autonomy refers to the requirement that any research must respect the autonomy, rights and dignity of participants. Autonomy is the ability of participants to participate voluntarily, based on their informed consent, through which they are made fully aware of the ramifications of their participation (du Plessis, 2016:77). All participants were advised of the scope and duration of the research study – this included the school governing authority, the direct participants (teachers) and the learners. In all cases they were provided with consent forms that stipulated the requirements of the research and advised them regarding their options with regard to participation. I ensured that participants are protected in terms of privacy, confidentiality and anonymity; I obtained permission from guardians of minors that were involved and I obtained informed consent from participants. The forms are attached in Appendix A.

#### **3.10.2 Non-maleficence**

Non-maleficence is defined as avoiding harm in any way, either physically or emotionally (du Plessis, 2016:75) either through acts of omission or commission. In my study, I ensured that the teachers and learners involved were neither harmed nor maligned during the progress of the research.

### **3.10.3 Beneficence**

According to du Plessis (2016:75), beneficence refers to the requirement that research must make a positive contribution to society. To make sure research is applied only for good, I published research only within the ambit of the University process.

After obtaining ethical clearance from the University (attached to this thesis), the most important ethical consideration is the protection of the rights of the subjects. To achieve this, I obtained the informed consent of the guardians of potential subjects prior to observation.

Once selection of the subjects was completed, all identities were protected by coding the observation sheets and removing any reference to identities. After completion of the research phase and coding on a master data file, all observation sheets were destroyed in as required by the ethical principles as described by Creswell and Creswell (2018:95).

All participants were required to enter into a release agreement and to give permission for data and any recordings to be used in the analysis of the data. I afforded all participants the opportunity to withdraw at any time, and to request that all personal references and information be deleted.

### **3.10.4 Justice**

Du Plessis (2016:75) notes that the principle of justice obliges us to distribute benefits, risks, costs, and resources equitably. This implies fairness in the selection of participants and fairness in sharing of the risks and benefits of the research. My sampling process as described in section 3.6.2 deliberately avoided bias.

### **3.10.5 Photography**

The photography used in the research is "reflexive photography". In this method, participants take photographs of the aspects of the research that they believe support the goal and context of the study. These photographs were used to lead a reflective discussion in which the participants who created images led the interviews and described the meaning, significance and context of the images, as well as their perspectives and understanding thereof. The photographs were stored electronically along with the interview transcriptions. To conform to the ethical requirements of anonymity (Creswell & Creswell (2018:95), where photographs were published, the following steps were taken:

- Pixilation or otherwise obscuring the faces of any learners.
- No personal information about the learners was saved or embedded in any media.

### **3.10.6 Journals**

The journals follow part of the larger data gathering process and take the form of a record in which the participant recorded (in text, voice notes or photographs) their experiences during the study. Specifically, though, the journals are a source of information for the teachers themselves during interviews as well as instruments in their own right. Like transcriptions, the journals are not seen as the property of the participants, although they had full transparency during the process and were furnished with a digital copy on request.

### **3.10.7 Media storage**

All digital media is stored on University ICT infrastructure and is marked as personal to ensure that it is protected in line with the requirements of POPI and the processes and policies of the university. No offline copies were kept for longer than the research required it, in accordance with the ethical guidelines as described by Creswell and Creswell (2018:95).

### **3.10.8 Research assistants**

Four research assistants were employed to assist me with the physical deployment and setup of the sensopathic pathway described in section 4.3. The assistants were all second-year B.Ed. students enrolled at the University of Pretoria.

The research assistants were not participants, did not participate in any other activities and did not contribute any observations, opinions or comments. The research assistants signed waivers in which they undertook to respect all ethical considerations detailed above and worked under my personal supervision at all times.

### **3.11 Conclusion**

The qualitative research method posed many advantages as well as limitations, which will be dealt with in my further discussion. One advantage was that during the interviews I was able to observe the participants directly, which allowed me to control the line of questioning – however, I had to guard against bias and had to accommodate non-articulate as well as perceptive participants. I found it advantageous to be able to access the electronic documentation at any convenient time, and it proved to be an unobtrusive source of information. The electronic form of the reflective journals was particularly helpful, provided the journals were all kept correctly and kept up to date. The electronic device helped participants to save time when capturing data, and they were less resistant to participating in the survey. This was, however, a constraint for participants who were not particularly knowledgeable when using the electronic forms.

The collecting of visual material, for instance photographs, while completing the sensopathic pathway proved to be invaluable and allowed me and all the participants to share their reality directly without a filter. I found the process creative, and it immediately captured the attention of all the parties. I noted that some of the participants found the presence of the observer disruptive, and it may have influenced the responses of the participants; this risk was mentioned in Creswell and Creswell (2018: 188-189).

As the response was electronic as well as manual, I could immediately analyse the data inductively and identify recurring patterns. The teachers' experiences and observations contributed to how I understood the meaning an individual, such as the Grade R teacher, ascribed to play as a social phenomenon and the influence sensory improvement through sensopathic play pedagogy had on the learning experience of the Grade R learners. As shown by Creswell (2016:185), this methodology allowed me to observe the teachers' and the young learners' performance within their normal settings.

The teachers discussed their observations of the sensory-impaired grade R learners they had identified through the teachers' questionnaire. The teachers also reflected in their reflective journals on the photographs of the participants' behaviour to support their observations during the participation of sensopathic pathways. It was possible to gain an understanding and make sense of how teachers and learners experienced their reality, as described by Yin (2014:9) and Thanh and Thanh (2015:24). I was able to see the phenomenon of the impaired sensory behaviour of each Grade R learner through their eyes. These observations allowed me to create guidelines for teacher-led play pedagogy activities for the indoor and outdoor environment.

The research process involved not only data generation in the participants' normal setting (in this case, the teacher-led play pedagogy activities in the indoor and outdoor environment of the school); the quick response from participants using the electronic system also allowed me to follow an intuitive data analysis that allowed me to adjust the investigative tools to follow the most promising avenues.

## **4 Chapter 4 – Data generation process**

### **4.1 Introduction**

In Chapter 3 I discussed the method of research design, framework, data generation methods, tools and quality aspects. I also discussed the ethical considerations I followed in the research study.

Chapter 4 explains the process followed to generate the data and the method of analysis. The data generation instruments are described as well as the way the data was collected and sorted into the various types of responses. Data was generated in the field and transcribed.

As will be shown, I employed thematic analysis to evaluate the generated data. As part of this process, a coding scheme was generated for application in the analysis. The thematic analysis was initiated in phase 1 and the incoming data was added as it became available. The analysis process started and evolved during the data generation.

### **4.2 Data generation process and timelines**

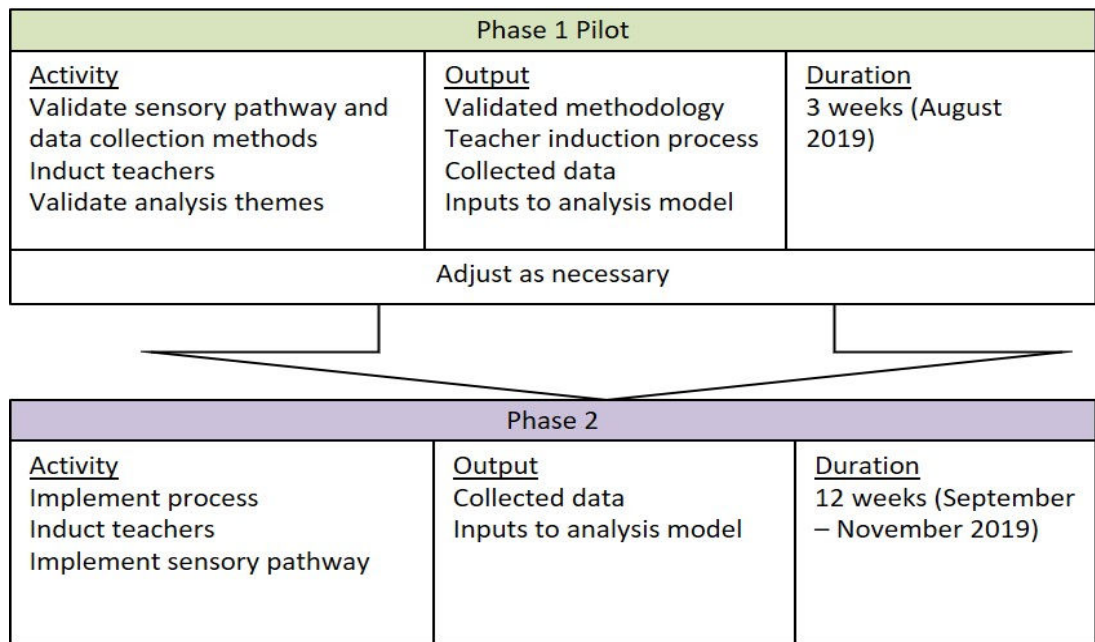
#### **4.2.1 Generation process**

From the start of the field process, all the field activities, including data generation, consolidation and transcription, were performed in a period of around 12 weeks.

A primary source was the participatory discussions, observations and semi-structured interviews, specifically with regard to the analysis of photographs and the identification of emerging themes. This process also obtained suggestions from participants and added to the body of knowledge of the researcher as well as the participants.

The consolidation of the participatory sessions and journals also helped to draw up guidelines for schools without sensory programmes, especially regarding the sensory priorities and the budget constraints associated with sensory programmes.

Figure 4-1 shows the process in more detail and illustrates the activities, the outputs and the timescales associated with the data generation process. It also shows a period between phases 1 and 2 during which the activities and the output from phase 1 were evaluated and adjustments were made to streamline the process.



**Figure 4-1 Data generation process and timelines**

#### 4.2.2 Timelines

The specific timelines for the research were as follows:

**Table 4-1 Field data generation timelines**

Action	Date	School
Programme induction and participant briefing	30 Aug-19	A
Execution of sensopathic pathway – indoors and outdoors	30 Aug 19	A
Participant interview	30 Aug 19	A
Programme induction and participant briefing	17 Oct 19	B
Execution of sensopathic pathway – indoors and outdoors	25 Oct 19	B
Participant interview	30 Oct 19	B
Principal briefing	16 Sep 19	C
Programme induction and participant briefing	25 Sep 19	C
Execution of sensopathic pathway – outdoors	27 Sep 19	C
Execution of sensopathic pathway – indoors	04 Oct 19	C
Participant interview	17 Oct 19	C
Participant interview	31 Oct 19	C
Programme induction and participant briefing	18 Sep 19	D
Execution of sensopathic pathway – indoors and outdoors	02 Oct 19	D
Participant interview	11 Oct 19	D
Participant interview	18 Oct 19	D
Programme induction and participant briefing	09 Oct 19	E
Execution of sensopathic pathway – indoors and outdoors	16 Oct 19	E
Execution of sensopathic pathway – indoors and outdoors	23 Oct 19	E
Participant interview	24-Oct-19	E








### 4.3 Sensopathic pathway

#### 4.3.1 Purpose

As discussed in section 3.5.3, the intent of the sensopathic pathway is to create an opportunity for the participants to engage in teacher-led play activities while presenting learners with a variety of sensory stimuli when they perform a number of challenging sensopathic tasks that are related to school readiness. To this end, a pathway consisting of various materials was constructed, and I observed the participants and assistants leading their learners through the various activities.

As noted in section 1.5.3 on school readiness, learners have to master a series of skills and abilities in order to be regarded as “school ready” (du Preez, 2018:8). These abilities were mapped to the senses in Figure 1-3 School readiness and the senses (adapted from du Preez, 2018:9), with specific attention to the sensopathic area. For ease of reference, the mapping is repeated in Table 4-2 below to provide the key to the icons used in the description. Ayres’ sensory processing theory as described in section 2.4.3.1 and specifically Figure 2-4 must be also be considered:

**Table 4-2 Icons used in sensopathic pathway**

Icon	Senses
	Auditory (hearing) - Speech and language development
	Vestibular (balance and movement) - Posture, balance, muscle tone, body perception, laterality
	Proprioception (position and movement) - Motor planning, hand-eye co-ordination
	Tactile (touch) – Comfort with tactile contact, sensory processing
	Visual (seeing) - Seeing and eye movement. Visual perception and purposeful activity
	Attention span - Ability to concentrate and organise, academic learning ability, cognition and abstract thought
	Emotional stability – Self-esteem, self-regulation, self- confidence





The sensopathic pathway is divided into an indoor and an outdoor section – on the one hand to determine whether there is a difference in the approach from the participants, and on the other hand as a convenient method of deployment.































### 4.3.2 Sensopathic outdoor pathway implementation












Photograph 4-1 - Outdoor sensopathic pathway

















Activity	Description	Illustration
1	<b>Story</b> – the course leader tells the learners a story to provide context to the activity. This is analogous to a teacher leading play.	
2   	<b>Noodle crawling</b> <b>Goal:</b> Team members must crawl through a tunnel made from pool noodles. <b>Method:</b> The learners crawl through a set of hoops on their hands and knees. <b>Readiness areas:</b> Physical, normative, social	













Activity	Description	Illustration
<p><b>3</b></p>    	<p><b>Sensory walkway</b></p> <p><b>Goal:</b> Learners walk barefoot through or on a series of materials.</p> <p><b>Method:</b> Textured surfaces are provided – each team member must place both feet on the surface before moving the next surface. Textures used are:</p> <p>Rubber mats, sand, birdseed, uncooked rice, polystyrene balls and blocks, wooden logs and leaves</p> <p><b>Readiness areas:</b> Physical, normative, social</p>	
<p><b>4</b></p>    	<p><b>Flipper walking</b></p> <p><b>Goal:</b> Learners walk on a rope course while wearing flippers.</p> <p><b>Method:</b> A course is laid out with a rope. The learners put the flippers on and walk the rope course.</p> <p><b>Readiness areas:</b> Physical, normative, social</p>	
<p><b>5</b></p>    	<p><b>Marble transferring</b></p> <p><b>Goal:</b> Learners pick up objects with their toes.</p> <p><b>Method:</b> Learners pick up marbles using their toes in a container of wet sand to drop in a container of dry sand.</p> <p><b>Readiness areas:</b> Physical, normative, social</p>	
<p><b>6</b></p>    	<p><b>Shell sorting</b></p> <p><b>Goal:</b> Learners must sort shells by texture and size.</p> <p><b>Method:</b> Learners sort a variety of shells into containers.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social</p>	

Activity	Description	Illustration
<p><b>7</b></p>   	<p><b>Face building</b></p> <p><b>Goal:</b> Use loose parts to create a face.</p> <p><b>Method:</b> Learners use a variety of loose parts to make faces in textured containers.</p> <p><b>Readiness areas:</b> Cognitive, normative, social</p>	
<p><b>8</b></p>   	<p><b>Ice cream</b></p> <p><b>Goal:</b> Make ice cream cones and decorate with natural materials.</p> <p><b>Method:</b> Learners use natural materials to decorate shaving foam ice cream cones.</p> <p><b>Readiness areas:</b> Cognitive, normative, social</p>	

#### 4.3.3 Sensopathic indoor pathway implementation

Activity	Description	Illustration
<p><b>1</b></p>	<p><b>Story</b> – The course leader tells the learners a story to provide context to the activity. This is analogous to a teacher leading play.</p>	
<p><b>2</b></p>   	<p><b>Letter sorting</b></p> <p><b>Goal:</b> Learners find letters and build a word</p> <p><b>Method:</b> Learners find textured letters in a container of materials and match the example.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social, literacy</p>	
<p><b>3</b></p>    	<p><b>Spelling clue</b></p> <p><b>Goal:</b> Spell a word by placing letters on a board.</p> <p><b>Method:</b> Learners place letters on a magnetic board to match the example. The letters are placed using washing pegs.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social, literacy</p>	

Activity	Description	Illustration
<p><b>4</b></p>  	<p><b>Texture matching</b></p> <p><b>Goal:</b> Match various textures without looking.</p> <p><b>Method:</b> Learners must identify various materials by matching the texture from a sample using feel only.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative</p>	
<p><b>5</b></p>   	<p><b>Outline sorting</b></p> <p><b>Goal:</b> Learners must match outlines in 2D of 3D objects.</p> <p><b>Method:</b> Learners have a set of objects in 3D. They must match the 2D outlines of the objects drawn on a template. Textures are also used to identify objects.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social</p>	
<p><b>6</b></p>   	<p><b>Pattern sorting and dough imprinting</b></p> <p><b>Goal:</b> Learners must feel a 3D pattern matching a 2D pattern and make an imprint in play dough.</p> <p><b>Method:</b> Learners must use a pattern template to recognise a raised pattern on a stick. Once identified, the pattern is imprinted in dough.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative</p>	
<p><b>7</b></p>    	<p><b>Grotto crawling</b></p> <p><b>Goal:</b> Learners must enter a dark space through a waterfall of wet ribbons.</p> <p><b>Method:</b> Learners crawl through a dark grotto with a waterfall entrance while carrying an object.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social</p>	

Activity	Description	Illustration
<p><b>8</b></p>     	<p><b>Textured walkway and bean bag tossing</b></p> <p><b>Goal:</b> Learners must crawl over a sensory walkway and toss a beanbag into a container.</p> <p><b>Method:</b> Learners crawl on hands and feet over a variety of textured surfaces on an indoor sensory walkway. At the end of the crawl way, they select a numbered bean bag and toss it into the correct bucket.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social</p>	
<p><b>9</b></p>     	<p><b>Duplo block and coin sort</b></p> <p><b>Goal:</b> Learners must identify objects by feel in a slimy environment.</p> <p><b>Method:</b> Duplo blocks and coins are hidden in a container of slime balls. Learners must find the blocks and coins while blindfolded. Afterwards the blocks and coins must be sorted without the blindfold.</p> <p><b>Readiness areas:</b> Physical, cognitive, normative, social</p>	

#### 4.3.4 Pilot study (phase 1)

During the pilot study (phase 1) the sensopathic pathway and the associated questionnaires were put to the test. Based on practical aspects, such as the time required to set up the sensopathic pathway and the amount of space required, some of the activities were changed to streamline the pathway. The data generated during the pilot study was included in the overall data analysis, because the sensopathic pathway was used to observe the participants and was not a quantitative test in any way. The pathway used in the pilot phase is shown in Appendix D.

#### 4.4 Data generated

The documents that were collected during the data generation phase are shown in Table 4-3. This is a list of all the forms of data collected. “Resp Code” refers to the Responder Code.

**Table 4-3 Data generated**

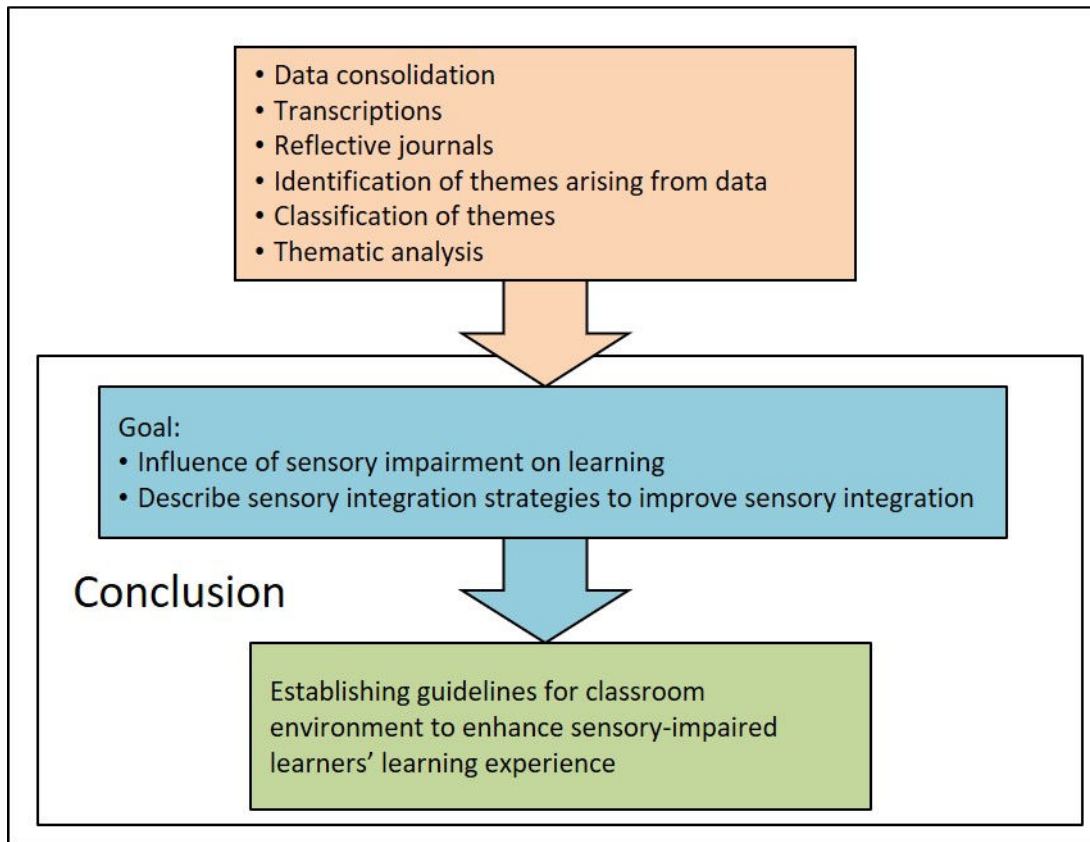
Item	Type	Resp Code	School Code	Code	Document Name
1	Questionnaire	SB	A	QESSB	Questionnaire QESSB
2	Reflective journal	SB	A	RJESSB	Journal RJESSB
3	Semi-structured interview	SB	A	SIESSB	Interview SIESSB
4	Questionnaire	AR	B	QSFAR	Questionnaire QSFAR
5	Reflective journal	AR	B	RJSFAR	Journal RJSFAR
6	Semi-structured interview	AR	B	SISFAR	Interview SISFAR
7	Curriculum interview	TG	C	CICH	Curriculum CICH
8	Field notes	CL	C	FNCH	Field notes FNCH
9	Questionnaire	JB	C	QCHJB	Questionnaire QCHJB
10	Questionnaire	JD	C	QCHJD	Questionnaire QCHJD
11	Questionnaire	RS	C	QCHRS	Questionnaire QCHRS
12	Reflective journal	JB	C	RJCHJB	Journal RJCHJB
13	Reflective journal	JD	C	RJCHJD	Journal RJCHJD
14	Reflective journal	RS	C	RJCHRS	Journal RJCHRS
15	Semi-structured interview	JB	C	SICHJB	Interview SICHJB
16	Semi-structured interview	JD	C	SICHJD	Interview SICHJD
17	Semi-structured interview	RS	C	SICHRS	Interview SICHRS
18	Curriculum interview	SK	D	CICM	Curriculum CICM
19	Field notes	CL	D	FNCM	Field notes FNCM
20	Questionnaire	DG	D	QCMDG	Questionnaire QCMDG
21	Reflective journal	DG	D	RJCMDG	Journal RJCMDG
22	Semi-structured interview	DG	D	SICMDG	Interview SICMDG
23	Curriculum interview	AH	E	CIKJ	Curriculum CIKJ
24	Field notes	CL	E	FNKJ	Field notes FNKJ
25	Questionnaire	AH	E	QKJAH	Questionnaire QKJAH
26	Questionnaire	MU	E	QKJMU	Questionnaire QKJMU
27	Reflective journal	AH	E	RJKJAH	Journal RJKJAH
28	Reflective journal	MU	E	RJKJMU	Journal RJKJMU
29	Semi-structured interview	AH	E	SIKJAH	Interview SIKJAH
30	Semi-structured interview	MU	E	SIKJMU	Interview SIKJMU
31	Reflective journal	CL		RJCL	Journal RJCL

The documents shown in Table 4-3 are coded regarding the participants and the schools they are associated with as discussed in section 3-7 in order to preserve anonymity.

#### 4.5 Data analysis

Nieuwenhuis (2016c:109) notes that, as a rule, the qualitative data analysis process is based on an interpretative examination of the meaningful and symbolic content of data. Yin (2014:132) notes that the essence of data analysis is to match patterns in texts, to link data to propositions,

to build explanations and to perform cross-case synthesis. I used this basis to analyse the data I generated. The process of data analysis is shown in Figure 4-3. The process is discussed further in this section.



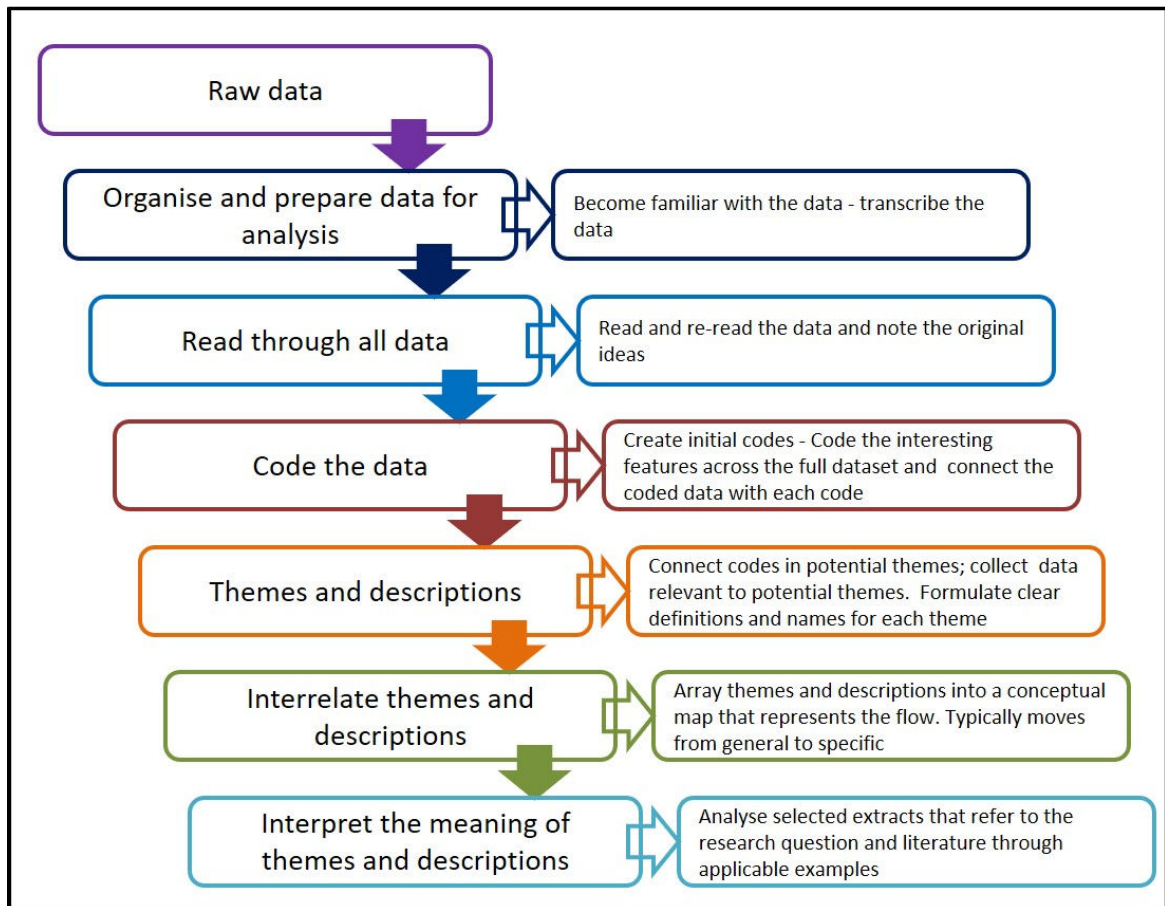
**Figure 4-2 Data analysis, interpretation and conclusion**

#### 4.5.1 Data analysis technique

Engelbrecht (2016:117) notes that data analysis in qualitative research is a textual analysis, as the subject matter, whether transcribed interviews, questionnaires or field notes, are all a form of text. In all forms of analysis the data must be examined in depth and repeatedly, and each analysis must progress through various phases. Stemler (2001:2) makes the important point that “content analysis extends far beyond simple word counts, however. What makes the technique particularly rich and meaningful is its reliance on coding and categorising of the data.” The steps I used in the analysis process to interpret the data are shown in Figure 4-3.

Yin (2014:169) notes that there are four principles that the researcher must attend to: demonstrate that analysis considered all the applicable documented evidence; consider all significant opposing interpretations in the examination; attend to the most important facet of the case study; and utilise the researcher’s existing skills to enhance the analysis. As Creswell and

Creswell (2018:190) explain: “In general, the intent is to make sense out of text and image data. It involves segmenting and taking apart the data as well as putting it back together.”



**Figure 4-3 Data analysis process adapted from Creswell & Creswell (2018:194) and Engelbrecht (2016:121)**

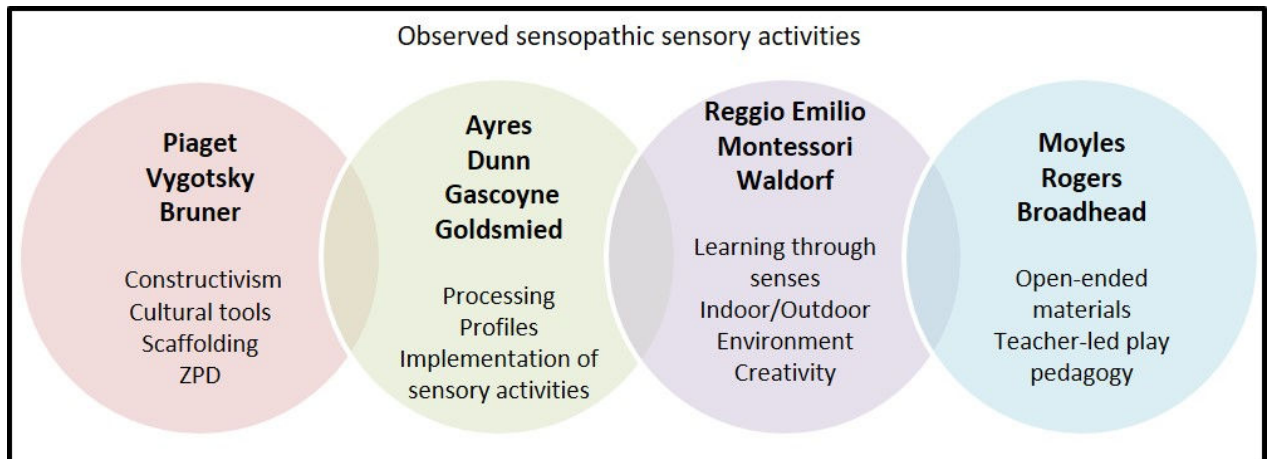
Rule and Vaughn (2011:76) advise that data needs to be systematically organised after it has been collected. The initial activity was to systematically arrange and label the generated data, which enabled retrieval of the data on an electronic system as well as in hard copy. I created seven sections, with a separate section for each site. I filed the completed letters of consent, the induction package, questionnaires, reflective journals, photographs, and audio files of the semi-structured interviews and transcriptions generated at each research site, as well as my field notes for that particular site, into the applicable sections.

After the data had been suitably arranged the first reading took place. The main aim of the initial reading was to gain an awareness of the information that the transcripts contained to allow the coding process to be initiated.



#### 4.5.2 Role of the conceptual framework

The conceptual framework not only provided a solid underpinning for the conceptualisation, but also the implementation of the data generation, analyses and interpretation of the data. The conceptual framework is discussed in Chapter 2. The relationship between the various components discussed in chapter 2 is shown in figure 4-4.



**Figure 4-4 Role of the conceptual framework**

The conceptual framework draws on the merging of several historically important theorists of play, such as Vygotsky in section 2.4.1, sensory processing theorists such as Drs. Jean Ayres and Winnie Dunn in section 2.4.3 and sensopathic play theorists such as Sue Gascoyne and Eleanor Goldschmied in section 2.4.3.3. The influences of international best practices in the development of the Grade R learner around the world discussed in section 2.4.4 reflected not only a national view of the generated data, but also incorporated an international influence in the study.

The sensopathic pathways were designed with all of these theorists' work in mind. They are introduced to the learners using Vygotsky's cultural tools, which are essential not only in developing, but also in scaffolding the young learners' play.

Activities included in the sensopathic pathways were designed to provide valuable opportunities to observe and reflect on the sensory behaviour of learners based on their sensory processing profile. The sensopathic activities themselves were specifically designed with the theorists (as described in section 2.7) in mind. This provided the opportunity to observe whether impaired sensory processing has an influence on the learning experience of the Grade R learner.

The conceptual framework provided the baseline for the design of the data generation instruments such as the semi-structured interviews, observation schedules, the reflective journal as well as reflexive photography detailed in section 3.7.2.4. The data collection process

not only included the analysis of data, but also the identification of themes, and culminated in multiple case studies of which the results can be used to compile sensible and practical guidelines. These are intended to be applied in schools to enhance the learning experience of all the Grade R learners within the South African context, which is inclusive and accommodative to all learners in the classroom. Within the conceptual framework, the data collected can be confirmed, triangulated and, where possible, transferred to other contexts.

### **4.5.3 Thematic content analysis**

#### **4.5.3.1 Thematic content analysis process**

Content analysis is described by Cohen *et al.* (2018:668) as a methodology within which many words of text are organised into a range of fewer categories. As shown in Figure 4.3, after the raw data has been generated and organised, the critical part of qualitative data analysis is to develop a suitable analysis basis or frame (Schreier, 2014:174) by coding the data. Coding allows for a methodical data trail, creating an auditable path to the original data and to allocate themes arising from the raw data (Stach, 2017:134). The coding system allows the creation of a system in the data and allows the identification of gaps in the data. Identifying gaps in the data creates opportunities for future studies and identifies possible limitations. This coding process is referred to as content analysis.

Analysis of the raw data can be approached from two directions – in the first direction, the data is viewed as either supporting or not supporting a concept (deductive analysis), while in the second direction the concept is generated from the data (inductive analysis). Inductive coding is also commonly referred to as “emergent” coding and deductive coding as “a priori” coding (Stemler, 2001:2). In simpler terms, deductive analysis can be seen as “top down” and inductive analysis as “bottom up” (Mayring, 2014:104).

Thomas (2006:238) notes that the process of deductive analysis is defined as a process is intended to test whether the generated data is consistent with initial assumptions, concepts or hypotheses that the researcher had presented. According to Mayring (2000:16), the application of deductive category assignment is properly applied using previously formulated, theoretically extracted facets of analysis (the statement) and connects these aspects with the qualitative text or data sets - the qualitative phase of analysis (coding) entails the methodological assignment of a particular category to a specific passage of text. However, as Thomas (2006:238) cautions, in deductive analyses the preconceptions in the data generation process that the researcher imposes (whether intentional or not) may allow key themes to be obscured or clouded.

The term inductive analysis is used to refer to a method that primarily makes use of detailed examination of raw data in order to extract concepts and themes. This process of analysis is

consistent with Corbin and Strauss's (2008:12) description: "The researcher begins with an area of study and allows the theory to emerge from the data".

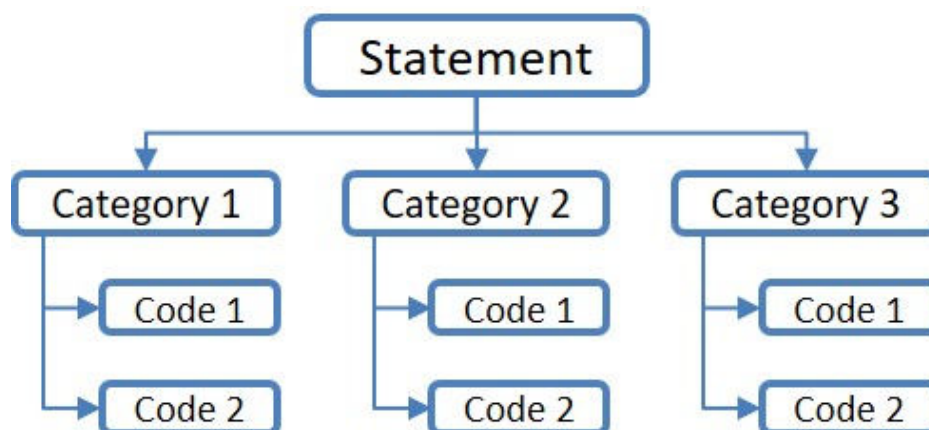
As noted in Thomas (2006:238) and Corbin and Strauss (2008:46), in practice, research studies use both deductive as well as inductive analysis - Cohen *et al.* (2018:669) point out that a researcher often starts with some codes previously decided, but expands, modifies and adjusts these in response to the data. Since my research primarily involves the evaluation of a concept, deductive analysis provided the best fit and I used the research questions to frame the content analysis.

#### 4.5.3.2 Structuring - deductive category assignment

Analysing content requires a structure to be extracted from the data. Mayring (2014:97) notes that this structure is obtained by utilising categories that are deduced from the research questions and the conceptual framework, as well as from other studies or previous research. Cohen *et al.* (2018:669) note that the categories are used as labels for pieces of data that allow the researcher to identify similar information.

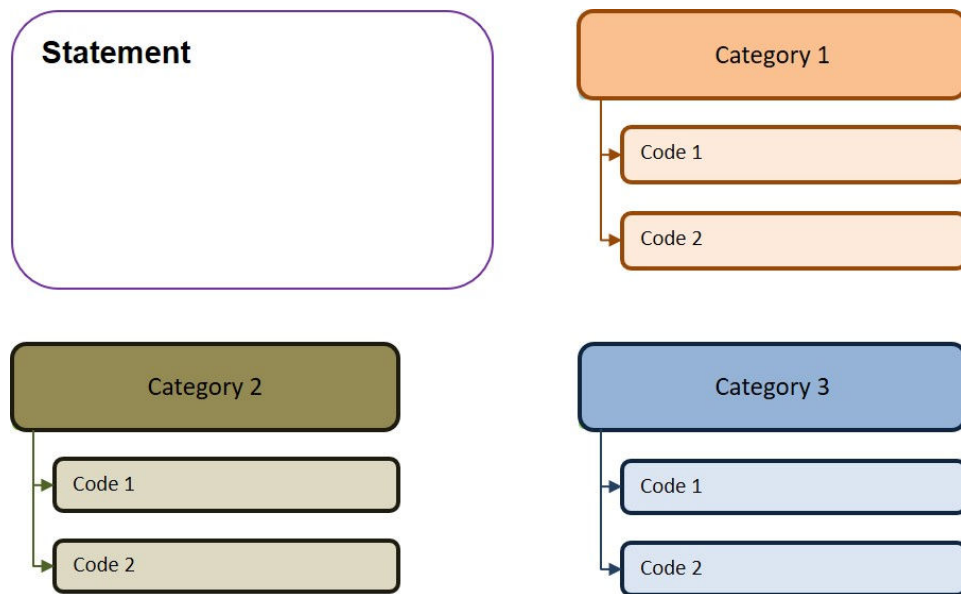
Categories consist of different levels of specificity, and some categories may subsume others, thus creating a hierarchical structure or tree diagram. The categories themselves are nominal (Mayring, 2014:98), referring to the fact that they belong to a list of independent categories, with the only similarity that they belong to the structuring dimension. As noted previously, these categories are formulated in advance and hold constantly through the text analysis.

In order to establish the top-down framework of the coding tree, a hierarchical system is followed starting with a statement that is deduced from the research questions. The statement is further expanded into constituent superordinate and subordinate categories and codes that support the statement, as shown in Figure 4-5.



**Figure 4-5 Hierarchical structure for deductive category assignment**

For the purposes of the discussion in Chapter 5, the hierarchical structure will be presented as shown below in figure 4-6. This provides a visualisation of the data.



**Figure 4-6 Content analysis hierarchy**

Using the structure shown in figure 4.5, I generated the a priori categories by using the research questions as a baseline. The research questions were recast as statements, and each of these statements was used as the initial category. I then developed subordinate categories using the literature study as theoretical background to create the content structure hierarchy shown in figure 4-6 by dividing the theoretical components of the categories into smaller, coherent units.

The statements used in the coding frame are based on the following fundamental understanding of the research questions:

- Primary research question - How can sensopathic-focussed teacher-led sensory play in the play pedagogy context influence sensory processing in Grade R learners?
- Secondary research question 1 - What is the role of effective sensory processing on the school readiness of Grade R learners?
- Secondary research question 2 - How do teachers implement sensopathic-focussed teacher-led sensory play in accordance with play pedagogy principles?
- Secondary research question 3 - What guidelines can be formulated for implementing sensopathic-focussed sensory play pedagogy in policy and practice?

These questions were recast as the following statements:

- Statement PRQ: Sensopathic-focussed, teacher-led sensory play in the play pedagogy context influences sensory processing.

- Statement SRQ1: Effective sensory processing influences school readiness.
- Statement SRQ2: Teachers can implement sensopathic-focussed teacher-led sensory play in accordance with play pedagogy principles.
- Statement SRQ3: Guidelines for implementing sensopathic-focussed, sensory play pedagogy in policy and practice.

The research questions can be distilled into the following main themes that are used as the underlying baseline for the content analysis:

- Teachers' perceptions of the effect of sensory processing on school readiness.
- The opinions of teachers regarding the value of play in the pedagogic context as well as in developing sensory processing.
- Teachers' perceptions between free and guided play.
- Teachers' role in initiating, supporting and guiding play.
- Methods and resources used by teachers to incorporate play-based pedagogy.

Cohen *et al.* (2018:670) note that the categories used must provide answers to fundamental questions such as “what” and “who”, but above all must be consistently applicable to ensure repeatability and to increase the validity of the analysis.

I developed categories and codes to support the statements. I limited the expansion to three hierarchical levels. In addition, the following requirements as defined in Schreier (2014:175) were observed:

- Statements must be one-dimensional (i.e. cover one aspect only)
- Categories within one main theme must be mutually exclusive to ensure that any unit can be coded only once under one main category.
- The coding must be exhaustive, i.e. cover all relevant aspects of the material.

The completed coding frame is shown in Figure 4-7. This coding frame was tested during phase 1 and was found to be sufficiently comprehensive. The completeness of the coding frame was the key to ensure that all the data was comprehensively captured (Schreier, 2014:175).

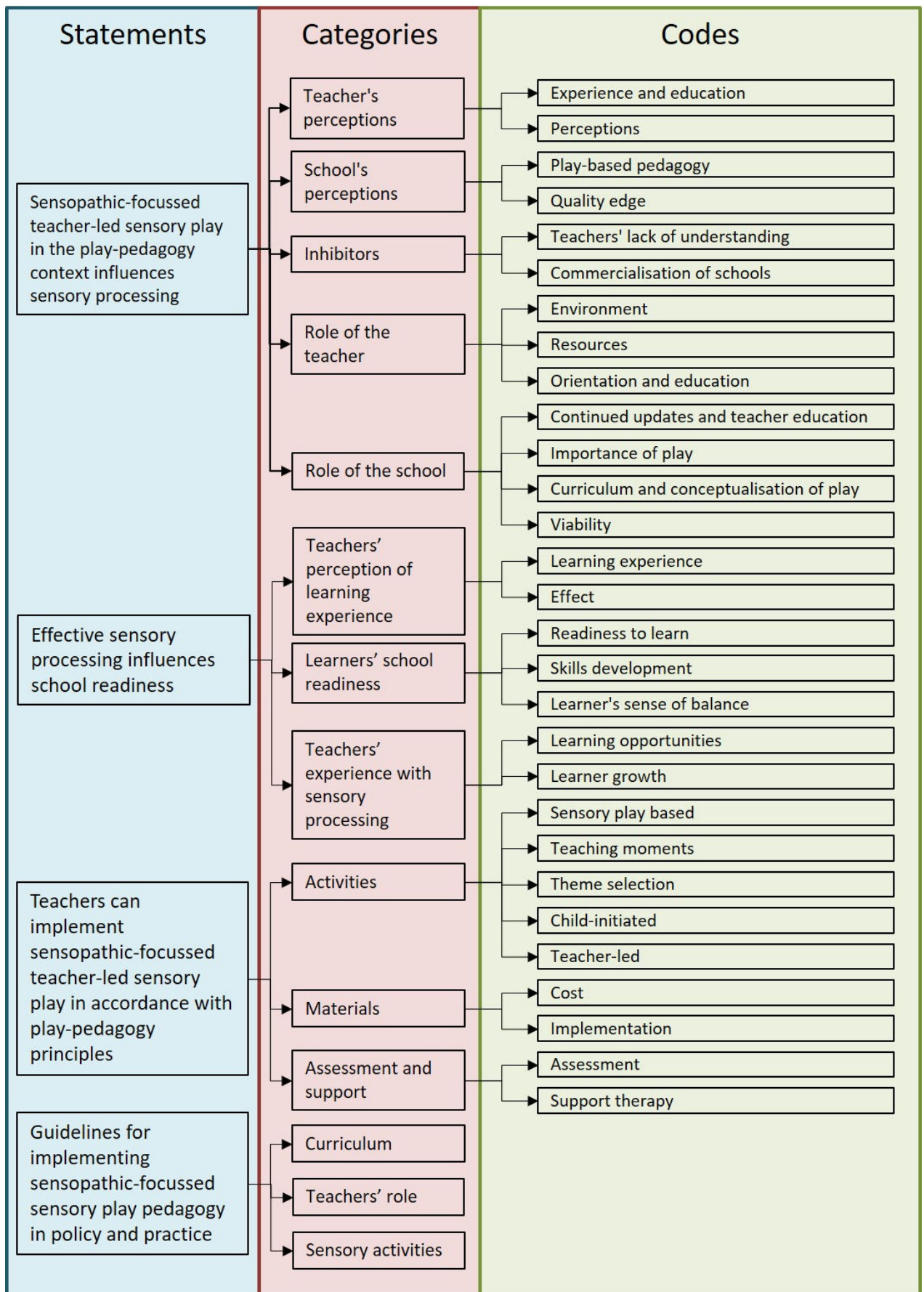


Figure 4-7 Coding frame (content analysis hierarchy)

### 4.5.3.3 Content analysis

Cohen *et al.* (2018:677) refer to content analysis as the process of creating a domain analysis using coding assigned to units of assessment. This system involves the assignment of categories defined in the coding frame (Figure 4-7) to text units (sentences and paragraphs) of the data sources as shown in Table 4-3. When analysing the results, subsequent successive words, sentences or illustrations that could be grouped under a specific code formed a semantic unit of analysis. The aggregation of semantic units formed a category (also known as an episode), and various categories aggregated to form a statement as shown in Figure 4-5. These codes or episodes were examined to determine what each of them reveals about the researched phenomenon (Engelbrecht, 2016:120).

All observations, transcriptions of interviews and the results from questionnaires were coded in a master list that provide a single combined record of the results of the study. This was used to identify the key elements of the play activities. Collaborative sessions and interviews were recorded and transcribed. In this method, units were defined semantically, i.e. in terms of meaning (Engelbrecht, 2016:120). In essence, the transcribed data was separated into meaningful analytical units on a line-by-line basis (Nieuwenhuis, 2016c:116). The relationships between the various units of analysis were explored.

### 4.5.3.4 Software analysis tool QDA Miner

I used a software package to perform category assignment and coding. The package I selected was QDA Miner Lite, which is a software package for qualitative data analysis that performs coding, annotation, retrieval and analysis of documents and images. The programme can be used to analyse textual data, including interview transcripts and open-ended or semi-structured responses. It is also possible to analyse images. QDA Miner is available from Provalis Research at <https://provalisresearch.com/products/qualitative-data-analysis-software/>.

The system allowed me to import my data from Excel and Word and also allowed the importing of images. The coding process itself is intuitive and organised in a tree structure. I used the coding frame shown in Figure 4-7 and entered the statements, categories and codes into the programme. Once this was completed, I could open each text source in the programme and tag each text unit with the appropriate code. Comments can also be added to coded segments.

Some of the analytical methods I used were the following:

- The program was used to search for keywords and key phrases that are associated with similar concepts. This allowed me to mark all references to a specific category or code.
- Sections in structured documents were retrieved and marked to specific codes. I used this function to group sections in a set of documents that were associated.

- QDA Miner is also capable of grouping matching sentences or paragraphs into collections and allows the user to associate short-text items with specific codes.
- A specific function, the Code Similarity search, was used to group similar segments of text with those that had previously been coded. This function allowed me to identify items that had been overlooked initially.

Figure 4-8 shows a typical screenshot illustrating the coded document, code tree and marking.

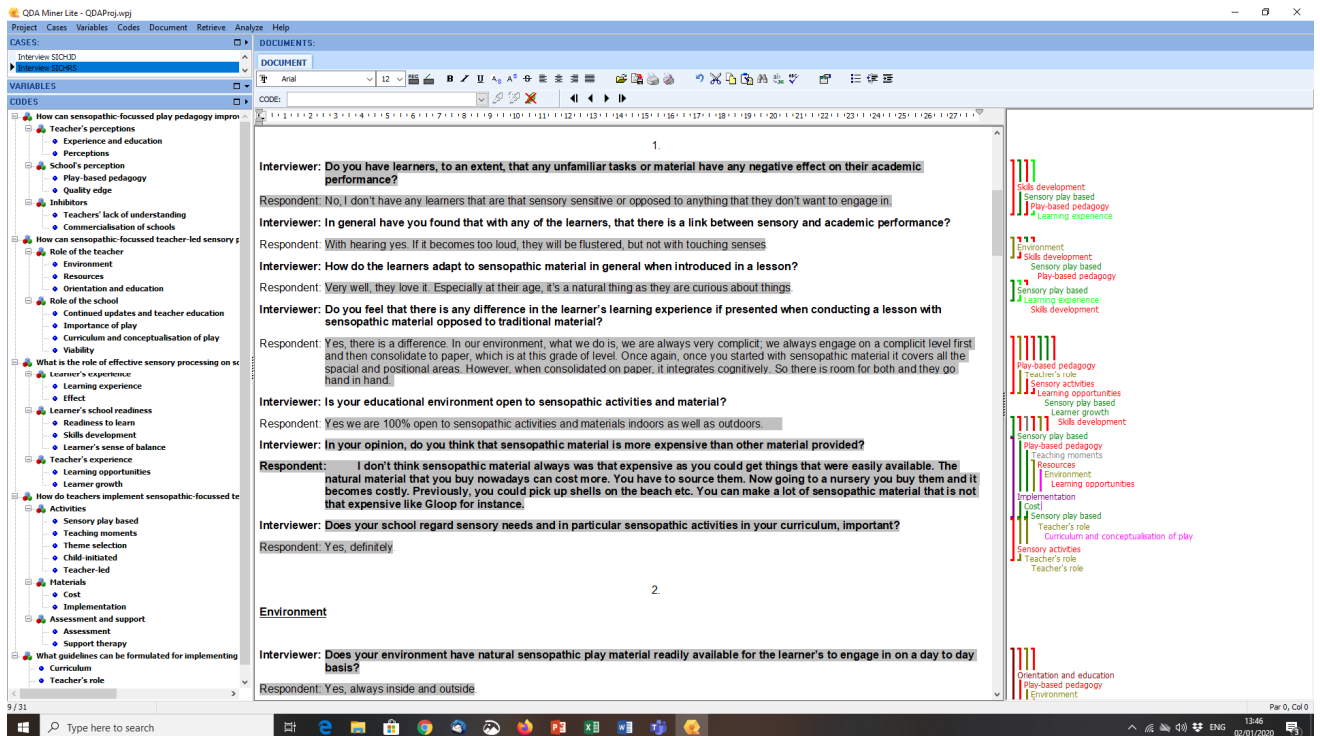


Figure 4-8 Screenshot from QDA Miner

## 4.6 Identification of sources

In Chapter 5 and in subsequent discussions, sources are quoted from the source material of the research study. In order to conform to the ethical requirements, the schools are identified only by the allocated alphabetical letter (refer to Table 3.6). Further identification is based on the list of sources shown in Table 4.3.

## 4.7 Conclusion

In Chapter 4 I discussed the methods I used to collect data for my research using a variety of tools, including a sensopathic pathway. I also provided the timelines and a record of data instruments I collected.



I discussed the data analysis process in depth, specifically the role of the conceptual framework in the analysis. I furthermore provided the background to the method of coding and the derivation of the themes. I provided details on the development of the themes (statements), categories and codes.

Lastly, I explained the use of a software package to assist the analysis process. In Chapter 5 I explain how I applied the tools and methods discussed in this chapter, analyse the generated data sets and provide a preliminary analysis of the results.

## 5 Chapter 5: Data presentation and preliminary analysis

### 5.1 Introduction

In the previous chapter, I described the research execution and provided a methodological layout of the data capturing process and a description of the instruments used. A summary of the data generation process and provisional timelines were provided. The data analysis techniques and the coding frames were briefly discussed.

In this chapter I discuss the analysis of my raw data, i.e. the questionnaires, reflexive journals, semi-structured interviews, curriculum interviews and my own field notes to validate the results.

I developed a coding frame deduced from the research questions as detailed in section 4.5.3.2. The coding frame is based on statements formulated from the research questions and is expanded into categories and codes as shown in Figure 4.5. The coding book itself is presented in Figure 4-7.

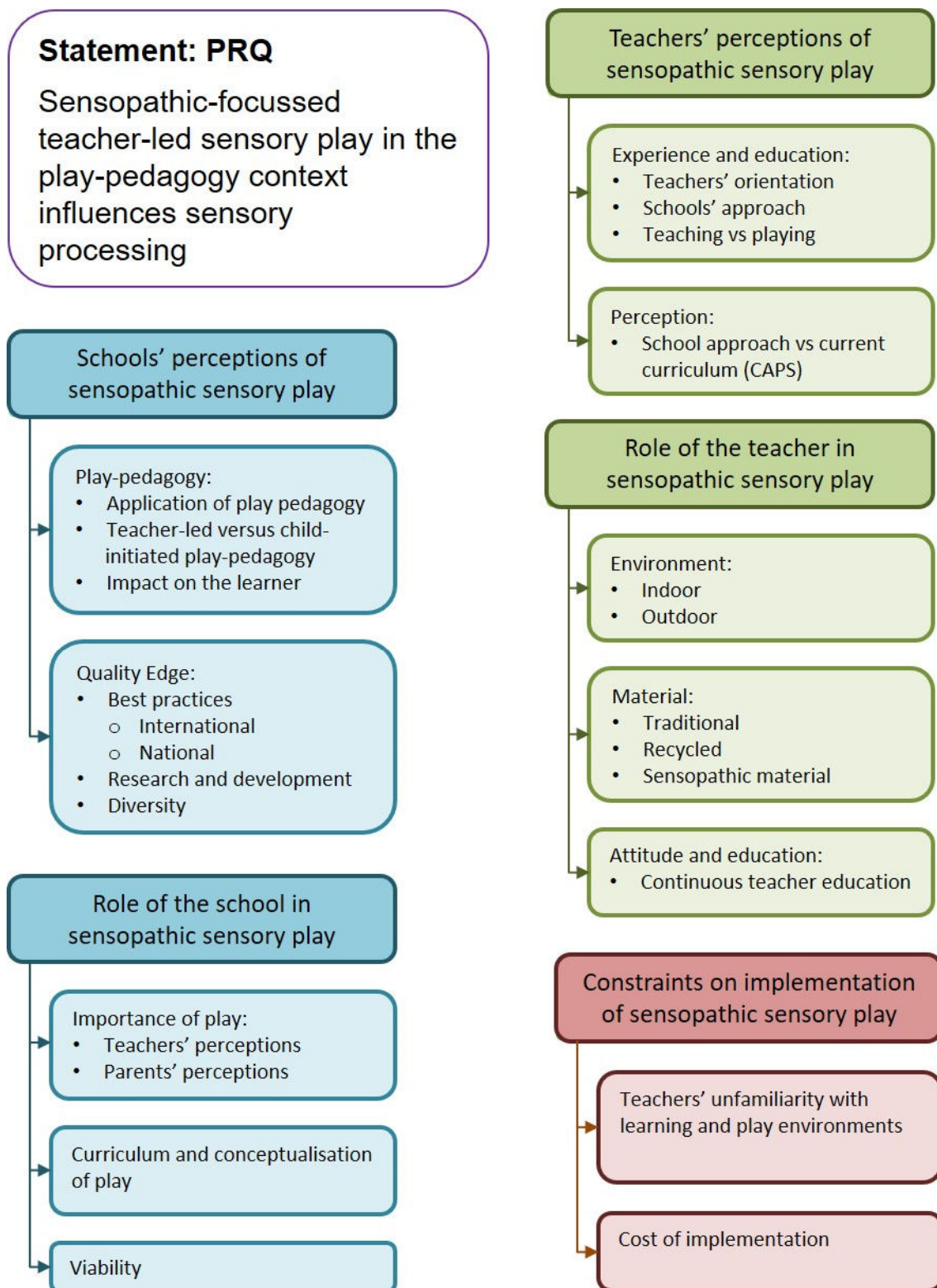
After developing the coding book, I performed a deductive content analysis by marking text units with the appropriate codes. The codes are aggregated to the categories and statements in the code book. The codes and categories are supported by direct quotes from the set of data as well as my field notes and with reflective photographs, where applicable. Each theme is discussed in terms of the categories and codes and further expanded as necessary.

The results are examined against the primary and secondary research questions. The primary research question encompasses a constellation of all the data. The chapter concludes with a summary of the findings.

In the interests of brevity, “sensopathic-focussed teacher-led sensory play” is also referred to as “sensopathic play” in this chapter.

### 5.2 Statement PRQ - Sensopathic-focussed teacher-led sensory play in the play pedagogy context influences sensory processing

As shown in the coding tree in Figure 4-7 and described in section 4.5.3, statement PRQ is derived from the primary research question, i.e. *How can sensopathic-focused, teacher-led sensory play in the play pedagogy context influence sensory processing?* The categories associated with the statement are deduced from the research question and expanded into codes as shown in Figure 5-1.



**Figure 5-1 Analysis structure for Statement PRQ**

As seen in Figure 5-1, Statement PRQ was expanded into five categories and twelve codes. This statement is further explored by discussing each category and code separately. Direct quotes and photographs are used to illustrate or support the data as necessary.

The categories are as follows:

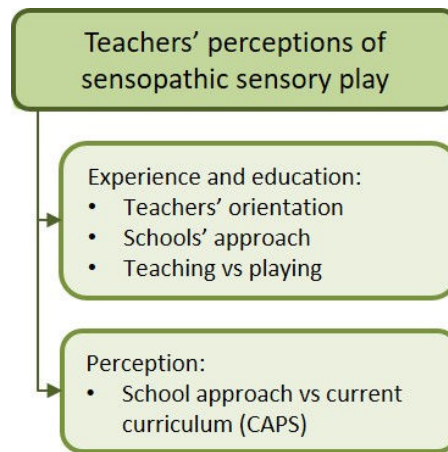
- Teachers' perceptions of sensopathic play: This category describes how teachers see sensopathic-focussed teacher-led play in the learning environment and how it is integrated into the classroom and the daily lessons. It also examines how they feel about it.
- Role of the teacher in sensopathic play: This category encompasses a study of how the teacher interfaces with the environment, both indoors and outdoors; how the teacher applies materials in sensory activities and finally how the attitude or approach and the education of the teacher impacts the effect that sensopathic-focussed teacher-led play pedagogy has on the learners' sensory processing.
- Schools' perceptions of sensopathic play: This category describes the way that schools themselves see sensopathic-focussed teacher-led play and how it is incorporated into the curriculum and implemented in the school as a whole. It also examines the benefits that schools see in its use.
- Role of the school in sensopathic play: This category examines the role of the school, specifically how schools view the importance of play, how their curricula and conceptualisation of play impact learners' sensory processing and how schools view the viability of a sensopathic-focussed teacher-led play pedagogy.
- Constraints on the implementation of sensopathic play: In this category the issues that prevent sensopathic-focussed teacher-led play from being implemented, whether physical or perceptual, are examined.

### **5.2.1 PRQ Category 1: Teachers' perceptions of sensopathic play**

The participants' perceptions of sensopathic-focussed teacher-led sensory play were of significant importance, as these perceptions shaped their actions in the implementation and execution of play activities. This category specifically examined these perceptions.

The category was expanded to examine two codes, as shown in Figure 5-2:

- The experience and education of the teachers with sensopathic-focussed teacher-led play pedagogy.
- How teachers perceive sensopathic-focussed teacher-led play in the context of the curriculum, especially where CAPS compliance is required.



**Figure 5-2 PRQ Category 1 - Teachers' perceptions**

### 5.2.1.1 Code: Teachers' experience and education

Participants were enthusiastic about sensopathic-focussed teacher-led play and positive about its benefits. One participant put it as follows:

*What we get lately, is learners from leading schools who come to do screening, they will have all seven's (7's) on their reports, and when we test them according to our standard, they fail the year. There is absolutely no understanding. So what is happening here is the teacher is coaching the learners for the worksheets, because the teachers get pressured and now the learners have to work through those eight worksheets at the speed of light. They have to memorise it like a parrot, and understand the worksheets, but if we have to give them any in depth work or understanding, they don't cope. The parents are totally shocked. We explained that the learners do not understand the principles, not at all. (School E: CIKJ 29 Oct 2019)*

The experiences and education of individual teachers had a significant influence on their perception as to what their own role and responsibility would be in the execution of sensory processing activities – counterintuitively, “more” was not always “better”. The important experiences of the participants and their role as teachers in teaching practices were reported as follows:

*I think the ones that found it most difficult were the older teachers that have been teaching the longest in traditional schools. Our young teachers coped best as they have learned a lot about sensopathic materials and ways recently. It is also about discipline; you must have self-confidence. The older teachers felt that as soon as something is out of place then the discipline was gone too. It took the older teachers about two years to get used to the new sensopathic ideas. (School E: SIKJAH 29 Oct 2019)*

A point that kept recurring was that the most important part of sensopathic-focused teacher-led play pedagogy was identified as follows by one of the participants:

*I would say the teacher. 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 learners. (School E: SIKJAH 29 Oct 2019)*

The aspect of teacher-led play is also identified – the impact of the teacher must always be recognised:

*It depends on what you ask them to do. If it is sensory activities, they will engage as they are used to what we are doing here. I think it is also your expectation; do you want them to explore? Sometimes they follow what the teacher is doing and also follow their peers. If they are familiar with a certain sensory activity, they will engage from the beginning. (School C: SICHJD 11 Oct 2019)*

The sensory pathway was a good example of how teacher-led activities provided the balance between open-ended play and play with a goal. Without the boundaries being set by the teacher, the activity could fail to deliver planned learning experiences.

What was noticeable was that there seemed to be little appreciation for the benefit that open-ended play (refer to section 2.7) could provide. However, as this study was concerned with sensopathic-focused, teacher-led play, this aspect was not pursued further.



**Photograph 5-1 – Learner completing the indoor sensopathic pathway.**

This photograph shows a learner completing the indoor sensopathic pathway by crawling on the textured walkway. School D.



**Photograph 5-2 - Learner completing the outdoor sensopathic pathway.**

In this photograph a learner walks on the outdoor sensory walkway. Note the bare feet, which are important to facilitate tactile experiences. School D.

To have a more detailed view of the category, I divided the category into sub-codes for a more focussed analysis.

## A. Sub-code: Teachers' orientation

The teacher's role is not only important in improving sensory processing, it is also imperative that the teacher realises the importance of sensopathic play-focused pedagogy, not only to improve sensory processing by the learners, but also for the teaching and learning moments that it creates and embeds in the daily programme of the Grade R learner. This category examines whether the participants shared this view.

*I would say by moving away from just ordinary classroom learning/ traditional learning, you can move it outside. By using stones, sticks and leaves, to do numeracy. The learners can learn so much from just observing the trees and leaves and also by touching and feeling different objects. By using any waste material, like bottle caps, we all have that in our homes and learners can bring it to school to be used. It doesn't necessarily have to be in the classroom. You can do so much with very little resources if you are prepared to think outside of the box. (School C: SICHRS 11 Oct 2019)*

As mentioned previously, planning, observing and adapting are vital skills that teachers need to make sensory play effective:

*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, a sensopathic level or on an initiative level, and that a teacher has to be more observant to know what is going on around them. Very observant of what's going on around us yes. You get to know your learners very quickly and their needs. (School C: SICHRS 11 Oct 2019)*

*The teacher's role is extremely important to guidance and support of the learner. And to expose them to new sensopathic material, especially with the time frame we are in with our learners and youth today, it also provides a lot of direction. (School A: SIESSB 24 Sep 2019)*

The ability to adapt an activity based on the reaction of learners or teachable moments that occur is a key area:

*I am very observant, and if I observe that a child is more resistant to the material, I would go and sit with him, assist him and maybe be the first one to show the example and then they will follow. Sometimes I sit with my class around a table and I will start to roll the clay in different ways or even start with the finger paint and they will follow. The one that is a little bit resistant, I will take with me or put him/her next to me and gradually ask them to engage with the material that I am using on my piece of paper and they will follow my example. (School A: SIESSB 24 Sep 2019)*

As a researcher I could identify with the contributions by participants from schools A and C during the semi-structured interviews - in my reflective journal I worded my ideas and emotions regarding the attitude and orientation of the teacher.

*Activities, materials and outlay can be changed as well as the material at any time I realised it's not the specific material or activity which draws the learner into the experience but it's rather the enthusiasm, the attitude of the teacher which makes sensory learning an exciting and successful learning experience. The observation and the presence of mind if the learner does not want to experience the activity and the assistance and guidance provided beforehand, during as well as afterwards which makes sensory learning a success. As well as the empathy of the teacher if the learner indicates that they do not want to participate or are apprehensive or averse to the activity.*  
(RJCL 15 Oct 2019)

## **B. Sub-code: School's approach**

The school's approach to the implementation and conceptualisation of play pedagogy, and especially sensopathic-focussed play pedagogy, is especially important, as this approach would be represented in the curricula that schools use as well as in adaptations of standard curricula. It is important to note that two distinct policies were noted – in the first place (and often associated with the school's ability to finance it) there would be a conscious process of continuous monitoring of practice in the wider educational environment, while some of the smaller schools I worked with had (out of necessity, mostly) a more random approach, where it was actually incumbent on the teachers themselves to do the research.

*We are constantly looking at best practice throughout the world. We are always researching what is happening in the world, what the latest trends are.* (School C: CICH 17 Oct 2019)

It was also noted that the process needs to be entrenched in the school itself – internal workshops are important to create a common baseline and especially to ensure that new teachers are integrated into the system.

*We are a sensory-integrated school. We do a lot of workshops and we learn from each other and we have our workshop every second week. We don't have it in our curriculum though, however, the school itself said that you can't work or teach on a worksheet base, you have to teach them in a sensory way.*  
(School C: SICHJB 11 Oct 2019)

As all of the schools in the sample (refer to section 3.6.2) were chosen based on their implementation of sensory play it was not really surprising, but it was thought-provoking to note that all participants regarded the use of sensory play activities as superior to more traditional methods, especially by participants that had had the opportunity to work in both.

*More and more schools bring sensory play into their activities. But there are still a lot of schools that tend to use paper-based activities with very little meaning for the pre-school child.* (School C: RJCHRS 30 Sept 2019)



Of course, budget pressures and unsuitable facilities could cause problems:

*There are more traditional and limited natural material available on the playground. Learners engage more with traditional toys during free play and not always sensory play. No additional sensory material was available for free play and outdoor play. Little or no novel sensory rich outdoor material available for learners to engage in free play. Outdoors was limited and lends itself to little sensory exploration and expression. (School D: FNCM 22 Oct 2019)*

The participating schools approached the matter differently, and mostly these approaches seemed to be based on the resources available, which was also a function of their client base, as they were all private schools. The degree to which the curriculum could be seen as a business decision is discussed later in section 5.2.3.2.

### **C. Sub-code: Teaching versus play**

The dialogue between play-based teaching and formal teaching is always relevant and leads to varied discussions. The full conceptual background is discussed in section 2.4 and will not be restated in this section. Suffice it to note that all the participants understood the concepts involved.

*I would say a good mix of both environments is good for them. I also think it doesn't matter where you work with them, as long as the work or activities are well thought through, it would prompt the learners to engage and there will be an element of surprise, something different. (School C: SICHJD 11 Oct 2019)*

*Any child-initiated activities with boundaries and a controlled environment won't become ludic, although they do enjoy it, but they also learn from it. If I see that it gets out of hand, I will stop it, put in boundaries and we will resume or change to a different activity. (School A: SIESSB 23 Oct 2019)*

*Yes, it makes a huge difference because they see it as a challenge opposed to the pen and pencil exercises. Traditional material does have a place - however I feel they learn more and retain more information once it is experienced on a sensopathic level. (School A: SIESSB 23 Oct 2019)*

On the whole, the results from the code indicate that participants had a good balance of experience and education. It is important, though, to keep the following in mind:

- Very few (if any) of the participants were actually trained formally (i.e. during their initial teacher training) and all indicated a mixture of own research, experience and additional training, either formal or on the job.
- While all participants had a fair idea of play and sensory play, the focus for the most part was on teacher-led play and less on more open-ended activities.

In my research journal I reflected on the following perceptions after the semi-structured interviews conducted with School A and C based on the category analysis.

*Learners who are averse to sensory experiences on this primal level later have difficulties with applying more complex and demanding skills, regardless of it being on a sensory level or not. I observed that the teacher's experience of implementing sensopathic play often depend on their own initiative and the flexibility to change their teaching practices. They also need to be creative in teaching practices as well as in embracing the learner's needs and to meet learners on their level and being able to accommodate each individual learner's needs. (RJCL 30 Oct 2019)*

### 5.2.1.2 Code: Teachers' perception of sensopathic play

This category examines how teachers perceive sensopathic-focussed, teacher-led play in the context of the curriculum, especially where CAPS compliance is required.

Traditional teacher training emphasises a much more formal approach, and while play as an educational method is widely recognised and incorporated into curricula, sensory play itself has not had the same exposure and is not really seen at the same level. Benefits of sensory play (and sensopathic-focussed play in particular) are more perception-based, and as a result I specifically examined the participants' perceptions of where sensory play would fit into the learning environment. It was observed that there seemed to be broad consensus in terms of the understanding of the concept, but more variability as regards the implementation.

*Yes, the better the senses are involved in the classroom the more the learner retains information on a long-term basis and the less entrenchment and activities do I have to do as a teacher afterwards. It is also enjoyable and fun, so the experience is more memorable. (School E: RJKJAH 15 Dec 2019)*

*Yes, I think so at least I think we all have different perspectives of sensory play and play pedagogy principals so each one individually applies it according to their personality and perception. (School B: RJSFAR 29 Oct 2019)*

At least one participant was not convinced of the **sensory** aspect and focussed more on the activity itself. This perception seemed to be an exception:

*It makes it more interesting. It depends on the initiative taken by the teacher. The emphasis should not be on the material but the activity. (School E: SIKJMU 29 Oct 2019)*

The attractiveness of sensory activities to learners was pointed out by one participant – this aspect was also commented on in other categories. Sensory activities seem to have an attraction all of their own – several authors such as Gascoyne, Goldschmied and Nicholson (refer to section 2.7.1) have also commented on this.

*From my experience learners love these experiences and they learn and benefit so much from them. In my class, I try and present the experiences during free play and incorporate them into structured group activities as well. (School C: RJCHJD 3 Oct 2019)*

In summary, the perceptions of the participants could be broadly divided into the following areas:

1. While participants agreed on the place of sensory and specifically sensopathic-focused play in the broader environment, the method of implementation varied.
2. Experience played a larger part than education, but primarily due to a lack of formal education opportunities in the field.
3. There was significantly more appreciation of teacher-led play than of more open-ended play.

### 5.2.2 PRQ Category 2: Role of the teacher in sensopathic play

PRQ Category 2 examines the role of the teacher during sensopathic play and the way in which they manage the resources and environment in the process. Three codes were developed in this category, as shown in Figure 5-3.

These are:

- Environment – This code examines whether indoor and outdoor settings have different effects on learners or not.
- Materials – In this code the type of materials used for sensopathic-focused, teacher-led play pedagogy are examined.
- Attitude and education – the requirement for continuous teacher education and training is analysed.

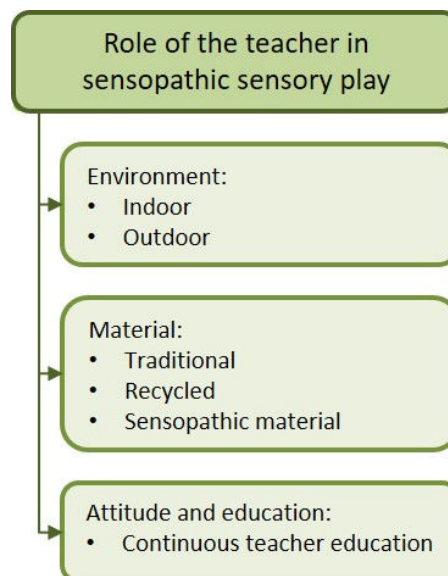


Figure 5-3 PRQ Category 2 - Role of the teacher

### 5.2.2.1 Code: Environment

As discussed in section 2.4.4, Bishop (2001:78) notes that learning occurs through gaining “an awareness of scale, colour, texture, sound and smell, light [and] micro-climate”. A key area of concern for Moyles (2015:56) remains the fact that young learners in the early years are losing contact with play and nature. Young learners are currently spending too much time indoors, engaged with the virtual world and less with the natural world that is of vital importance for their sensory processing (Save Childhood Movement, 2014).

Sensopathic-focused teacher-led sensory play can be implemented in both indoor as well as outdoor environments. The environment supports the learning experience of the learner and also supports the teacher in her teaching practices. Teachers need to integrate teaching practices with the environment in every way possible in order to create sensory experiences for learners.

In their observations and responses, participants made a distinction between outdoor and indoor environments and how their learners perform in each environment. The environments also largely dictated which sensory activities would be used. Participants agreed that sensopathic activities and materials enhance the sensory processing of the learner, although I observed a difference in how participants applied sensopathic activities. An interesting observation by one participant was that the environment had an impact on the different learning styles of the learners and certain learners would perform better in either an outdoor or an indoor environment, regardless of the activity.

*It depends on the learner; some enjoy it outside and others indoors, therefore it is important that there is a good exposure of both environments available to them. You don't get splinter skills but actually a range of skills that are developed, so you develop the child holistically. (School C: SICHJD 17 Oct 2019)*

A difference in gender preference for environments was also observed by another participant:

*The boys mostly do better outside where you've got your gross motor with activities, whereas the girls they thrive better inside, where they colouring in, writing and drawing. It definitely depends on the learner. (School C: SICHJB 17 Oct 2019)*

#### A. Sub-code: Outdoor environment

In this sub-code I analysed the observations made by participants with regard to the type and effect of sensopathic play pedagogy in an outdoor environment. One response emphasised the fact that the outdoor environment was more physical and could also affect the intensity of the sensations experienced by learners:

*We have also noticed that the outside environment absorbed their energy. Also with the obstacle course we have done with them, which was not necessarily something that they were exposed to before, I observed that they were more tired at the end of the day. It was quite intense and the*

*environment definitely has a big impact on the intensity of how they experience it. (School D: SICMDG 11Oct 2019)*

While not identifying it directly, one participant observed that certain types of play (messy play, water play and sand play in this case) as described in section 2.7.1 lent itself better to an outdoor environment:

*Yes, we have a huge play area that we make use of, sand, trees, leaves, I introduced foam, bubbles, colouring of water, mud and the learners totally engage with it and they like it. (School A: SIESSB 26 Sept 2019)*

A number of participants reported a preference for outdoor activities, although the previous comments regarding the gender preferences and type of play need to be kept in mind when considering these observations:

*It depends on the activity, but outdoor activities do get better results. We do have lovely weather, sometimes while busy in a lesson, it will start raining and then we will have to revert to something else. However, we do teach a lot more outdoors. (School A: SIESSB 26 Sept 2019)*

One of the participants motivated their preference by pointing out the benefits of an outdoor environment on learners with attention issues:

*Definitely, outdoor. Not only our grade Rs but also in the Intersen<sup>5</sup> phase, they sometimes carry their desks outside and go sit under the trees. Sometimes they will write their exams outside. Just the fresh air and the outdoor environment make a huge difference. The attention-defying learners have to put in so much brain power to get this action right, so that the teacher doesn't have to say, sit still. However, when they get outside, their attitudes change. Outdoors make a big difference in their lives. (School E: SIKJAH 5 Dec 2019)*

For another participant, the benefit was more in terms of how an outdoors setting could improve child-initiated play.

*Outdoor activities did lend itself more to child-initiated interpretation of the activity and the teacher observing and directing the activity accordingly. (School E: RJKJ 5 Dec 2019)*

My reflection after observing all the participating schools focussed on the fact that outdoor environments provide learners with a setting that they naturally associate with play to a higher degree than indoor environments would. In addition, outdoor play areas typically do not require any preparation and are ready for play.

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<sup>5</sup> Intersen is a contraction of Intermediate and Senior phases and consists of the years from Grade 4 – Grade 6.

In my journal I noted the following:

*All the schools that participated in the data generation had outdoor sensopathic activities readily available, although schools C and E had the most. Schools A, C and E in particular had wide open spaces for the learners to engage in child-initiated activities. One of the advantages of outdoor activities is that learners do not feel as if they are learning, creating a “hidden” learning opportunity. Overstimulation and surplus energy are easily absorbed by the outdoor environment, more so than in an indoor environment. An outdoor environment lends itself to more gross motor as well as coordination activities.*

*Outdoor play areas at schools B and D only had astroturf available in the outside play area instead of natural grass. I observed in one activity of the outdoor sensopathic pathway (the shaving foam ice cream cone) that the learners needed to be guided by the teacher to add natural material – the learners had lost touch with the environment.*

*School C in particular had a large variety of outdoor sensopathic materials for learners to engage with. They also continuously rotate the sensory activities which they put out for the learners to engage with. Learners had the opportunity to engage in traditional toys (swings, jungle gyms, bikes etc) as well as sensopathic-focussed activities during free play (sandpit, water play, mud kitchen etc.). The perception remains that outdoor activities are experienced more as play rather than learning, and that learning was associated with indoor environments. The fact remains, though, that I observed that teaching can take place in both environments, provided that teacher-led play pedagogy is practised. (RJCL 16 Dec 2019)*

## **B. Sub-code: Indoor environment**

Indoor spaces were noticeably differently arranged between the participating schools. Traditional chairs and desks were readily available in each Grade R class, but the application of teacher-led activities was differently interpreted and utilised at different schools. Schools B and D were still utilising traditional indoor approaches as opposed to Schools A, C and E, which had already adapted their approach and activities in order to support sensory play by Grade R learners. Specifically, the arrangement of furniture, use of space and the indoor environment were noticeably more creatively and differently constructed.

There was a definite perception among most of the participants that learners were more conditioned to traditional learning indoors, while more traditional crafts such as painting, playing with clay and so forth seemed to be the extent of indoor activities. The following comment underscored the perception:

*I think it can go both ways. Formal work like learning to write and to sound the letters and words, will just work better inside. Opposed to activities and play, will work better outside. (School B: SISFAR 30 Oct 2019)*

Other participants were less definite about the separation between indoor and outdoor environments:

*Whether it is inside or outside the classroom, our main thing is that we learn through our senses, we cannot not cater for that with the learners. (School C: CICH 17 Oct 2019)*

The general perception amongst all the participants remains that indoor environments are more suitable for learning. In my field notes I mention the following:

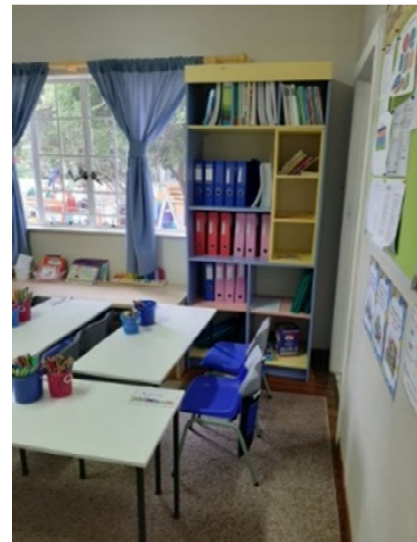
*Introducing teacher-led play pedagogy in both environments still remains challenging for the participants, as they favour the indoor environment more for teaching and learning experiences. Although school C and E are incorporating both environments as teaching environments, it was observed that it remains a challenge and does not resonate with a “traditional” teaching and learning set-up. The challenge remains for the teacher to remind herself that teaching can take place outdoors as well as indoors and that the quality of teaching and learning remains the same. The challenge for the teacher remains to think out of the box in the application of activities and to understand that both environments are conducive to learning. The outside environment is not only for “play” and enjoyment, but can also be successfully applied for learning and acquiring new skills. (FNCL 16 Dec 2019)*

Some traditional indoor play arrangements can be seen in the photographs to illustrate the point.



**Photograph 5-3 – “Traditional” indoor playing area, School A**

The area shown is intended to host traditional arts and crafts and is not a sensory-friendly play space.



**Photograph 5-4 – Indoor playing area, School D**

While more attractive than that of School A in Photograph 5-3, it is still not appealing from a sensopathic play perspective.

Other schools have incorporated sensory activities into their indoor settings:



**Photograph 5-5 – Indoor activity area, School C**

An activity area with natural blocks, suitable for open-ended play.



**Photograph 5-6 – Indoor sensory area, School C**

Water play area, complete with shapes and colours.



**Photograph 5-7 – Indoor sensopathic play area, School C**

An area for playing with Lego blocks. While primarily intended for open-ended play, the tactile effect of the blocks is also important.



**Photograph 5-8 – Indoor sensory area, School C**

The play area not only provides posters and books, but also tactile material such as water and astroturf.

However, not all participants agreed that there was a substantial difference between indoor and outdoor settings:

*Interviewer: Have you found that the learner retains information better in an outdoor opposed to an indoor environment or does the environment have no effect on the learner's experience? Respondent: I would say a good mix of both environments is good for them. I also think it doesn't matter where you work with them, as long as the work or activities are well thought through, it would prompt the*



*learners to engage and there will be an element of surprise, something different.* (School C: SICHJD 17 Oct 2019)

### 5.2.2.2 Code: Materials

Sensory materials play an important part in the Grade R class to assist the learning and teaching. The engagement of the learner with the materials has an influence on the learning experience, and open-ended materials have a significant influence on the learner's creativity as well as interpretation of the learning material.

#### A. Sub-code: Traditional materials

In the context of this sub-code, "traditional" refers to everyday school materials that have always formed a part of Grade R classrooms, as opposed to specifically sensory materials. Every Grade R class has copious amounts of traditional resources available, such as desks, chairs, carpet, paint and paintbrushes, wax crayons, scissors, crayons, paper, coloured paper and so forth.

"Traditional" also refers to outdoor play resources and materials that are not specifically sensory materials. These traditional outdoor resources are also readily available to explore during outside free play, such as jungle gyms, sandpits and tricycles. Learners enjoy the outdoor play, which provides important moments for social skills, gross motor as well as spatial and perceptual skills to develop.

An element of normative and social school readiness criteria is creativity when setting your own rules for games played with your peers within the boundaries of a safe and secluded environment. Participants were asked whether there was a difference in the reaction of learners to traditional materials as opposed to sensory materials and sensory activities, especially as regards the creativity of learners when using different materials, and if either traditional or sensory materials were preferable in this context.

*Yes, it makes a huge difference because they see it as a challenge opposed to the pen and pencil exercises. **Traditional methods do have a place**, however I feel they learn more and retain more information once it is experienced on a sensopathic basis.* (School A: SIESSB 26 Sept 2019)

*I would say both. You will always have some learners that will play with traditional material and others will be sensopathic inclined. We have to cater for both traditional and sensopathic learners.* (School B: SISFAR 30 Oct 2019)

*Yes, they do. Although in my class the learners are sometimes excited to **do traditional activities**, because they hardly ever get to do traditional play. We might do writing maybe everyone to three months and that then when they get excited.* (School C: SICHJD 11 Oct 2019)

*I think the way in which we do it, is very good because we balance it and build on their imagination. There are also times where they will have to find things. **They benefit from both traditional as well as natural resources.*** (School C: SICHRS 11 Oct 2019)

An example of an outdoor play area is shown in Photograph 5-9.



**Photograph 5-9 - Outdoor play material, School D**

While not specifically sensory-focused, it does illustrate the availability of sensory materials in playgrounds.

Participants agreed that there was a role for both types of material and that there was no clear preference for one material to the other. While this seems somewhat contradictory, if the responses in previous sections regarding the fact that the activity itself was seen as more important than the material are considered, this would not be a significant finding.

**B. Sub-code: Recycled material**

Recycled or repurposed material is a significant source of open-ended material, as it is economical and makes for interesting materials to incorporate in the learning experience – who does not remember the stories of young learners playing with the box a present came in, rather than the present itself? Repurposed material stimulates creativity due to its open-ended nature. Encouraging parents and learners to collect recycled and repurposed materials creates valuable communication opportunities between the school and home environments. Some of the observations regarding the use of recycled and repurposed material used in the learning process were the following:

*We have an abstract recycle board outside the classroom, which teaches them that we can use old materials to make new materials or goods. However, the school and environment supply most of the natural sensory materials. I am also vigilant to always implement it. (School D: SICMDG 11 Oct 2019)*

*We get waste material from home; we put egg boxes outside which they can then jump on. We put boxes in the sandpit and old containers in mud kitchen as well as sandpit, there we ask parents to provide. We make use of old onion bags and cellophane in water, we use pinecones, artificial grass, natural grass, pebbles, big stones and bricks. Those are the things we provide. The learners also ask for certain material and therefore we change it every day. (School C: SICHRs 11Oct 2019)*

*Both recycled and repurposed materials are available. We've got a recycling bin with corrugated cardboard, boxes, newspapers and other materials. We also have traditional play material and in their free time they can decide what they want to play with. In class it is definitely something that I will introduce, for them to conduct an activity with. (School A: SIESSB 26 Sept 2019)*

Having a variety of materials also provides for variability in activities, which counters learners falling into a comfort zone:

*Generally, you have to keep revisiting new ideas because you get used to things. Continue looking for new ideas. As teachers, we look at things and think how we can change it. **We never throw anything away**, we always think of what we can use the specific item or material for. (School C: SICHRs 11 Oct 2019)*

Learners' creativity is stimulated through the use of recycled material. Sustainability can be taught from a young age, and that with a little imagination, different materials can be used to create a new object.



#### **Photograph 5-10 – Recycling board, School D**

The recycling board is used to teach learners how waste materials can be re-used and re-purposed.

In my reflective journal I commented as follows:

*Recycled and repurposed materials create the potential for interesting and creative learning opportunities. In assembling the material for the outdoor and indoor sensopathic pathways some of the materials I used were recycled cardboard boxes, bits of wrapping paper and other waste materials.*

*The loose parts sensory materials used for the shaving cream cones (station 8 of the outdoor sensopathic pathway) were sourced from recycled material such as shredded paper, dry grass gathered from the school yard after the lawn was mowed, odd assortment of buttons, sticks gathered from the outdoor environment and even loose stones or pebbles lying in the grass.*

*The sensory walk (station 2 of the outdoor sensopathic pathway) also utilised material such as dry leaves, cardboard boxes, bubble wrap and cork pieces that I recycled.*

*A positive quality of sensory material is that although the perception exists that sensory material is expensive and exclusive, it is actually very cost effective and can be reused repeatedly - you just have to be aware of the sensory properties recycled material might present. As a bonus, material spilt after the learners used it was environmentally friendly and could be left on the grass for the birds to feast on. Clean up was easy! (RJCL 16 Dec 2019)*

### **C. Sub-code: Sensopathic material**

Sensopathic materials can be enjoyable and creative, but due to the variety of tactile feedback some learners may find it unpleasant, while others find it stimulating – described as sensory-seeking or sensory-avoiding by Dunn (1999) (see section 2.4.3.2). Some learners might therefore be put off by the tactile experience of sensopathic material. Teacher-led play pedagogy supports sensopathic material and creates an opportunity to support the apprehensive learner and encourage them to participate in activities with sensopathic material.

Sensopathic activities are important for sensory processing and for learning, as learners use more of their senses in these activities than in traditional learning activities. As participants have reported in previous sections, using more senses improves the learning process and retention of knowledge.

*Yes, they do like **sensopathic activities more than traditional lessons**. Sensopathic-based activities enhance their learning experience. (School A: SIESSB 26 Sept 2019)*

Participants also noted the benefit of allowing child-initiated free play, provided that a teacher was in attendance who could guide and encourage these play activities to create and use teaching moments.

*I believe that **sensopathic experiences should be available on a continuous basis**. In our playground there are always different sensory play activities which learners can engage in during playtime. The activities change on a daily basis and are inviting. There is always a teacher at these activities who engages with the learners playing in this area. Teachers can also include these in the activities during arrival time and some of your structured activities can be play based. (School C: RJCHJD 11 Oct 2019)*

*Learners go through stages. I think they meet their needs when they play with certain things and our sensopathic play and trays changes every day. What is in the mud kitchen and on construction, changes on a daily basis. It really depends on the child. (School C: SICHS 11 Oct 2019)*

*Mine love it, now and again when we have glue or something that are really sticky, it takes time to get used to but other than that, the other sensory materials we introduce, they actually enjoy. The messier, the better. (School C: SICHRS 11 Oct 2019)*

Some examples of sensory play activities taken from the sensopathic pathway activities:



**Photograph 5-11 – Slime ball object search, School E**

The photograph shows learners looking for objects hidden in a container of slime balls during activity 9 of the indoor sensopathic pathway. The slime balls are intensely tactile.



**Photograph 5-12 - Sorting and imprinting, School E**

The photograph shows learners sorting shapes and making dough imprints as part of activity 6 of the indoor sensopathic pathway. The shapes are a combination of 2D and 3D with a significant tactile aspect, as the shapes are transparent and not easily identified using only visual cues.

I noted the effect that the availability of materials had on the activities in my reflective journal:

*The various attitudes, abilities and insights of the participants in exploring new teaching practices have definitely struck me as creative, innovative and interesting. The different interpretation of sensopathic play pedagogy has also been insightful. During the sensopathic pathway I was enlightened by the manner in which theory and practice met in reality. It was also an eye opener to observe how participants implemented sensopathic-focused teacher-led play pedagogy in their own schools' environments.*

*I concluded that participants' implementation of implementing sensopathic-focused teacher-led play depended on the participating schools' perception and interpretation of "sensopathic-focused play-based pedagogy" as well as the resources they had available. The immediate environment, their own experience or exposure to sensory teaching and the availability as well as the knowledge, guidance and willingness to explore the sensopathic play principles in their teaching practice were all contributing factors. It was also insightful to observe the differences in application of play based sensopathic play pedagogy between the participants and the participating schools. The shared ideas between me and the participants as well as the reciprocation of knowledge made the research enriching and practical. I honestly connected with each of the participants. (RJCL 15 Dec 2019)*

### 5.2.2.3 Code: Attitude and education (continuing teacher education)

The attitude or approach of teachers as well as their initial and continuing education with regard to sensopathic-focussed teacher-led play pedagogy is important for the learning process to go forward. Teachers need to understand how a sensopathic play pedagogy can lead to rich learning experiences as well as an improved sensory processing ability. If learners are able to regulate their own sensory processing they will have reached a point where it no longer affects their ability to learn (based on Winnie Dunn's model (Dunn (1999) in Figure 2-5).

As discussed in section 2.4.4, international best practices in Early Childhood Education have shown the benefits of using sensory material in pedagogy. On a general level, teachers still need to be educated in following a sensory approach in their teaching practices. As formal teacher training in South Africa hardly touches on the sensory aspects of pedagogy, there is an increasing need for education in this field, particularly with reference to the effect it has on the learning process itself. This can only be achieved by continuous learning (workshops, courses, academic articles released, joining a sensory friendly online group etc.) and education of teachers in ECE. Revising traditional teaching methods is a continuous challenge for any progressive school, as well as for individual teachers.

Effective observation of learners and their participation in class activities as well as their performance is of the utmost importance in the Grade R classroom. Through observation of the learners the teachers can ask questions and reflect on their own teaching practices as well.

Teaching remains a dynamic and adaptive process between the learner and the teacher. Keeping abreast with international practices and adapting them to South African standards where necessary should be a key performance area for every school and individual teacher.

The participants noted the following about continuing teacher education:

*Yes, we do have a lot, but we always feel there is room for improvement. We never feel that we have made it. We always strive to enhance our teaching and reinventing ourselves. (School C: SICHJD 11 Oct 2019)*

*We do a lot of workshops and we learn from each other and we have our workshop every second week. (School C: SICHJB 11 Oct 2019)*

Attending workshops and courses, forming relationships with nearby schools and discussing mutual issues arising in classroom practice are also vital ways to ensure that teachers remain current with the latest developments in ECD. Participants also noted that equipping teachers with the appropriate skills took time and effort, from the school as well as from the teachers themselves. This not only included the training requirement, but also the time required to develop the necessary confidence:

*Teachers coming from traditional schools did work hard, but they might have thought that this might be not as hard as where they come from. (School E: SIKJAH 29 Oct 2019)*

*Some of the teachers only found it easier in their third year to adapt to all the sensopathic ideas. (School E: SIKJAH 29 Oct 2019)*

***We give training every year.** When a school starts on a Tuesday we will start on a Wednesday due to training. We always have speakers. And most importantly is that you work on yourself and your skills. The teachers actually learn on a daily basis. There is always something new. We have about three to four students studying at UNISA and working for us full time. We are training them for the mere fact that they can fit in with us and our way of teaching. (School E: SIKJAH 29 Oct 2019)*

Participants from Schools C and E reported that they attend workshops on a regular basis to keep current with new developments in ECD. These two schools' teaching practices were different from the other schools' approach to sensopathic play-based pedagogy. Both schools continuously researched new approaches and integrated them with their pedagogic approach. I commented in my reflective journal:

*Observing the learners today was an interesting experience. The learners were quite diverse in their abilities to execute the activities at each station. Some of the learners experienced the sensopathic pathways as more challenging than others but with assistance they all participated and completed the pathways.*

*The teacher of the group was surprised by her learners' emotional endurance - she mentioned that three of her learners in particular had at least one to two emotional outbursts daily and although she expected them not to cope well with the activities, they did so without any difficulties. During the semi-structured interviews we discussed her observation again and she said after giving it some thought it became clear to her that the sensopathic pathways satisfied the sensory needs of the three learners, and although every activity was sensory based it provided some sort of "sensory comfort" for these learners and that is why they were able to handle the sensopathic pathways without any emotional meltdowns.*

*She specifically mentioned that the insight and understanding she had for her learners only came from attending many workshops and courses on sensory behaviour which the school either sponsored or invited knowledgeable speakers to discuss the topic. The schools' perception and further education did not only benefit her as teacher but also the learners in her class. (RJCL 16 Dec 2019)*

Participants also commented on the necessity of sensory processing in their own experience:

*Learners with **sensory processing problems** have problems with the sensory input - too much or too little. Like overly sensitive learners will respond overly to stimulation. That can have an effect on their behaviour and ability to remain attentive during a lesson. (School C: RJCHRS 30 Sept 2019)*

***Teacher-led sensory play experiences** as with other sensory experiences help learners understand the world around them and they learn how to interpret the messages their bodies receive from outside stimuli and how to use the information correctly. Example - putting their hand into a bag full of numbers cut out from different textured materials and trying to feel what the number is without looking at it. (School C: RJCHJD 11 Oct 2019)*

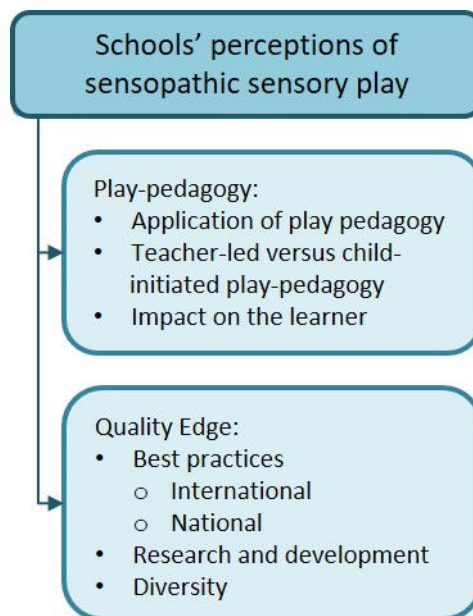
*Learners need to know how to **process the information** they receive so they can use it effectively in learning when they go to Grade 1. (School C: RJCHJD 3 Oct 2019)*

### 5.2.3 PRQ Category 3: Schools' perceptions of sensopathic play

It is obvious that the sensopathic-focussed teacher-led play activities examined in this study do not exist just between teacher and learner – the schools where these activities take place are as important. It should also be kept in mind that schools themselves, whether public or private, find themselves in a competitive environment and that the curricula presented may afford them a commercial advantage (or the contrary!) and thus is an important consideration for them.

This category focusses on the way schools themselves see sensopathic-focussed teacher-led play and how it is incorporated into the curriculum and implemented in the school as a whole. It also examines the benefits that schools see in its use (if any).

The category is examined by expanding it into two codes, as shown in Figure 5-4:



**Figure 5-4 PRQ Category 3 – Schools' perceptions of sensopathic play**

The codes are expanded into sub-codes as necessary to facilitate the analysis.

- The first code looks at perceptions that schools have regarding the implementation of play pedagogy, specifically from a sensopathic-focussed point of view. The application of play pedagogy and the perceived effect on the learner is considered.
- In the second code I look at the methods used to establish a quality advantage or edge – not only from a commercial point of view, but also in order to ensure the best quality possible. This examination considers best practices, research and development (in the



school as well as the wider ecosystem) and the aspects that require attention in a diverse environment.

### 5.2.3.1 Code: Play pedagogy

As discussed previously, this code category examines the perceptions that schools have regarding the implementation of sensopathic-focussed teacher-led play pedagogy. In order to achieve this, the category is expanded into the following sub-codes or components:

- How play pedagogy, specifically sensopathic-focussed teacher-led play pedagogy, is applied in the school.
- How schools perceive the difference between teacher-led and child-initiated play pedagogy and how these perceptions impact on the implementation of a play pedagogy.
- The perceptions that schools have regarding the effect of sensopathic-focussed teacher-led play pedagogy on learners.

As mentioned previously, the school and the teachers are an intertwined ecosystem and therefore often have a similar view, but the implementation may vary between organisation and individual. Referring back to the discussion of participants' experience and education (section 5.2.1.1), the effect of the teacher is again emphasised, even within the constraints of a curriculum. It is worth noting that while the effect is positive in this case, teachers with poor understanding, attitude or skills may choose to implement the prescribed curriculum only to reduce their own workload.

*The curriculum is there for the interpretation by the teacher, if you don't want to interpret it in that way, and you want to go the easy way, you are more than welcome to. I am guided by the interpretation, and I am very sensopathic inclined. I am flexible and have a lot of experience as a teacher; therefore I can be flexible to know what the outcome should be. (School A: SIESSB 23 Oct 2019)*

*Open ended material and child-initiated experiences are a high priority, the curriculum is not always flexible, and you have to balance it and it takes planning for the teacher to build it into her lesson but it does enhance their performance. (School A: SIESSB 23 Oct 2019)*

There is often a perception within the wider public that the CAPS curriculum is perhaps less effective and that private schools therefore need to distance themselves from it in order to be attractive.

Some of the comments from participants were illuminating in this sense:

*Yes, you just need to have the background and correct training for it. Therefore, we have never had a problem with CAPS curriculum, we have never criticised it as there is nothing wrong with the contents. (School E: SIKJAH 29 Oct 2019)*

*We use CAPS as a point of departure, and it makes it easy to tick all the boxes of all the Departments. Our kids are far ahead of the curriculum. As far as we are aware of CAPS content, we have never said we do not like CAPS. 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. But we keep ourselves safe by ticking all the relevant boxes. We just have a problem with the traditional system, the contents, the transporting of the content that is passed on to the child. That is our problem and not CAPS contents. We also say that we follow CAPS. (School E: CIKJ 29 Oct 2019)*

*We then already realise that we have to change our way of teaching to lessen the anxiety. We also wanted to limit formality. Regarding grade R, there is nothing new. We just kept what we have learnt thirty years ago. We are fighting the formal ones to keep it away. (School E: CIKJ 29 Oct 2019)*

My reflective journal resonates with the participants, as curriculums are not set in stone and need to be flexible and adaptable to be able to satisfy the needs of the learner and not only the needs of the school. Teachers must maintain an awareness of the requirements of their pupils and adapt the curriculum and activities according to the needs.

*Experiencing activities on a sensory level taps into the body's memory which in effect then again lends itself to the body, remembering the sensation of learning. It retains the information experienced on a sensory level to be recalled and applied at a different level (might be on a more advanced level or needed as prior knowledge to build on a more difficult skill). Being able to access the senses as a learning tool is a serious benefit. (RJCL 30 Oct 2019)*

#### **A. Sub-category: How is play pedagogy applied?**

While the conceptual understanding of play pedagogy may differ from school to school, with an impact on how play pedagogy is applied, this is only one of the variables. Other variables are the curriculum choices the school may have made, the skills of the teacher and the resources provided by the school.

*Where you traditionally have eight worksheets in higher grades, we will start of by doing volume (we will bake a cake), second day playing with measuring cups, funnels and sand, the third day we will watch a YouTube video, day four we will portray it in art and on the fifth day we will tell them to take a worksheet that was put together to see what you do understand. They don't hear the word test or term assignment and then all those learners understand the work one hundred percent. (School E: CIKJ 29 Oct 2019)*

One participant compared her experience of the implementation of play pedagogy with her experience at a previous school:

*I used to be a grade one teacher at a primary school, and I never go back the way we were taught, by using worksheets etc. There are so many different ways and playful ways of learning and teach the learners to write a letter for instance. (School C: SICHRS 11 Oct 2019)*

The implementation of play pedagogy has been embraced by the schools I examined. However, since this was a purposive sampling as described in section 3.4.3.1, this outcome is

self-explanatory. The implementation of play pedagogy in other schools has been studied by Aronstam and Braund (2015), for example. The comments made by participants regarding their experience at previous schools are also enlightening and provide a point of comparison with more traditional schools.

## **B. Sub-category: Teacher-led play pedagogy versus child-initiated play**

The perceived difference between teacher-led play-based pedagogy and child-initiated play is sometimes a constraint, as teachers may see it as opposing activities due to the restrictions of schedules and resources and the need to show results. However, as seen from the contributions of the participants in this study, the two are perhaps closer if the correct preparation, boundaries and scenarios are substituted for teacher-led activities. The participants' views of teacher-led play pedagogy and child-initiated play are described by the following observations:

*Any child-initiated activities **with boundaries** in a controlled environment won't become ludic, although they do enjoy it, but they also learn from it. If I see that it gets out of hand, I will stop it, put in boundaries and we will resume or change to a different activity. A good combination [is required] between traditional play and teacher led pedagogy as well as sensory play but the teacher must guide it and have the initiative to control it. (School A: SIESSB 26 Sept 2019)*

*Interviewer: In your observation which pedagogical approach is more compatible with most of your class, most of the time?*

*Respondent: I would say child-initiated play is best but feel in a way we do create the scenarios and that is teacher-led play pedagogy. There is a good balance between the two. (School C: SICHJD 11 Oct 2019)*

The aspect of planning was again seen as a critical item:

*If it is well thought through, the learners do learn lots of wonderful skills and knowledge. That is why we have product base learning, as several times a child will initiate learning and we will follow. They will initiate and we will assist them in their role play. We will create it and let the child follow. (School C: SICHJD 11 Oct 2019)*

A benefit of child-initiated play which is sometimes overlooked is the opportunity to assess the learner in a totally natural environment, as explained by one of the participants:

*I find child-initiated play in the sense of; they learn a lot of social skills, working together, have their little fights and sort out their own situations. The learners have engaged so much in their own play and created their own different tools for one specific material like a shell. Instead of a teacher telling them or guiding them, in what to use the shell for. They just led the whole activity. You can also learn a lot about a child if you only listen to him/her. Does the child need language enhancement improvement and where you can support the child? That is also the way we assess. (School C: SICHJD 11 Oct 2019)*

The photographs below illustrate how teachers can lead play by planning activities and outcomes:



**Photograph 5-13 – Shell sort from sensopathic pathway, School C**

Teachers set goals and provide material and rules, but learners experience on a sensory level because of the strange textures and shapes



**Photograph 5-14 – Shell sort from sensopathic pathway, School C**

Note the learner listening to the shell – even though the activity is teacher-led, the open-endedness creates teachable moments

Observing and assessing the learners during the sensory activities is a critical skill, as it allows the teacher to adapt the activities to pursue teachable moments.

In my field notes I mentioned the fact that at least some degree of structure seems needed, and that this does not seem to affect the outcome adversely:

*I noticed that it was important for learners to comply with the instruction and not just follow their own ideas – while this may be seen as the antithesis of child-initiated play, the fact remains that instructions, boundaries and scenarios don't necessarily affect the initiation or the open-endedness of the play activity.*

*A good example of the interaction between teacher-led play pedagogy and child-initiated play was the activity where learners searched for Lego Duplo building blocks in the water balls during the sensopathic path activities. The learners were enthusiastic and at times their enthusiasm overpowered the goal of the exercise and the principles had to be enforced in order to accomplish the desired outcome. I had to be vigilant to keep the goal of each activity in mind and to remind them of the water balls. They all gravitated towards the coins - one learner became so excited when he found a yellow Duplo block that he loudly announced to his friends: "Don't worry guys I have found a golden bar". In his imagination the yellow Duplo block represented a gold bar which the play coins were made of, so he was the richest of all his group members. (FNCH 4 Oct 2019)*



**Photograph 5-15 – Teacher observing learners sorting 3D objects on a 2D template, School C**

The teacher observes learners performing an activity, ensuring that the teacher can assess the effectiveness of the activity and to adjust it to suit the capabilities of the learners.



**Photograph 5-16 – Teacher observing learners sorting objects**

The teacher observes and assesses informally during an activity in order to ensure the appropriateness the activity and the learners' reaction to it.

To summarise this sub-category, the view was expressed by all participants that the difference between teacher-led and child-initiated play is much more manageable if proper planning is done. I observed, however, that it is important that the differences between child-initiated play and teacher-led play pedagogy as described in section 2.3.2 should not be discounted, and that the benefits of child-initiated play must not be “structured out” by over-planning activities.

### **C. Subcategory: The effect of play pedagogy on the learning experience**

The learning experience of the learner is enhanced if the learner is guided and assisted by the teacher in the learning activity, as shown by Fischer *et al.* (2013:1872–1877) and discussed in section 2.3.2. The learning experience can be enhanced by the teacher scaffolding the learner in executing a task. Participants agreed that this experience of assistance not only contributed to the learner's academic experience, but also built his self-confidence. Note should also be taken of the effect of peer learning, and activities should be structured to take advantage of it.

*Yes, it can go over into play, and then their goal is not achieved. But in a controlled environment it will be controlled and the learning environment will be stimulating and enjoyable for the teacher as well as the learners. (School A: SIESSB 26 Sept 2019)*

The addition of the teacher-led play activity seems to assist with focus and participation in the learning activity:

*We just start the introduction at the right time. Sometimes we have theme discussions, open ended, they must ask questions. Sometimes our discussions can take up to an hour and they stay focused. Today for instance we discussed communication, how many ways there are that one can communicate. The kids came up with landlines, cell phones, internet, your tablet, satellite, news on TV, computers-mail, it just carried on. They even said that animals also communicate with each other and people with their bodies – body language. (School E: SIKJAH 29 Oct 2019)*

The play aspect increases the opportunities for peer learning:

*Yes, they truly enjoy it, if they have to fetch things or pick a flower or do things for themselves. 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. (School D: SICMDG 11 Oct 2019)*

*I also think it doesn't matter where you work with them, as long as the work or activities are well thought through, it would prompt the learners to engage and there will be an element of surprise, something different. (School C: SICHJD 11 Oct 2019)*

All the participants noted that teacher-led play pedagogy improved the learning experience, based on their experience of the learners' focus and participation. It also improved the probability of peer learning, with the benefit of having the teachers' guidance.

### **5.2.3.2 Code: Quality edge**

In terms of the quality of education, there are three specific aspects that bear examination:

- Schools need to maintain the quality of education by ensuring that best practices are monitored and internalised, that teachers are trained to work in accordance with those practices and that their curricula reflect these practices. Private schools exist in a competitive commercial environment, and it is often required that schools show a quality benefit to their learners and thus provide a more attractive service to prospective clients (parents).
- The level of effort required to bring the school and staff to a certain skills level and to maintain this level.
- Schools, especially the private schools participating in the study, operate in very diverse environments, possibly more so than traditional state schools, as there is no specific feeder community, which traditionally provided a measure of homogeneousness. However, in the study I realised that diversity is important in more than one aspect – firstly in the sense of different cultures and so forth, but diversity in the classroom can also manifest as a variance in learners' capability. I will examine both.

#### **A. Sub-code: International and national best practices**

A large number of private schools are competing for learners in the foundation phase (including Grade R), with both larger, more traditional schools and smaller, less formal institutions

competing. Over and above proximity to the prospective learners and cost, a major advantage of any school is to be seen to offer a better quality product than its competition. In this sense, schools are pressured from a commercial point of view to keep pace with international developments.

One of the participants noted the following in relation to their school's internationally-based programme:

*The parents that come from other schools, those (international aspects) are the first thing that they notice and see. (School C: CICH 17 Oct 2019)*

The potential benefits of this pressure to continuously improve is good but may possibly be offset by the increased pressure to get the next fashionable idea, whether it is educationally sound or not.

Most independent schools have a specific base curriculum or system, as described in section 3.6.3. However, even with these systems, schools need to keep abreast of best practices, both international and local, to keep their quality edge. Participants provided insight into the processes used:

*We went to visit a school in Fishhoek, also a public school in Cape Town, that also works on the Finnish principles, that it is basically the same as what we believe in. In the sense of traditional way of learning like, sitting in rows, learn like a parrot, addresses at most two parts of the brain. So basically, we all went through the worst learning way possible through our school careers. (School E: CIKJ 29 Oct 2019)*

*Curriculum, we relook at it every five years. In those five years, we are constantly updating and have an in-depth look. It would be our grade leaders, together with myself and the deputy that would sit and have a look at what is happening. Is there anything that we need to have a look at in our curriculum? What can we bring in? But then hand in hand, working with our curriculum, is our best practice documents. Australia has an inviting, refined curriculum, in terms of flexibility of teaching, Italy, the Reggio Emilia approach, we had a look at that. We don't call ourselves a Reggio school as we can't because we are not in Italy. But we do bring in influences of that into the classroom. We've done a lot of project base learning, bringing in that and obviously project base learning and Reggio are so close to one another. We also are bringing in a lot of thinking skills into our classes. (School C: CICH 17 OCT 2019)*

I observed that there seems to be cross-pollination between the various systems and that schools tend to choose best practices, which may to some extent diverge from their founding system.

*The Montessori has been here since the school opened in 2010, and the EYFS (Early Years Foundation Stage) a British Curriculum, we started implementing it last year 2018 midyear. We formally introduced it the beginning of this year 2019. We found that it works very well. (School D: CICM 11 Oct 2019)*

*We mostly do that. With EYFS, I would say is more on the academic side and not sensory. That is why we have the Montessori and therefore the combination work so well together. We find that a lot of*

*learners have sensory issues and that is where the Montessori caters for that. (School D: CICM 11 Oct 2019)*

It also seems as if the participating schools are not passive consumers of international systems, but actively contribute to the international body of knowledge.

*We then studied the Finnish approach. We met the Finnish Minister of Education. She told us at the time that she actually wanted to learn from us. (School E: CIKJ 29 Oct 2019)*

It was furthermore noticeable that the participating schools actively pursued “added value”, which would typically in the past have been regarded as extra-mural activities and integrated these in their curricula.

*Bringing that into our curriculum, we are also busy partnering with Thinking Skills South Africa, to be seen as a thinking school. (School C: CICH 17 Oct 2019)*

All participants expended significant effort to keep their curricula and systems up to date on both national and international levels in order to sustain the quality advantage of their schools. Again, this outcome is not surprising, being a result of the purposeful sampling methodology, and I would be careful not to generalise.

## **B. Sub-code: Research and development of play pedagogic programmes**

Sub-code A above includes some of the facets of research and development into play pedagogy programmes for the schools studied; however, it also bears witness to the amount of training that is required to bring already qualified and experienced teachers to the level required to implement sensopathic-focussed teacher-led play pedagogy successfully. As has been noted before, the teachers’ skills in planning, implementing assessing and adapting are key to its success.

*This thing was quite overwhelming for all the older teachers. You can’t tell them we are not going to give you new training, and you have to take all your lessons and change it. You can’t tell a teacher that has been teaching for over thirty years to change her way of teaching now. What you can do is that when she has a music class, to tell her just add a dancing move into the routine or to the song, make it fun. They shouldn’t feel threatened or overwhelmed by all of this, they just need guidance. They need training and guidance that can make it easy for them. We have been doing this for fourteen years. (School E: SIKJAH 24 Oct 2019)*

From the statements made by participants, the amount of effort expended in training new teachers can definitely add significant complexity to a school’s operational expenses.

## **C. Sub-category: Diversity**

In South Africa diversity is normally used to describe the variances in culture, race and languages and the impact that such a non-homogenous group of learners could have on the learning process. While this is a valid point, diversity can also be extended to diversity in ability



to perform or learn in the early childhood learning environment. In a Grade R classroom all aspects of diversity should be accommodated and stimulated equally to maximise the learner's ability to perform.

Examining the aspect of cultural diversity, participants noted that the reality of the South African situation is an area that is taken seriously and that significant effort is expended in managing it. This includes culturally based phobias. One participant in particular responded as follows when asked whether diversity affects what they do in the classroom:

*Absolutely. We have approached other schools in the area and we also try to support and help other schools in that respect. We don't just cater for a specific type or group of learners; we cater for everyone. We cater for a multiracial, cultural, religious, emotionally underdeveloped kids with phobias you name it and we cater for them. No exceptions. We are also not forcing learners to participate if they don't want to, we try to do things together and motivate them to participate. Whereas in other schools, they are in a strict routine. (School D: SICMDG 11 Oct 2019)*

It should be noted that some of the issues may simply be personal for learners and not necessarily rooted in their background. The teacher should attempt to assess whether the problem is based on sensory processing or a cultural bias – if not, it may result in a learner with a sensory processing inhibition not receiving the correct attention. A case in point is shown in the following response from a participant:

*We generally introduce them to a variety of materials at a young age. I would say the average child is not unfamiliar with different materials. I have a little Chinese girl in the class, she is very neat and her parents are very neat and always wear shoes. She doesn't like messy play, but I have encouraged her a lot and she has improved a lot throughout the year. I have also encouraged her parents to allow her to have messy play and walk without shoes. (School C: SICHJD 11 Oct 2019)*

It was also pointed out that there is a lack of international best practices that can be directly applied to the diversity in South African schools. This requires the school to be cautious when applying international models as is, especially Scandinavian models, where the population is homogenous.

*The fact that they don't have any diversity, how are we going to handle diversity once we have figured it out? As they all speak the same language and same culture etc. We can't say we follow the Finnish approach to fit our schools' curriculum. So the schools' demographic area or socio-economic circumstance needs to be adjusted again. We are careful to say we do not follow the Finnish approach, but we do follow some of their principles. (School C: CIKJ 24 Oct 2019)*

Interestingly, no participant offered an opinion on Te Whāriki model (as described in section 2.4.4.6) as none of the participants had had any specific exposure to it. This area may warrant further study.

When considering the aspect of diverse capabilities, participants offered a few insights:

*If your learners are really engaged, and your lesson is on the right level, and sometimes you might find that some of your learners are faster or ahead of the others then you add something and you manage it. If you see that no one is interested, then the fault lies with you. You have approached it wrong. (School E: SIKJAH 24 Oct 2019)*

In my field notes I also mentioned the following regarding diversity of capability:

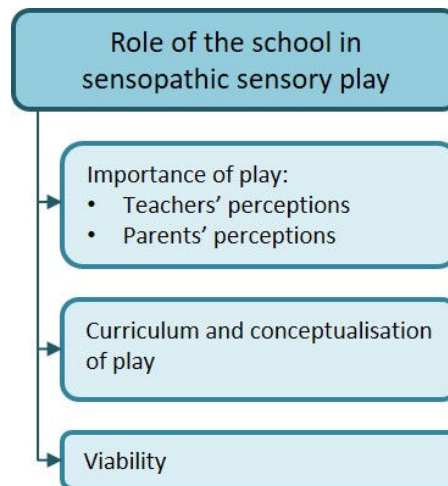
*I conducted the indoor and the outdoor sensopathic pathway at School D today. It was interesting to observe the diversity in ability between the learners. As the learners are not on the same chronological age level as it is a mixed small classroom group, they support each other naturally without being asked for assisting other learners. It was endearing to observe the natural gravitation to assist between the learners. Outdoor area was limited, so we had to do most of the outdoor sensopathic pathway on a bit of concrete slab next to the building. The indoor space was also limited. I observed that the use of space should not be undervalued in the development and creation of useful sensory experiences for the learner. (FNCM 02/10/2019)*

In summary, the diversity aspect of the category revealed interesting results. While all participants were very focussed on the South African diversity problem, i.e. race, language and culture, there seemed to be less focus on diversity of capability. It was also clear that international best practice is approached carefully, precisely because it often originates in a much more homogenous environment and application in South Africa must be done carefully.

#### **5.2.4 PRQ Category 4: Role of the school in sensopathic play**

After examining the role teachers play in implementing sensopathic-focussed teacher-led play pedagogy, it is imperative to reflect on the role that the school plays in this field. To do this, category 4 (shown in Figure 5-5) is considered in the light of the schools' approach to the following:

- The schools' perception of the importance of play in their respective curricula and how their staff and parents view it.
- How schools incorporate play and play pedagogies into their curricula, with specific emphasis on sensopathic-focussed teacher-led play pedagogy and the requirements of the South African National Curriculum Framework (NCF) and Curriculum Assessment Policy for Foundation Phase Grades R-3 (CAPS).
- The viability of the participating schools' approach.



**Figure 5-5 PRQ Category 4 – The role of the school in sensopathic sensory play**

#### 5.2.4.1 Code: Importance of play

Play and how it fits in with learning and pedagogy is examined in detail in chapter 2. In this category, I set out to determine how the participating schools viewed play and how play was incorporated into their curricula. I also reviewed the sensory aspects of the play that they used.

Perceptions of teaching practices or learning moments can occur require that schools' and teachers' thinking and approach need to be adjusted to take advantage of the pedagogies creating these moments. Participants noted that teachers must be flexible and creative and must "think out of the box", carrying out more than the ordinary, prescribed activities of the standard curriculum, to take advantage of the more interesting teaching opportunities for the learners that are created in a play pedagogy environment with sensory aspects.

All participants agreed on the importance of play and responded as follows:

<p><i>Learners must learn through play. If you provide sensory-rich activities, they process the information on all levels and they use all their senses. They retain information better when they have experienced something using all their senses. I.e. setting out seashells of various sizes and shapes. The learners 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. (School C: RJCHJB 6 Oct 2019)</i></p>
<p><i>We play all the time. We do everything through play. For instance, when we do word sounds, we will play as if the friends are staying in different letter lands. Things like "the leg kicks the ball", we will go out to kick the ball. (School B: SISFAR 30 Oct 2019)</i></p>
<p><i>Definitely, yes. Play always leads to learning. We always say that play is a child's language. (School B: SISFAR 30 Oct 2019)</i></p>

## A. Sub-code: Teachers' perception of the importance of play

Most of our early childhood teachers received their training in an era when sensory activities were confined to art activities and creative activities such as baking. Over the past decade, research on sensory processing has become more relevant in ECE. There is a greater awareness of sensory-wise practices and accommodating pupils with sensory processing difficulties in our inclusive education system, of play pedagogies and sensory processing and how early childhood centres need to accommodate learners with sensory processing problems.

It should be noted that not all the participants or participating schools had the same level of focus and experience as schools C and E had, and consequently provided an interesting counterpoint once they understood the benefits of sensopathic-focussed teacher-led play pedagogy.

Participants were specifically asked to reflect on the sensory aspect of the play pedagogies they used:

*It makes them calm. I have a child that can't sit still and once he sits on the Disco cushion (therapeutic balance device), it is as if he focuses better. Another child needs the deep pressure and we put the weighted black rings on him and then he will also be more focused. (School C: SICHJB 11 Oct 2019)*

*Yes, definitely. If their sensory needs are met, they can learn and do better. (School C: SICHJB 11 Oct 2019)*

*I think the most important thing that you mentioned is that about open ended material. That gives you the idea of whatever material is open ended, that the learners will engage. It lends itself to engagement. For instance, puppets. That is open ended. You can create your own story. They gravitate towards it; they really enjoy it and engage immediately. I think the Grade R learners are very hands on, if they can look at something and manipulate it or play with or on it, it makes a sound, they really enjoy it. (School C: SICHJD 11 Oct 2019)*

*Yes, especially in the beginning of the year, they are unsure and lack self-confidence. They wouldn't have the courage just to start on their own, they will rather say, I don't know how to do it. Then, we will have to assist and guide them through the process. It definitely affects their academic performance, due to the fact that instead of saying you can't do it, rather ask for help and guidance or please explain, I don't understand. (School B: SISFAR 30 Oct 2019)*

*You need to get to a point where you don't have to implement sensory play; the whole day should be sensory integrated. But it takes training and practice. (School E: SIKJAH 5 Dec 2019)*

In my reflective journal I thought about the essence of the sensory activities:

*This was our last sensopathic pathway we conducted today and we changed the first station to the sandpit rather than the AstroTurf. I was interested to observe the reaction of the learners and noticed that it did not change their performance. This made me realise that activities, materials and outlay can be changed as well as the material at any given time. I understood that it's not the specific material or activity which draws the learner into the experience but rather the enthusiasm and attitude of the teacher or facilitator which makes sensory learning exciting to learners and a successful learning experience, although at times challenging to implement.*

*The benefit of the reassurance and assistance provided during the activities by the teacher/facilitator was yet again apparent today. At School C one learner in particular needed guidance and reassurance throughout the sensopathic pathways, as he was relatively insecure in performing the activities. Once he was reassured that I was available to assist him where necessary he became less anxious and tried the activities which at first, he was apprehensive to try at all. The example set by his peers who did each activity before him also assisted him in becoming more resilient and venturing into the activities presented at the different stations. (RJCL 29 Oct 2019)*

## **B. Sub-code: Parents' perception of sensopathic play**

A lot of informative material has been published in the public domain about sensory processing and sensory processing disorder, and parents – especially those of young learners that present challenging behaviour – have to some extent become aware of the field. Unfortunately, many parents are still uneducated about how it should be handled on a daily basis. Our 21<sup>st</sup> century environments are not conducive to sensory processing, as we are more prone to indoor play and less outside play due to security and lifestyle factors. Modern play additionally incorporates significantly more solitary, electronic media-based activities at a much younger age than previous generations. Parent education in developing a sensorially well-integrated learner, and cognizance of the significance of sensory processing is of the utmost importance in this day and age in order to promote academic success. I canvassed the opinions of the participants in this regard:

*No, I think it varies from child to child. I also think the parents play a big role. It depends if the parents have exposed them to messy play and if they allow them to play with mud and water and sensory materials. It's not just the schools where they come from, because generally, most learners are engaging. I often find that it is the parents that are not allowing the learners to explore different environments. But then we also have learners with sensory disorders and problems. (School C: SICHJD 11 Oct 2019)*

*Often, they will refrain from engaging, or you will have to do a lot of exposure of the same thing over and over. Often those learners tend to play with the same things repetitive play. For instance, the one bright little girl, she will refrain from anything messy, she will rather take something else to engage with like taking tweezers to pick up something that is messy, she really doesn't like any sensory play, she won't take off her shoes, and she gets quite anxious about something like that. I think she is able to do it but also it's her family life that doesn't allow it. I had another boy also, but I have encouraged it, and he is much better as his feet are dirty and he is really enjoying getting dirty. I have another boy too, he has sensory processing problems and he won't even try to pick up anything with a peg, he will totally refrain from, he will cry and run away from it. (School C: SICHJD 11 Oct 2019)*

The comments from participants reinforced my observation that parents would rather leave matters for the teachers to manage, unless the learner in question was already undergoing specialist therapy.

### 5.2.4.2 Code: Curriculum and conceptualisation of play

The South African National Curriculum Framework and Assessment (Department of Basic Education, 2011) followed in South Africa's schools inevitably influence the practices of all schools, even private schools and the teachers at those schools. After Grade R the learners are required to meet the standards of the South African National Curriculum Framework and Assessment for school and must have mastered the skills required for formal Grade One as defined in the Curriculum Assessment Policy for Foundation Phase Grades R-3 (CAPS). While participating schools may be private schools or may not be affiliated to a particular primary school, they feed their learners to different schools and therefore must prepare their learners to meet the basic standards set by the National Curriculum Framework.

As participants had commented in previous sections, while CAPS does not provide explicitly for sensopathic-focussed teacher-led play pedagogy, participating schools all incorporate it to some degree. Schools C and E use CAPS as a basis in order to comply with the requirements of the National Curriculum Framework and Assessment, but then adapt and incorporate international best practice in sensory-based pedagogy.

School D follows a different curriculum which caters more for learners in an international school context. Schools A and B are more aligned with the National Curriculum Framework and Assessment statement, as most of their learners are preparing to enter schools which are CAPS compliant. CAPS does not emphasise or embrace any particular play pedagogy, but merely states the basic recommendations that need to be met to allow learners to be promoted to the following grade. Participants offered a variety of views when comparing their schools' curricula with CAPS:

*With government schools it is difficult as they have different rules and regulations due to fact that the learners need to be at least the age of six in grade 0 and seven in grade 1. Our learners would do grade 0/R at the age of five. But if they had to go to a government school, they would repeat grade R because of their rules and regulations. (School D: CICM 11 Oct 2019)*

*Yes, we put a lot of effort in it and our curriculum is designed for it. I think with CAPS it is just how much you've got to fit in. I don't know if all schools are as geared as we are, have the facilities and the anti-waste and place to store it. So definitely yes, I think CAPS suffices. (School C: SICHRS 11 Oct 2019)*

*I think the focus point of CAPS might be a bit different due to the fact that they don't focus on sensory processing, which is what we found when working with CAPS. The Montessori has the better approach to sensory processing. (School D: CICM 11 Oct 2019)*

*I think there is room in the CAPS system; I feel we should implement it more. We are so used to the traditional way of doing things; we should be more open to sensopathic ways and activities. (School B: SISFAR 30 Oct 2019)*

In my reflective journal I considered the overlaps between CAPS and a sensory approach after the pilot phase (school A):

*My activities that I chose to incorporate in the sensopathic pathways are basic perceptual skills described in CAPS for Grade R. The activities I chose are sensopathic and grounded in play-based pedagogy. The sensopathic pathways activities target two senses - namely the visual and the tactile senses. I was pleasantly surprised by the reaction of the learners in the pilot study, but also observed that there were some activities I needed to adapt, especially the indoor sensopathic pathway. The flow was not viable for the amount of participants I wanted to use and I also needed to improve the practicality of executing the pathway.*

*The pilot study was a good exercise to observe how the activities work in practice, to observe which of the activities need to be changed and definitely to be more organised in the execution of the activities as well as the layout of the stations. (RJCL 30 Sept 2019)*

#### **5.2.4.3 Code: Viability**

In this category I analysed the pedagogical viability of sensopathic-focussed teacher-led play pedagogy as a method to engage the senses in the activity which is being incorporated into the daily programme. This is seen as part of the role of the school since it would have to be integrated into the total learning process.

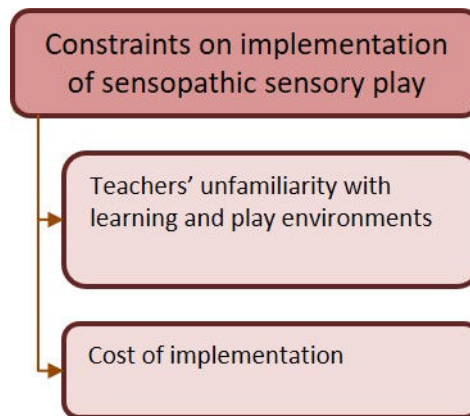
The implementation of sensory aspects in the learning process is as a rule not emphasised in the training of the early childhood teacher; it is commonly limited to non-learning activities such as baking. To incorporate international best practices and models such as the Reggio Emilia and the Montessori approaches, which are based on sensopathic and sensory activities for ECE, the schools and teachers concerned have to make a significant effort.

As shown in the responses previously discussed, the effort is centred around research of best practices, adaptation and application of the models to South African requirements and, more significantly, the requirements of the particular school, development and skills of teachers and a concerted effort to sustain the process in the longer term.

While this falls outside of the scope of this study, further research into the commercial aspect may be of importance. Quantifying the effect of sensopathic-focussed teacher-led play pedagogy on the total cost of ownership can provide guidance to schools considering its implementation.

#### **5.2.5 PRQ Category 5: Constraints on implementing sensopathic play**

Statement PRQ examines the benefits of sensopathic-focussed teacher-led play pedagogy. The analysis would not be complete unless the constraints on the use of sensopathic-focussed teacher-led play pedagogy were also considered. Category 5 expands on this, as shown in Figure 5-6.



**Figure 5-6 MRQ Category 5 – Constraints on the implementation of sensopathic play**

The analysis of the category is based on the examination of two codes:

- Teachers’ unfamiliarity with implementing sensopathic play pedagogy potentially reduces its benefit, as teachers do not understand how to apply it most effectively and how it fits into the greater pedagogical ecosystem.
- The perceived cost of sensopathic-focussed teacher-led play pedagogy programme may discourage schools from implementing it.

#### 5.2.5.1 Code: Teachers’ unfamiliarity with sensopathic play

While the use of play is relatively well understood, the use of sensopathic play pedagogy is seldom taught at teacher training facilities. As a result, new teachers or veteran teachers from more traditional schools could have misconceptions regarding its use. The participating schools all provided ongoing skills training to ensure that teachers were comfortable using sensopathic-focussed teacher-led play pedagogy.

One of the participants commented on an external assessment performed at the school, where the assessor completely missed the point:

*We had a lecturer who deducted points when they assessed us. She completely looked past the learners and not what they were doing. She thought our learners were totally out of control and impossible. That is where you look at it differently. The Montessori approach calls it a busy hub. They don’t have to keep quiet as they sort out their work and activities. We don’t have a problem with it as we have it under control. Nobody is shouting. (School E: SIKJAH 24 Oct 2019)*

A particularly pertinent response was shown in section 5.2.1.1, which refers to teachers’ training and experience in Category 1. To paraphrase, the experience of the participant was that veteran teachers found adapting to sensopathic-focussed teacher-led play pedagogy the most



difficult, as they perceived it as conducive to poor discipline. The participant also mentions that it generally took the veteran teachers approximately two years to become comfortable with the sensory-based pedagogy.

Another participant noted the amount of training required (discussed in section 5.2.3.2) to maintain the teachers' skill levels and to ensure that the school's programme was relevant. This can be a significant expense, even if the actual sensopathic play activities are not expensive at all when done right, as is shown in further theme analysis.

In my field notes I mention the fact that teachers and learners alike tend to forget about the environment as a source of material for sensopathic activities:

*Today was interesting as I had to point out to the learners specifically to use the environment (twigs and leaves) to decorate their shaving foam ice-creams. They were at a loss as to how to incorporate the environment in this activity. In the loose part activity where the sensory material was provided though, it was easy for them to use it. Have our learners become constricted in applying their imaginations?..... (FNCM 02 Oct 2019)*

Teachers also tend to have the perception that sensory activities need a large amount of space – in constrained environments, inexperienced educators use this argument against the implementation of sensory activities. However, it is up to the school and the teachers to see the opportunities and to optimise them to make the learning experience as successful as possible.

#### **5.2.5.2 Code: Cost and commercialisation of schools**

As discussed in the beginning of the analysis if this sub-code, ECE centres operate in a very competitive market. One of the main selection criteria of parents is cost (along with quality, proximity and similar aspects), and this limits the resources that these centres can apply to sensopathic-focussed teacher-led play pedagogy. As one participant puts it, “sensory activities are seen as a rich man’s tool” (refer to section 5.4.2.2).

The actual cost of the implementation of sensopathic activities in a class or school is in fact not high (refer to the discussion on material cost in section 5.4.2.2). However, the cost of maintaining teacher skills, training new teachers and continuously adjusting the school’s model can be a significant operational cost. As has been pointed out repeatedly in this analysis, the difference lies in the skills of the teachers, and maintaining these skills levels is a primary concern.

The economics of the use of sensopathic-focussed teacher-led play pedagogy is not part of the scope of this study. It is however seen as an area for future study.

## 5.2.6 Summary of findings on Statement PRQ

All of the participants indicated that they perceived a positive effect when comparing their experience in a more traditional school environment with an environment that included sensopathic-focussed teacher-led play pedagogy. Several participants noted that they had had relatively little experience of this pedagogy, and that changing their teaching methods to include sensory activities was challenging. The participants indicated that integrating sensopathic play opportunities needs a different mindset. One participant noted that she focused on more traditional pen and pencil exercises in her day-to day teaching, and her previous perception was that sensopathic activities were limited to art activities.

Most of the participants reported that they experienced an improvement in the learners' ability to retain information and sensory processing abilities after implementing sensopathic-focussed teacher-led play pedagogy. They also noted the importance of sharpening their skills in observing the learners' behaviour, and reported that teaching in a more sensory-focussed way improved the sensory processing by the learners.

All the participants observed that early childhood centres were becoming more open to experimenting with their teaching strategies and were moving to a more play-based pedagogical approach, with a resultant reduction in the more traditional approach. It was clear that most of the participants understood that play does not imply a loss of teaching opportunities, but rather an opportunity for learning in a more appealing environment, where learners could develop skills in a playful setting. They agreed that this in itself proved to be more conducive not only to the acquisition of new knowledge, but also entrenched skills already acquired.

One of the participants reported that her experience of sensory activities had been confined to art, baking and fantasy corners, and that her school did not yet recognise that play pedagogy was not only a ludic play activity, but also a solid pedagogy for learning in a playful and enjoyable way. After I demonstrated the sensopathic pathways at this school, the specific participant noted that she had changed her perception of sensopathic teaching and recognised the benefits of sensopathic play.

All of the participants also pointed out that the CAPS curriculum in and of itself was not seen as a poor standard, but rather that the approach of teachers and schools in the implementation, and the level of play integration, would cause a difference to the standard of education. However, participants agreed that play is an obvious medium to use for learning – it is natural and it is the language of young learners, and teachers need to adapt and become more innovative in their teaching practices.

After examining the research data, I concluded that the implementation of international best practices and interpretation as well as the innovative implementation of the National Curriculum Statement in South Africa will not only be to the advantage of the learner, but will also be conducive to novel and integrative learning practices in early childhood classrooms.

It should however be noted that the implementation of sensopathic-based teacher-led play pedagogy can also be inhibited, at least on a perceptual level, by teachers' unfamiliarity with the benefits as well as the process of implementation. Participants with experience on both sides of the spectrum (i.e. traditional and sensory play pedagogies) noted the changes required in terms of effort, training and continuous research when compared with a school just following a standard CAPS curriculum.

The majority of participants also noted that the commercialisation of schools has led many early childhood developmental centres to develop unique selling points in order to compete with other schools. A sound traditional foundation still resonates with most parents, but newly emerging practices are often regarded as more attractive than traditional education systems. Affluent parents have the flexibility of choice and can place their young learners in more exclusive and independent early childhood development centres, which can then spend more on research and keeping up with international best practice.

The perception that a sensory play pedagogy is expensive to implement could also prevent wider acceptance. This perception is not necessarily correct, as the activities and materials themselves can be quite cheap – however, the level of effort in terms of research, continuous improvement and teacher training entails a significant operational cost that may inhibit its implementation.

My first-hand experience of the sensopathic pathway showed me that the end result of concurrent learning and skills development does not depend solely upon the activity or the material *per sé*, but also upon the balance between the teacher's intervention and the learner's initiative and reaction – this requires a mutual trust and reciprocity between the teacher and the learner in either taking the lead or following in order to entrench and consolidate the activity in a playful, yet instructive manner.

*Reflecting on the experience I can say that all the schools participating in the research study valued play as a vehicle of learning, enjoyment, and exploration for the learners. In our society and lifestyles today, I think this needs to be applauded that efforts are still made by Early Developmental centres to value play and the importance of play on a daily basis. Well done schools! ☺ (RJCL 15/12/2019)*

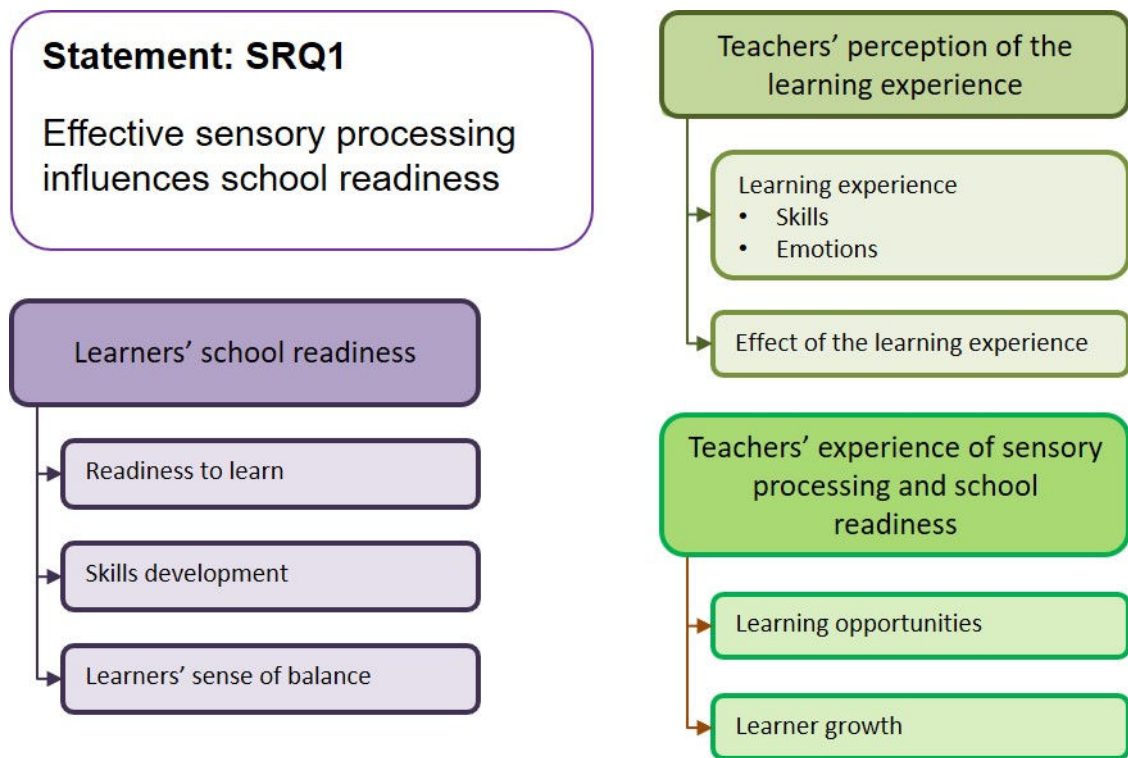
### **5.3 Statement SRQ1 - Effective sensory processing influences school readiness**

Statement SRQ1 is deduced from the first secondary research question. It is expanded into categories and codes as shown in Figure 5-7 overleaf. Statement SRQ1 will be answered by discussing each category and code. Statement SRQ1 explores school readiness, which entails that the learner is not only developmentally, but also emotionally ready for the formal learning environment. The theoretical link between sensory processing and school readiness was shown in chapter 1 in section 1.5.3. Using the sensopathic pathway amplified the ability to observe the learners' state of sensory processing and their reaction to sensopathic-focussed teacher-led play. The participants as well as the researcher could observe that the regulation of the body, emotions and sensory information was important for learners to be school ready, as defined by the requirements for school readiness shown in section 1.5.3.2

The challenge remains for the Grade R teacher to provide enough sensopathic play-based opportunities throughout the Grade R year for the learner to grow in sensopathic development.

The statement is examined with reference to the following:

- Teachers' perceptions of the learning experience - do teachers think that sensopathic-focussed teacher-led play improves school readiness?
- The enhancement of school readiness of the learners as a result of sensopathic sensory processing.
- The experience of the teachers with regard to enhancement of the learning experience by learners' sensory processing, and specifically by sensopathic-focussed teacher-led play.

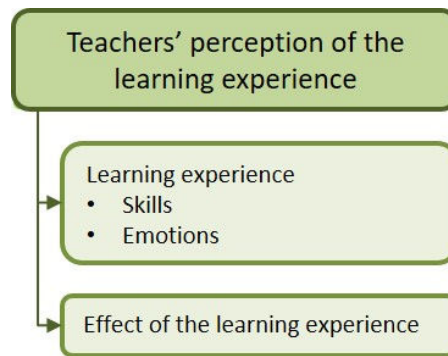


**Figure 5-7 Analysis structure for Statement SRQ1**

### 5.3.1 SRQ1 Category 1: Teachers' perceptions of learning experiences

Figure 5-8 shows the expansion of the category into codes. The category is analysed by examining the contributions of these two codes. The codes are:

- The learning experience and specifically how the learners' skills levels and emotional regulation are affected by sensory processing and sensopathic-focussed teacher-led play.
- Teachers' perceptions of the effect of sensory processing on the learners' school readiness.



**Figure 5-8 SRQ1 Category 1 – Teachers’ perceptions of learning experiences**

### 5.3.1.1 Code: Learning experience

The learner’s experience of sensory material to enhance play-based pedagogy in a teacher-led focused environment contributes to the learner’s effective sensory processing. As shown in section 2.4.3.1, sensory processing is important in order to organise sensory input. A learner who is organised in their play will also be organised in the classroom activities.

These are skills that contribute a significant part of a child’s readiness to go to school. The teacher can observe disorganised sensory processing in the young learner, especially in the Grade R year, and the earlier support and intervention are given, the more beneficial it will be to the learner’s development. The observation skills of the teacher are thus of the utmost importance to gauge the learner’s learning experiences and to monitor progress and development. Learning opportunities in the Grade R year are still informal, and the learners enjoy them.

The following observations of the participants describe how they think the learners experienced the learning opportunity through sensory material and sensory activities.

***I think spontaneous play is lovely, as they will ask you about it and we are on the playground all the time to answer all their questions. When you put something out, they will start wondering about the material that was put out and start asking questions and you can engage with them.*** (School C: SICHRS 11 Oct 2019)

***There are many more parts of the brain that are addressed. That is the point we are trying to make, when it comes to learners from another school, it takes them up to two months to settle in due to the fact that they are or were used to traditional workbooks and activities. They do not know what to do.*** (School E: SIKJAH 5 Dec 2019)

***When learners are exposed to a variety of sensory inputs, they develop the ability to organise these stimuli and become more able to understand and act on them. Learners are gradually able to focus more on specific sensations and their ability to perform is increased.*** (School D: RJCMDG 7 Nov 2019)

***My class had fun and they wanted to do more of the activities, so it reinforced that they really do enjoy play activities and they learn from them. The activities presented were all provided a learning***

*experience from sorting and classification to patterning and colour recognition. (School C: RJCHJD 3 Oct 2019)*

One participant was asked if the sensory activity would improve the learning experience for the learner.

*Yes, it will. This is exactly the point we are trying to make. That is why they do so well academically. The more they **are prepared to dare, the more senses they are using**, the more they learn. This is the success we experience here. (School E: SIKJAH 5 Dec 2019)*

In my reflective journal I noted my observations about sensory experiences:

*Learners are naturally curious and instinctively want to find out more about their environments. By providing them with sensory play experiences they learn more about their life world and how to process the information that they are receiving from their various senses. We provide the learners in our school with **daily sensory experiences in and outside the classroom**. Often these relate to a theme or project we are busy with. When discovering water we provide them with "sink/float" experiences, they also have the chance to play with different toy creatures from that can be found in either fresh water/ salt water or are amphibious. They discover different textures where animals/ sea creatures are placed in coloured water, Gelli Baff (goo), Orbeez (slime balls), bubble water, or on artificial grass or bark or wooden pieces etc. (School C: RJCHJD 3 Oct 2019)*

Considering the responses from all participants, the teachers all seemed to understand the benefits of sensopathic-focussed teacher-led play. The perceptions as a whole support a positive outcome of the category.

### **5.3.1.2 Code: Effect of the learning experience**

Although sensopathic activities might seem to the outsider as an enjoyable play activity, it should be experienced as a learning experience by both the teacher as well as the learner. These activities also provide a valuable opportunity for the teacher to observe learners in a child-centred learning environment and how they cope amongst their peers. As all the senses are engaged and exposed to the sensopathic material during the activity, the learning is enhanced and reinforced through the senses as described by Watts *et al.* (2014:42). The learner takes away a more enriched learning experience by engaging the senses than by learning exclusively on a cognitive level. This category examines the effect of sensopathic-focussed teacher-led play on the skills required for school readiness.

Emotional regulation, readiness and maturity are some of the most important skills that the Grade R learner needs to develop to be ready for formal education (De Witt, 2009:156-157). This is a turbulent year for most of the Grade Rs, and through support and guidance of their teacher as well as their peer group emotional growth can be enhanced.

Sensory experiences can be challenging for some learners and thus create an excellent opportunity for vigilant teachers to observe, support and guide the learners who are not

emotionally mature to handle activities. Participants responded about the benefit of teacher guidance as follows:

*It has an impact on the development of the learner. 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. (School B: RJSFAR 29 Oct 2019)*

*Yes, especially in the beginning of the year, they are unsure and lack **self-confidence**. They wouldn't have the courage just to start on their own, they will rather say, I don't know how to do it. Then, we will have to assist and guide them through the process. It definitely affects their academic performance, due to the fact that instead of saying you can't do it, rather ask for help and guidance or "please explain, I don't understand". (School B: SISFAR 30 Oct 2019)*

***They are very reluctant at first.** For instance, we have a water, slimy activity, and until you put their hands into the bucket for them to feel, then they will interact. They won't engage by themselves but because it's an assignment or instruction, something that they have to do, they will try but they do need guidance. We engage in groups and as soon as someone says it's nice, the rest will follow. It is peer learning. (School B: SISFAR 30 Oct 2019)*

*It happens to some, for instance **your emotional child** that is emotionally immature and your anxious child. They might still need your guidance. In my class I have two learners that will stand back and watch, where the others will carry on with their tasks. (School C: SICHJB 11 Oct 2019)*

In my reflective journal I noted that the teacher's leadership remains critical. At the age of the Grade R group, they do need the guidance and reassurance of the teacher, especially if they have not acquired the required skillset yet:

*Today 's indoor and outdoor sensopathic pathway went well at school D.I observed that it was a mixed group and the difference in dealing with the challenges of the sensopathic pathway were noticeable. One girl in particular was upon questioning the youngest of the group and although she handled herself well, station one two and three of the indoor sensopathic pathway was emotionally challenging for her and she started to cry. After I assured her and tended to her needs, she was emotionally more stable and coped better with the remaining stations in the sensopathic pathway. It was clear that on an emotional maturity level she still needed to mature to cope on the same level as her peers. (RJCL 11 Oct 2019)*

The responses from the participants were uniformly supportive in this sub-code and, importantly, also underlined the need for teachers to be involved, not only in terms of setting the environment for the play activities, but also as discussed in section 2.6.2.3, which described the role of the teacher in sensory play activities as not only the affording of play opportunities, but also in regulating the environment in a risk-averse culture. The adult or teacher must remain an ever-vigilant observer of the play activity.

In that section, I further noted that observation of the young learner during sensory play would provide the teacher with an indication of their sensory profile. These observations allow the

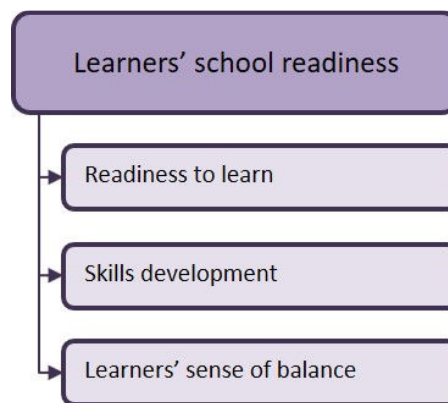


adult or teacher to not only plan sensory play experiences, but also to plan opportunities for future learning experiences.

### 5.3.2 SRQ1 Category 2: Learners' school readiness

The requirements for school readiness were discussed in section 1.5.3, and the expansion of this category into codes is shown in Figure 5-9. It should be noted that this category relates to sensory processing as a concept, and not only to sensopathic-focussed teacher-led play.

School readiness encompasses the major areas of development, as shown in Table 5-1. Obviously not all of the aspects are influenced by the learners' sensory processing abilities, and the applicability of each is indicated in the table.



**Figure 5-9 SRQ1 Category 2 – Learners' school readiness**

This category examines the school readiness of learners based on the requirements contained in Table 5-1. From these requirements, the following three codes were developed:

- Readiness to learn, which describes the ability of learners to learn and how sensopathic-focussed teacher-led play improves it (cognitive, normative).
- Skills development, which examines the benefit of sensopathic-focussed teacher-led play on the broadening of the skills base of the learners, developmentally as well as emotionally (affective, normative, social).
- Learners' sense of balance – in this category the learners' capability to adapt and react to a change in environment is examined (cognitive, affective).

**Table 5-1 School readiness requirements**

Readiness area	Description	Applicable
<b>Physical</b>	Physical growth required for formal school.	No
<b>Cognitive</b>	Powers of observation, visualising and fantasising as well as sufficient language development and a connection to perception, with the associated perceptual development	Yes
<b>Affective</b>	Encouragement, recognition and praise from teachers for affective stabilisation	Yes
<b>Normative</b>	Acceptance of authority, mastering task orientation and completion and a sense of responsibility. Ability to communicate and share, as well as to self-regulate	Yes
<b>Social</b>	Ability to function, position and contribute in and as a group.	Yes
<b>Literacy</b>	Mastery of entry-level requirements for literacy	No

### 5.3.2.1 Code: Readiness to learn

The benefits of play in learning are universally recognised and discussed in section 2.4 and in this code I examined the specific experience of the participants with sensopathic-focussed teacher-led play. As noted above, this code is particularly associated with cognitive and normative development. Most participants commented on the effect that their approach has on stimulating learners to explore any subject and how the learners respond to sensopathic play:

*Our learners are very **comfortable because our approach** is different. They seldom hear no, it's wrong or you are not doing it right. They go for everything, because there are never critics or get scolded. We hardly ever get a child that says I can't. (School E: SIKJMU 29 Oct 2019)*

*Very well, they love it. Especially at their age, **it's a natural thing as they are curious about things.** (School C: SICHRS 11 Oct 2019)*

Another participant commented on how they ensure that learners conform and regulate:

*We will prepare a learner when we will **engage in sensopathic play or material**, especially if he doesn't know what will be expected from him. It just makes it more comfortable for the child. (School B: SISFAR 30 Oct 2019)*

Another participant noted that learners engaged in activities much more readily when the sensory aspect was introduced. Learners seem drawn to sensory activities.

*They **immediately interact and play with the material.** I am sometimes amazed by the things they do with the sensopathic material. (School C: SICHJB 11 Oct 2019)*

It remains important to keep in mind that, while activities are teacher-led, they are not teacher-controlled and thus leave room for an open-ended outcome. This is important, as it maintains the benefits of open-ended play in the process:

*Yes, some of the learners are not there **yet with sensopathic material and it give them room to explore. If it is an instruction or assignment**, they have the choice of how it will turn out. With traditional play or engagement, I would say is very structured and it follows steps A, B, C. I think most kids are traditionally inclined and it is complicated for the sensory child.* (School B: SISFAR 30 Oct 2019)

Ultimately, one participant was quite insistent regarding the value of sensory processing as a contributor to learning ability:

*If the learner is not sensory **integrated the learner will not be able to perform and other areas of development will lag. Behaviour might present as difficult, but it is a matter of adjusting.*** (School E: RJKJAH 5 Dec 2019)

In my reflective journal I mention the participants' comments regarding the different competencies of learners and how sensopathic play seemed to stimulate peer learning and development, thus also supporting school readiness.

*My observation underscores the points raised by the participants from schools B, C and E. I could observe the learners' different competencies in developmental areas. These differences, however, did not influence any individual learner to the extent that they could not participate in any of the activities, but rather emphasised the natural ability of the learners to learn from each other and share their experiences, although diverse.*

*The hub of conversation and meeting each other on a social level, even though different, was enlightening to observe and each learner contributed on their level of experience or expertise. The learners were naturally drawn toward the material as well as the activity, which made for rich learning experiences although they were unaware that they were sharing skills and information amongst each other in an informal environment. I observed that learners naturally gravitated towards each other and did not feel threatened at all by their peers' observation or sharing of observations or engaging in the activities. I observed that the learners experienced the situation as relaxed and non-threatening, and thus the learning opportunity was so much more amplified without trying to impart any skill or knowledge.* (RJCL 11 Oct 2019)

All the participants agreed with the theories as discussed in section 2.4 to a significant degree, and they seem to have no doubt that learning ability strongly correlates with sensory processing.

### 5.3.2.2 Code: Skills development

As noted previously, this code examines the contributions (affective, normative, social) of sensory processing to the broadening of the skills base of the learners, developmentally as well as emotionally. The skills required for school readiness are varied, and participants noted that development of the skills necessitated the learners' exposure to situations where these skills were required.

*It depends on the learner; some enjoy it outside and others indoors, therefore it is important that there is a good exposure of both environments available to them. You don't get splinter skills but actually a range of skills that are developed, so **you develop the child holistically**. (School C: SICHJD 11 Oct 2019)*

The teachers' approach towards accommodating the different learning styles is of the utmost importance, allowing peer learning to take place. Different activities are also required to keep the stimulus level high.

*It depends on the learner; the activity and the theme you are doing. They will be engaged in environmental play, social skills and how well you work together as a team. It is also interesting to hear their conversation between each other; **peer learning plays a role as they help each other**. (School C: SICHRS 11 Oct 2019)*

*I think if we can implement it in all our lessons and have a sensory station like yours permanently on the playground or in class so there can be **different experiences** every day. That will enhance their sensory learning experience. (School B: SISFAR 30 Oct 2019)*

Participants agreed that skills development follows exposure to situations where these skills are stimulated. Sensory processing is important in the sense that it provides situations that appeal to learners and not only revolve around the teacher, but also provide opportunities for peer learning and social development.

### 5.3.2.3 Code: Learners' sense of balance

This category refers to the balance created by the learners, in other words it speaks to their flexibility when changing from one task or activity to another, or when the environment in which they operate changes. Responses in this category examine the cognitive and affective abilities of the learners and their correlation to sensory processing.

*The tunnel was exceptional. They enjoyed the surprise element. They went through a dark grotto, and at the end they could see light again. I also plan to use it in my class on a day-to-day basis sometimes, I will use a torch, flash it a couple of times and then the learners will have to count how many times it flashed. That is how numeracy is combined with sensopathic experiences. They really enjoyed it as they were still talking about the grotto the next day. (School A: SIESSB 26 Sept 2019)*

The changes in environment also often require guidance from teachers, supporting the requirement for teacher-led play. Most participants agreed with the following:

*It depends what it is and how you are going to do it. If it is a material that they have used often or before, then they won't need my assistance. When it is a material that they use in crazy play and it became sticky like bubble-gum on their hands. They really need to know how to manipulate the material and how to use it, so when it becomes sticky, it is not a nice feeling anymore. They need to learn the rules and how to engage with it. (School C: SICHRS 11 Oct 2019)*

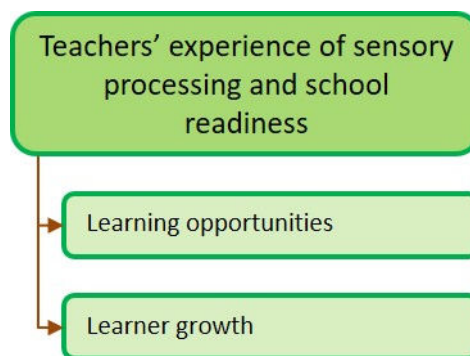
I noted in my reflective journal that flexibility of the teacher and the learners is key:

*I realised that although one plans an activity to unfold in a certain way, it might not be the same way as the learner perceives it nor allow the learner to engage with the material as one anticipated. This*

*creates a valuable opportunity to observe how the learner is going to engage with the material or what the outcomes might be. This keeps all learning opportunities interactive and flexible at all times, and it should always be taken into account that the learning process per se is not a static process, but a process that evolves as the learner engages with the sensopathic material available. Both teacher and learner learn from the experience. This feeling of success teaches learners to regulate naturally, and once they have experienced that sense of balance within themselves it's easier to transfer it to various situations presented during the day. (RJCL 11 Oct 2019)*

### 5.3.3 SRQ1 Category 3: Teachers' experience of sensopathic play

This category explores the teachers' experience as regards improvement or enhancement of learners' learning by sensory processing, and specifically by sensopathic-focused teacher-led play. The expansion of the category into codes is shown in Figure 5-10.



**Figure 5-10 SRQ1 Category 3 - Teachers' experience of sensopathic play**

Two codes are examined:

- Learning opportunities, which further explores teachers' experience of the influence of sensory processing on opportunities for learning and teaching moments.
- Learner growth, that is the improvement of learners in terms of achieving school readiness in an environment supported by sensory processing.

#### 5.3.3.1 Code: Learning opportunities

Learning opportunities (teaching moments) are those times when the situation or activity lends itself to learning, i.e. when an opportunity occurs that will allow the teacher to scaffold on to prior learning in an unplanned fashion. Not all learners react the same to these opportunities, and the teacher needs to cultivate an awareness of the scope and extent of the opportunity.

*We will first leave them to see how they cope and what they do. When they need our help, we will help them; sometimes they will ask and other times you can see they struggle but they don't ask for help and then we will guide them anyway. That is verbal instructions and questions that can make them think. (School C: SICHJB 11 Oct 2019)*

At times the opportunities created are for peer learning, and then the teacher should assist the process rather than lead it.

*You get your learners that like to figure out things by themselves **and others will need assistance.***  
(School C: SICHJB 11 Oct 2019)

*Yes, definitely spontaneous. I have witnessed it, they learn better if they **interact with something themselves, than being taught.*** (School C: SICHJB 11 Oct 2019)

As mentioned, not all learners react the same to an opportunity for learning, and it may be incumbent on the teacher to stretch the opportunity to the extent that scaffolding is possible:

*When the activity is teacher-led, the learners are more likely to all be involved in the work as they **copy what they see.** When playing with clay, when playing in the sand. They are more comfortable if the teacher is involved.* (School D: RJCMDG 7 Nov 2019)

*Yes, some of the learners are not there yet **with sensopathic material and it give them room to explore.** If it is an instruction or assignment, they have the choice of how it will turn out. With traditional play or engagement, I would say is very structured and it follows steps A, B, C. I think most kids are traditionally inclined and it is complicated for the sensory child.* (School B: SISFAR 30 Oct 2019)

As noted in section 2.6.2.3, the role of the teacher is important, but it can change from moment to moment. It is therefore important that teachers are sufficiently observant to recognise the learning moments, adapt to the requirements of the moment, environment and situation and exploit them for learning purposes.

### 5.3.3.2 Code: Learner growth

This category examines the experience that teachers have with regard to how sensory processing assists in the growth of the Grade R learner to school readiness.

Sensory processing is seen as important on all levels. A participant from school C spoke about the affective benefit and how the sensory activities draw apprehensive learners in and allow them to grow their experience to a level where they are comfortable with the situation.

*It is amazing to see how **their faces brighten up once they have done it, and they realise how much fun it is.** In the beginning of the year, they are very apprehensive, but this time of the year (towards the end of the year) you get your few learners who do not want to participate.* (School C: SICHJB 11 Oct 2019)

There was significant agreement between participants about their experience of sensory processing and how it helps learners to grow:

*Yes, definitely. If their **sensory needs are met, they can learn and do better.** The sensory and academic doesn't have to be separate.* (School C: SICHRS 11 Oct 2019)

The consensus was that sensory processing is a significant part of learners' growth towards school readiness. I noted the fact that learners enjoyed mutual peer support during the sensopathic pathways and that their growth was supported.

*I observed that the learners experienced the indoor sensopathic pathway as well as the outdoor sensory pathway as enjoyable activities and did not perceive the learning effect of the engagement with the materials as well as the group experience, they were part of. It was clear that all the activities were not easily achievable by the learners in the group, and some learners found the activity challenging at times, but were encouraged by the other group members to join in or venture in the activity. This accomplishment was observed time and time again and reflected in the learners' demeanour as well as their ability to venture into a new or more challenging task. Very little explanation was required after the learners gained the confidence to venture into unknown situations. The growth in the learners' ability and self-confidence in approaching unknown tasks were observed as they participated in the sensopathic pathways. (RJCL 2019)*

### **5.3.4 Summary of findings on Statement SRQ1**

Statement SRQ1 specifically examined the role of effective sensory processing in school readiness. It was obvious when discussing the question with participants that all agreed that sensory processing played a significant part in the process of getting learners to be ready for school. It allowed them to grow on cognitive, affective, normative and social levels.

Teachers were very positive about the benefits and effect, but also pointed out that learners with poor sensory processing abilities, although limited in number, were easily identified by their lack of comfort in sensopathic-focussed teacher-led activities.

It was also apparent from the interviews that sensory activities provided more teaching moments than ordinary classwork because of the open-ended nature of the material, but that teachers had to work harder to recognise and exploit these opportunities.

Sensory processing also played a role in the learners' growth towards school readiness, and it was also the view of participants that sensopathic-focussed teacher-led play activities were instrumental in allowing learners to settle into a more comfortable situation and positively assisted with self-regulation.

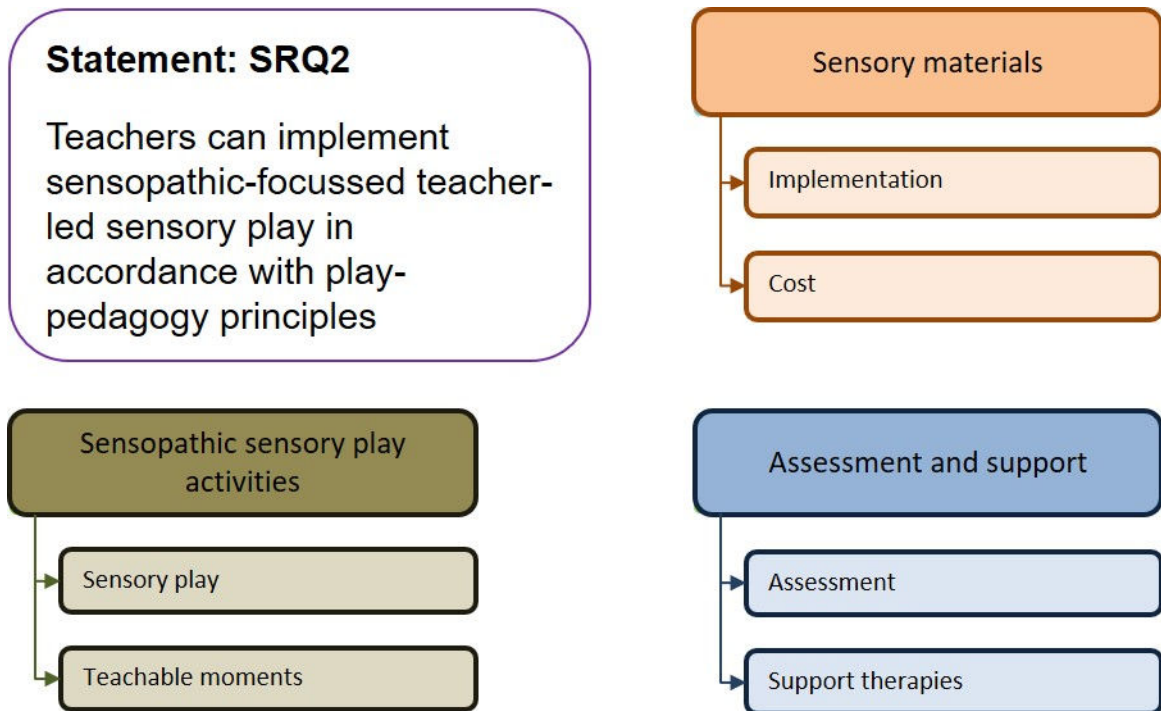
### **5.4 Statement SRQ2 - Teachers can implement sensopathic-focused teacher-led sensory play in accordance with play pedagogy principles**

Statement SRQ2 is derived from secondary research question 2. It is expanded in accordance with the coding frame presented in Figure 4-7. As seen in Figure 5-11, the statement is expanded into three categories and six codes.

The categories identified in statement SRQ2 revolved around the way participants implemented sensopathic-focussed teacher-led play. Three specific categories of interest were examined:

- Category 1 - Activities, i.e. the types of sensopathic play activities that were performed in the general course of teaching over the school year.

- Category 2 - Materials, specifically the types of materials used and how these were sourced.
- Category 3 - Assessment and support, examining the wider framework of how learners are assessed and the support structure outside of the classroom that could be utilised.



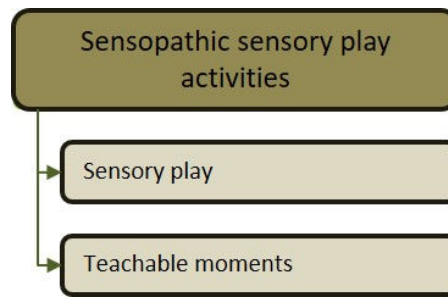
**Figure 5-11 Analysis structure for Statement SRQ2**

#### 5.4.1 SRQ2 Category 1: Sensopathic play activities

Category 1 was further expanded into codes as shown in Figure 5-12. The derived codes were:

- Sensory play, aimed at activities with a significant sensory effect or intent, even those not necessarily appearing to be a sensory activity.
- Teachable moments, where learners actually learned, but not necessarily with the input or intent from the teacher. These are also referred to as learning opportunities.





**Figure 5-12 SRQ2 Category 1 – Sensopathic play activities**

Gascoyne (2012) examined the stages of sensory play (refer to section 2.6.2 and specifically Figure 2-9), and this category is closely related to her discussion. While the sensory play category refers more to stage three of her model, the teaching moments in the second category are more in line with stages one and two of her model.

#### 5.4.1.1 Code: Sensory play

Properties of sensory play materials are essentially limitless and provide the teacher with a vast number of learning opportunities, provided they are applied and used properly. The open-ended quality of the materials allows creativity, and the learning experience then becomes a mutual adventure in exploration and problem solving that more traditional teaching materials do not offer. All participants provided details of sensory play activities performed in their classes:

*Sensory play and play initiated by themselves, they love the freedom and it is never the same, there are always different outcomes. There are different ways they can apply it. They can do it throughout the day and throughout the week. Class activity is something that I have introduced with sensopathic material, and it is more based on learning as such. They also initiate sensopathic play and they do love it and engage in it wholeheartedly. (School A: SIESSB 26 Sept 2019)*

*Yes, we've got the sandpit, jungle gyms, we've got the sensopathic area with the sensopathic trays that we put out every single day with different materials in the water troughs that we use; we have the mud kitchen and all the utensils. We have so many areas where the learners can engage to for their sensory needs. Not all the learners will engage in the mud kitchen as they don't like to get dirty. (School C: SICHJB 4 Oct 2019)*

*Sensopathic-focused teacher-led play is creative and mutually enjoyable for the teacher as well as the learners when these principles are implemented in the curriculum. The curriculum lends itself to a variety of activities as well as opportunities to make use of **sensory play within the curriculum**. An example I like to share is mathematics, particularly if texture and weight are the aim of the lesson. The learners have to use their senses to explore the shells and to sort and categorise the shells **according to textures as well as weight**. This topic can easily be combined with data handling and makes the lesson an active participation lesson which in return enhances the learning experience for the learners. I have found if the learners are naturally involved in the lesson and learning through first-hand experience the knowledge gained is so much more valuable to the learners themselves. (School A: RJESSB 24 Sept 2019)*

At least one participant was less familiar with the use of sensory materials and expressed surprise at the possibilities:

*I was amazed at **the possibility which sensory play could achieve** and have not thought about the activities to be applied in this way. It was good to observe my learners perform and enjoy the activities. I will in future be more open to create and expose my learners to sensory experiences rather than traditional pen and paper exercises. (School B: RJSFAR 29 Oct 2019)*

Another participant reported that the learners were encouraged to play free, with assistance as needed:

*Absolutely yes. What we try to do is (we call our play time, free play) We put toys out for them but never force them to play with something specific; otherwise it is not free play. We leave the playing up to them. We do it daily as it is part of our programme. 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. (School C: SICHJB 11 Oct 2019)*

Sensory play, while forming a significant portion of the play, was never the only play that learners engaged in. In my field notes I mention some observations:

*There are traditional as well as natural materials available on the playground. Learners engage with both types of play during breaktime, but I noticed that they still enjoyed the traditional play as well during free play and not always sensory play. Sensory play does lend itself to be easy to clean and is not wasted.*

*Outdoor activities lent itself more to child-initiated interpretation of the activity and the teacher observing and directing the activity accordingly. (FNCH 11 Oct 2019)*

#### **5.4.1.2 Code: Teachable moments**

Sensory materials are not only conducive to the development of sensory processing, but also create valuable teachable moments or learning opportunities. As mentioned previously, these teachable moments refer more to opportunities for learning created during child-initiated play than to teacher-led learning. Open-ended sensory play materials have the ability to develop into anything possible. The learner has to apply innovation, creativity, imagination at times to solve a problem by means of sensory material. This creates opportunities for the learner to explore new territory and venture into situations that might be unfamiliar to them at the time. Sensory material is inviting and catches the learner's attention immediately, thus creating more natural teaching moments than anticipated or prescribed by the curriculum. These teachable moments also include opportunities for learners to learn from each other in peer learning situations.

Sensopathic play materials such as clay, sand water, rice, pebbles offer learners so many more opportunities to deal with materials, thus enhancing the learning experience for the learner. As

indicated by the respondents, they are more likely to retain information gained through sensory play and sensory learning.

*We teach them through play. We use peer teaching by playing. (School C: SICHJB 11 Oct 2019)*

*They learn better as they are experiencing the sensopathic material. We let the learners explore and let them tell us what it is and what it is used for, and what not. They learn much quicker and better. The different learning styles that the learners have are catered for. (School C: SICHJB 11 Oct 2019)*

*.... sensory play experiences as with other sensory experiences help learners make sense of the world around them - they learn how to interpret the messages their bodies receive from outside stimuli and how to use the information correctly. Example - putting their hand into a bag full of numbers cut out of different textured materials and trying to feel what the number is without looking at it. (School C: RJCHJD 3 Oct 2019)*

Importantly, enjoyment seems to be a factor for the learners. Most participants agreed that it was because learners did not feel as if they were learning.

*Yes, they truly enjoy it, if they have to **fetch things or pick a flower or do things for themselves**. 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. (School D: SICMDG 11 Oct 2019)*

Most participants, especially the most experienced ones, emphasised the elements of planning, observation and flexibility:

*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. And that a teacher has to be more observant to know what is **going on around them**. (School C: SICHRS 11 Oct 2019)*

My observations supported the opinions of the participants:

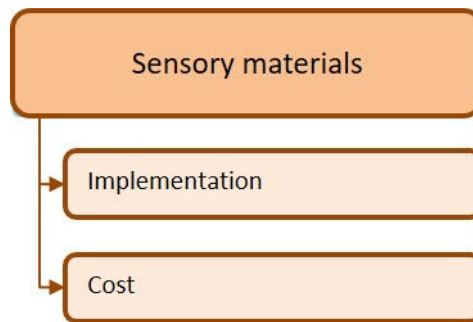
*My observation today during the outdoor sensopathic pathway was the opportunities presented at activity 6 of the outdoor sensopathic pathway, the shell sorting. The learners enjoyed the sensopathic nature of the materials and information, creativity and imagination just poured out of them. They socialised, discussed, talked, shared information – it was a hub of verbal conversation. The activity to sort the shells according to shape, texture and size followed only as I interrupted the conversation and made the learners attentive on the sorting activity. (RJCL 29 Oct 2019)*

The observations made illustrated the stages of play (free play, object play and adult play) as defined by Gascoyne (2012) and discussed in section 2.6.2., and it was quite instructive to observe the different opportunities afforded for learning. A significant outcome was that even though sensory play is open-ended and often child-initiated, the teacher needs to create the environment within which it can flourish.

## 5.4.2 SRQ2 Category 2: Sensory materials

This category describes the use of materials in sensopathic play and how participants utilised these materials. The category is expanded into two codes as shown in Figure 5-13:

- Implementation, referring to how the materials are used and the activities implemented.
- Cost, i.e. the cost of purchasing and maintaining the material used for sensory play.



**Figure 5-13 SRQ2 Category 2 – Sensory materials**

Materials used in sensory activities are often perceived as either “special”, i.e. specific for sensory stimulation, or costly. In practice I observed that sensory materials need not be either of the two to provide copious amounts of sensory possibilities. Materials used in a Grade R environment can provide sensory qualities without being intended for purely sensory purposes. The applications of materials used for sensory purposes are usually so many that when combined with the learners’ imagination and creativity, they can be used for more than a sensory experience: materials and activities can be applied in the Grade R environment to develop or augment specific developmentally appropriate skills that learners may need to transit from an informal learning environment to a more formal environment.

### 5.4.2.1 Code: Implementation

It was interesting that while most of the schools made a point of implementing sensory activities with materials at hand or re-purposed, at least one of the schools did not realise the extent to which ordinary material could be used for sensory play purposes. Most of the other schools also had a definite preference for natural and recycled material. All the participants shared their experiences with regard to sourcing of material and the type of material used:

*We don’t do it in an expensive way, and yes, we are a private school. We are encouraged to use natural materials. We won’t go out and just buy blocks, we would rather buy logs from the Farmer’s Market and we will use stones, leaves and all-natural materials. We don’t buy a lot of toys. We use waste materials like boxes and our parents are a big part of supporting us. (School C: SICHJD 11 Oct 2019)*

*... we do make use of recycling material. We do have recycling bins that we use the material from. We can make the sensory material; we make use of food stuffs, bird seeds. It can be recycled and reused, water with bubbles and food colouring to colour the water. Once we used the sensopathic material for some activities, we reuse it in an extension of a larger and different activity. (School A: SIESSB 23 Oct 2019)*

One participant shared her experience when learners were provided with materials that they did not encounter normally. This shows the value of diverse materials:

*Loved this! The unexpectedness of the rubber pieces that looked like wooden blocks made them focus immediately! Enjoyed asking the learners about their experiences. Good opportunity for vocab and talking about personal experiences. (School C: RJCHJB 6 Oct 2019)*

Natural products are also a favourite, supporting the thoughts of Froebel:

*Definitely a firm favourite with all the kids! Natural products, learners love working with natural products. They didn't only use touch (tactile) and visual, they used all their other senses too! Loved discussing all the textures and even what they could hear! (School C: RJCHJB 6 Oct 2019)*

One of the participants made the specific point that the materials themselves were of lesser importance, and that the overall planning aspect was more important:

*Yes, but it is not about the material. The challenge was for all the teachers to make use of the traditional material in a different approach. We have not taken out any material, we make use of everything. (School E: SIKJAH 29 Oct 2019)*

In my own reflection, I also mentioned the aspects of teacher planning – at times the child may initiate, but the teacher always plans.

*Activities, materials and layout can be changed, as well as the material, at any time. I realised it's not the specific material or activity which draws the learner into the experience but it's rather the enthusiasm and attitude of the teacher which makes sensory play an exciting and successful learning experience. It is often the observational skills and presence of mind of the teacher to adapt if the learners are hesitant to experience the activity, and the assistance and guidance provided before, during and after the activity which makes sensory activities successful learning experiences. It should be noted that the teacher should always respect the learners, even if they indicate that they do not want to participate or are apprehensive or averse to the activity. (RJCL 30 Oct 2019)*

As noted in my reflective journal entry above, most participants understood that the implementation of sensory play activities was not so much about the materials as it was about proper planning. That said, the materials used were predominantly natural and recycled.

#### **5.4.2.2 Code: Cost**

The cost of the material used is often overestimated, and at least one of the participants did not realise that sensory materials can be very cheap. It unfortunately seems as if student teachers are not taught how to implement sensory play, and as a result they may have the idea that these are specialised and expensive items.

*... lots of schools in RSA do not have the means to purchase all the bits and pieces needed to make their learning environment rich. (School C: RJCHRS 30 Sept 2019)*

However, most of the participants were aware of how much could be done with very little cost. Again, they all understood that proper planning was the key.

*I can see all your sponges, little plastic boats; **everything household related in different trays, not expensive and easy obtainable.** We keep it in containers, it gets washed and re-usable. So, one activity that is actually used for a starter activity can become a science activity and revolve into a math activity, not necessarily in the same time but can also be used as a structured activity. (School C: SICHJD 11 Oct 2019)*

One of the participants had taken part in an interview for a television programme and as a result had quite strong views on the matter of cost:

*When we had the Carte Blanche (a South African current affairs programme) interview, they said that the biggest critics are that sensopathic material is a rich men 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. It takes the creative thinking and planning of the teachers. (School E: SIKJAH 29 Oct 2019)*

One of the participants was of the opinion that sensory materials were more specialised and as a rule had to be purchased:

***I don't think sensopathic material always was that expensive as you could get things that were easily available. The natural material that you buy nowadays can cost more.** You have to source them. If you now go to a nursery, you can buy material and it becomes costly. Previously, you could pick up shells on the beach etc. You can make a lot of sensopathic material that is not that expensive, like Gloop for instance. (School C: SICHRS 11 Oct 2019)*

One of the participants reiterated that the materials themselves were not the important aspect, but that the correct application was critical.

*You will find at the affluent schools that they have all the most fantastic sensopathic materials, but use it incorrectly. They do more harm than good. (School E: SIKJAH 29 Oct 2019)*

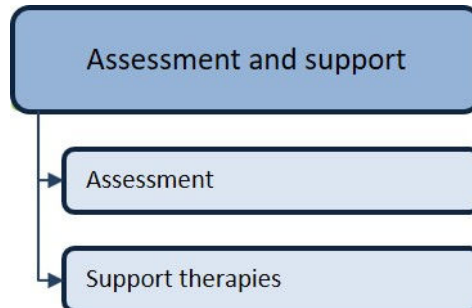
In my reflective journal I mentioned the fact that not all participants really understood that the materials were only tools – the best material was the skills of the teacher.

*Again, there were some participants that didn't really understand that material doesn't make the activity – it is the sensations that the learners experience and the imaginative associations that are suggested by the teacher that is the most important aspect. As a result, the materials used should be selected for their sensory characteristics and everyday objects can be used. Planning.... (RJCL 30 Oct 2019)*

The participants were for the most part aware that sensory materials could be obtained quite cheaply, and that cost of materials should never be an excuse not to perform sensory play activities. In the sensopathic area especially, where tactile and visual sensations are the focus, materials can easily be found to provide the sensations required.

### 5.4.3 SRQ2 Category 3: Assessment and support

Category 3 of Statement SRQ2 (refer to Figure 5-14) shows the examination of assessment opportunities and how support therapies may either be triggered by the assessments or existing therapies integrated into the sensory play activities.



**Figure 5-14 SRQ2 Category 3 – Assessment and support**

The category was expanded into two codes to examine the following:

- Assessment – this describes the informal opportunities for assessments in the aspects of school readiness as shown in Table 5-1 that are offered by sensopathic play activities.
- Support therapies in this context refers to therapies that may be indicated as a result of the informal assessment alluded to in the previous category, or the integration (where possible) of learners undergoing support therapies such as occupational therapy within a sensory activity.

#### 5.4.3.1 Code: Assessment

In the context of this code, the assessments referred to are those performed by teachers, typically informal and observation-based, to verify school readiness of learners (refer to Table 5-1). This code is specifically aimed at understanding the assessment aspects of sensory play, especially of sensopathic-focussed teacher-led play.

All participants agreed that sensory play activities provided significant opportunities for observation. These observations are not limited to an assessment environment, but also afford the teacher the opportunity to “find the gaps”, so to speak, and to plan interventions or referrals accordingly. Participants offered the following in their responses:

*We have our assessments standards and outcomes, we do ongoing observations on the learners, to see if they are meeting those standards and bridging the gaps where necessary. (School C: ClCH 17 Oct 2019)*

*If you noticed that a child has built a tower, we will say, let’s talk about your tower. We also have our assessment way that we will assess him/her right away and we will right our observations accordingly.*

*In a case where another teacher has observed one of my learners in free play and I'm not there, she will write it on the observer, and I can see what she has observed. We do discuss our learners' performance quite a lot and of course where we can improve. (School C: SICHJB 11 Oct 2019)*

The socialisation aspect also seemed to resonate with some participants:

*I find child-initiated play in the sense of; they learn a lot of social skills, working together, have their little fights and sort out their own situations. The learners have engaged so much in their own play and created their own different tools for one specific material like a shell. Instead of a teacher telling them or guiding them, in what to use the shell for. They just led the whole activity. You can also learn a lot about a child if you only listen to him/her. Does the child need language enhancement improvement and where you can support the child? That is also the way we assess. (School C: SICHJD 11 Oct 2019)*

One of the participants noted that another benefit was the tools that were provided to the teacher to informally observe learners, not only during teacher-led play, but also during child-initiated play:

*Sensopathic-focused sensory play pedagogy provides me with valuable tools as well as opportunity to observe my Grade R learners, track their sensory development as well as integration between sensory development and other developmental areas required for formal induction in Grade One. The nature of open-ended sensory material assists our school the opportunity to be creative and experimental with our use of resources in most of our lessons. Lessons do not always have to be teacher initiated and directed for sensory materials to be implemented as it is also implemented with great success with child-initiated activities during free play time. This is where one can really observe the application of not only meta cognitive skills but also the application of imaginary play. The social interaction and building upon themes between the peer group is also creative and at times astounding to observe. (School A: RJESSB 24 Sept 2019)*

The participants agreed that the opportunities for assessment that sensory play provides were not only dependent on being teacher-led, and that child-initiated play could also provide assessment opportunities, although any planned interventions would of necessity have to be teacher-led.

#### **5.4.3.2 Code: Support therapy**

This code refers to how support therapy is integrated with sensory play, either from the point of view of referring identified learners for support therapy, or of accommodating learners undergoing support therapy in teacher-led play.

It seems as if most participants worked especially with occupational therapists:

*And it has worked very well. On top of that, we do also suggest occupational therapy if it is extreme sensory issues. (School D: CICM 11 Oct 2019)*



In addition to referral of learners, participants also indicated getting inputs from occupational therapists:

*I will implement it if I see it is necessary. The occupational therapists have suggested it and they have supplied us with the cushion for a specific child. (School B: SISFAR 30 Oct 2019)*

*Yes, definitely. I think our Occupational Therapists help us a lot with sensory use the learners need, like do they need perceptive activities, do they need environment little tent, they help us a lot to provide those things that the learners need, as they are seeking it. (School C: SICHJD 11 Oct 2019)*

Learners undergoing therapy are accommodated where possible:

*He is at play therapy, speech therapy and goes to an Occupational Therapist. It does affect everything. He doesn't want to get dirty, doesn't want to take his jacket off. When we play in class, I put out activities for him just too sometimes get dirty and wet. When we do Monkeynastics<sup>6</sup>, I encourage him to take off his jacket for a little bit and he can put it back on when we are done and assist and support him in that way. I have also spoken to the Occupational Therapist, that when he goes there, he gets the opportunity to take off his shoes in a safe environment. (School C: SICHJB 11 Oct 2019)*

All the participants showed a significant amount of interaction with occupational therapists. This is understandable, as this study focusses on sensopathic (tactile and visual) aspects; the impact of other therapists would be significantly less.

#### **5.4.4 Summary of findings on Statement SRQ2**

The findings on SRQ2 were that while sensory materials and activities provided significant opportunities for development and assessment and were not difficult or expensive to implement, the impact of proper planning by the teacher could not be overestimated.

The level of effort required to make a sensopathic-focussed teacher-led play activity reach its goals is significantly higher than for “normal” classroom activities. It requires teachers to plan, observe, assess, adapt and interface with other professionals. It certainly also points to the probable lack of success if teachers are not properly trained and motivated.

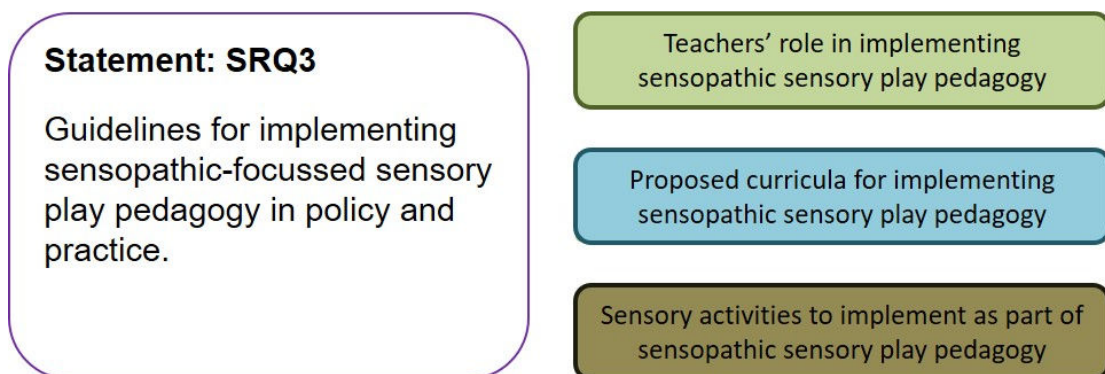
#### **5.5 Statement SRQ3 - Guidelines for implementing sensopathic-focussed sensory play pedagogy in policy and practice.**

Statement SRQ3 examines the suggestions, strategies and experiences the participants encountered during their own journeys in sensopathic-focussed teacher-led play pedagogy.

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<sup>6</sup> A type of informal gymnastics often used as a gross motor development tool.

The data provided three significant areas of interest, which were used as a set of categories to organise the inputs from participants. The statement and categories are shown in Figure 5-15.



**Figure 5-15 Analysis structure for Statement SRQ3**

### **5.5.1 SRQ3 Category 1: Teachers' role in implementing a sensopathic play pedagogy**

During the analysis of the responses to Statements PRQ and SRQ 1 and SRQ2, guidelines regarding the specific role of the teacher were identified. Participants indicated that the level of effort and involvement of teachers was significantly higher than would be the case in traditional curricula. The key performance areas that teachers would have to address during the execution of sensopathic-focussed teacher-led play pedagogy were found to be the following:

- **Planning:** Teachers had to plan the activities and scenarios as well as materials and integrate these with the curriculum and the required outcomes.
- **Observation:** The participants indicated that teachers had to develop their observational skills in order to recognise teaching opportunities and promote learning moments. Individual learners also had to be monitored to determine whether there were any potential problems that had to be addressed.
- **Assessment:** Participants noted that they had to continually assess the learning and teaching milestones achieved in the programme. Due to the inherent flexibility of a sensopathic-focussed teacher-led play pedagogy, it is imperative that the overall proficiencies should be assessed to make sure that all facets of the curriculum were adequately covered. This area was closely related to the observation performance area.
- **Adapting:** It was also reported that teachers needed to adapt frequently in order to take advantage of teaching and learning opportunities of the moment. This area was also closely associated with planning.

Participants provided the following inputs regarding ways of teaching:

*Interviewer: What guideline would you give to an ordinary model C school that does not have all the resources that you have available?*

*Respondent: I don't necessarily think its resources; I think you can make use of many ways of teaching as long as it has been well planned, it is a facilitator of learning, you stay up to date with research. You can't just sit back in a pre-school class; our teachers are on their feet all the time. They don't have a tea break. They are constantly integrating with the learners, scaffolding their thinking, asking them questions. I think it is all about the type of teacher that you are and being a lifelong learner. If you are willing to learn the whole day with the learners, you will easily be able to be a good teacher.*

*I don't think it is based on private or public schooling, it is the type of teacher that you are and how willing you are to teach. (School C: CICH 17 Oct 2019)*

Participants also provided input on mutual learning and support among teachers:

*We are a sensory integrated school. We do a lot of workshops and we learn from each other and we have our workshop every second week. We don't have it in our curriculum though, however, the school itself said that you can't work or teach on a worksheet base, you have to teach them in a sensory way. (School C: SICHJB 17 Oct 2019)*

In terms of the observation performance area, a participant also mentioned the need for teachers to make sure that all observations are recorded and actioned:

*If you noticed that a child has built a tower, we will say, let's talk about your tower. We also have our assessment way that we will assess him/her right away and we will write our observations accordingly. In a case where another teacher has observed one of my learners in free play, and I'm not there, she will write it on the observer and I can see what she has observed. We do discuss our learners' performance quite a lot and of course where we can improve. (School C: SICHJB 17 Oct 2019)*

The requirement for integration was described as follows:

*Interviewer: If you have to set some guidelines for sensopathic encouragement in a class or be more sensory aware, what you put in your guidelines?*

*Respondent: I think it is important that they understand what it is so they can integrate into anything. When we set up our weekly rosters and tasks, try and integrate something in each and every lesson. Incorporate any play activity into every lesson. (School C: SICHRS 31 Oct 2019)*

The same participant also expanded on the key performance areas:

*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. And that a teacher has to be more observant to know what is going on around them... and that is natural because of the environment we create, because of all the different personalities that we have. You get to know your learners very quickly and their needs. So in guidelines I would say observation, know your learners, observing initiatives, the environment, creativity, initiative, collaboration of ideas between teachers and team effort. (School C: SICHRS 31 Oct 2019)*

### 5.5.2 SRQ3 Category 2: Proposed curricula for implementing a sensopathic play pedagogy

Category 2 examined the guidelines that participants could offer with regard to curricula. It should be noted that the participants were all active teachers and therefore were not significantly involved with developing the curriculum. However, some participants were able to contribute to this discussion, as they were directly involved in setting their school's curriculum:

*I want to talk about the curriculum - the curriculum that we use in our school is that all the grades are sensopathic inclined and use sensory integrated materials. We have a little bit of CAPS, a little OBE and then I have incorporated fun activities that are learning geared before the change in the curriculum. We are process driven rather than product driven in our output of learners. Our planning and design is play based, mixed with teacher-led and basic teaching. I feel that when the emotional level is in order, they will be ready cognitively, it just follows that route. I concentrate on the emotional wellbeing of the child and that growth in my curriculum. The learners love the exposure to nature and less structured material, too much structure in a pre-primary curriculum, leads to anxious learners and they can't always comply with the expectancies of the teachers and society. And all that leads to a low self-esteem. (School A: SIESSB 30 Aug 2019)*

### 5.5.3 SRQ3 Category 3: Sensory activities to implement as part of a sensopathic play pedagogy

Participants were also asked to offer guidelines on which sensory activities to implement. Due to the wide variety, few specifics were offered, but there were a few helpful responses:

*You need to get to a point where you don't have to implement sensory play; the whole day should be sensory integrated. But it takes training and practice. Some of the teachers only found it easier in their third year to adapt to all the sensopathic ideas. You can turn anything into sensopathic ways. (School E: SIKJAH 24 Oct 2019)*

*I think our Occupational Therapists help us a lot with sensory use the learners need, like do they need perceptive activities, do they need a little environment tent - they help us a lot to provide those things that the learners need, as they are seeking it. And all your learners that move a lot the whole time, it's like movement seeking. We have a range of material and tools available. Not one for each child though but we have a sensory box that they can choose out of, so we can provide them with the necessary sensory input and needs. We also make things ourselves as well. (School C: SICHJD 17 Oct 2019)*

*They use all their senses together. I think a child that is more visual is more inclined to feel things and enjoys it more and it is 3 dimensional and learn more through sensopathic play. (School B: SISFAR 30 Oct 2019)*

#### **5.5.4 Summary of findings on Statement SRQ3**

Participants provided a set of strategies that they used when implementing sensopathic-focussed teacher-led play pedagogy in their institutions. These strategies detail the experience they built up in their own implementation and sustainment phases and form an important part of my study.

The findings on Statement SRQ3 are in essence the guidelines suggested by the participants. These guidelines contribute to the guidelines for implementation of sensopathic-focussed teacher-led play pedagogy that form part of the outcome of my research.

#### **5.6 Conclusion**

In chapter 5 I performed a thematic analysis based on my research questions. As shown in chapter 4, the statements were extracted from my research questions and the categories and codes were expanded from these statements, based on the available literature and my conceptual framework. The process of deriving the themes and the tools I used are discussed in chapter 4.

The analysis of each statement was based on the results obtained from the analysis of the categories and codes, with additional sub-codes where the results required deeper examination. I examined four statements based on the original research questions that were posed in chapter 1. The results of the analysis of each statement were summarised in the discussion of each theme.

The conclusion of the study, based on the results of the analysis, is discussed in chapter 6 along with a set of guidelines for the implementation of sensopathic-focussed teacher-led play pedagogy. This chapter provides the outcome of the research questions and places the results within the context of the conceptual framework I proposed in chapter 3.

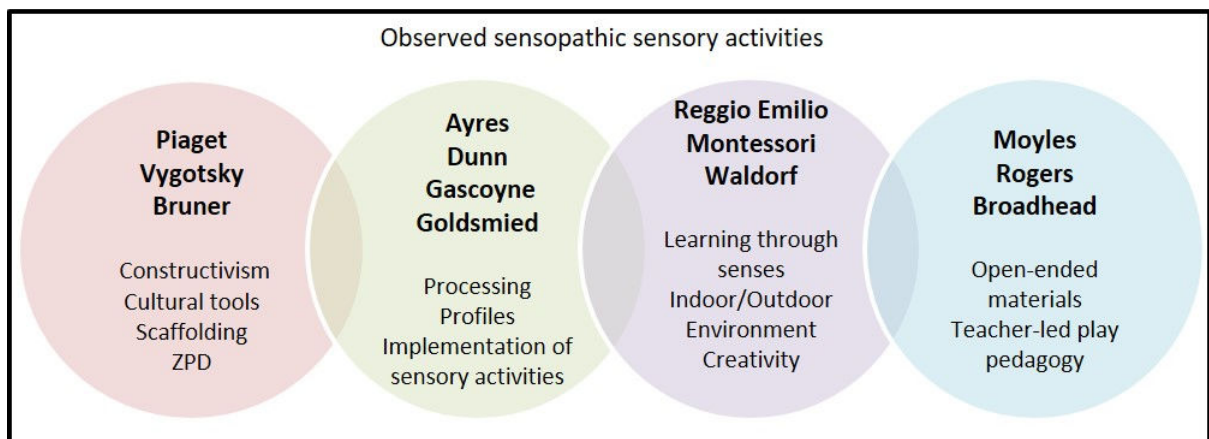
## 6 Chapter 6: Data interpretation and conclusion

### 6.1 Introduction

In this, the final chapter, I discuss and interpret the results from the analysis detailed in chapter five. I show the supporting and contradicting themes between the literature and the findings and I define the current shortcomings in the literature. I also discuss new insights from the study that complement the literature and present a set of guidelines that would be relevant to the implementation of a sensopathic-focused teacher-led play pedagogy.

### 6.2 Conceptual framework

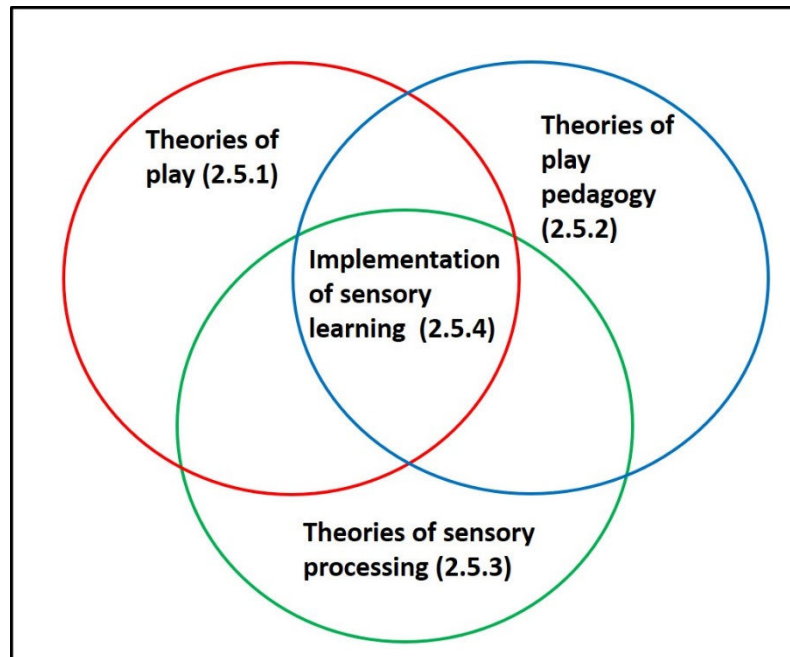
In order to contextualise the results of the thematic analysis, it is necessary to refer to the role of the conceptual model as explained in section 4.5.2 and specifically Figure 6-1 below, which shows the work of several historically important theorists of play such as Vygotsky, sensory processing theorists such as Dr Jean Ayres and sensopathic play theorists such as Sue Gascoyne and Eleanor Goldschmied. This forms the foundation for a number of international best practices in the development of the Grade R learner.



**Figure 6-1 Conceptual framework**

The research questions were posed in the framework of the confluences of the various theorists and the practical real-world implementation as expounded by the best practices. The results of the analysis must also be read in the same context.

In section 2.4 I proposed a conceptual framework that considered the common areas of the constituent parts of the conceptual framework, shown as Figure 6-2. I used this framework as a context for discussing the answers to the research questions.



**Figure 6-2 Common areas of the conceptual framework**

It should be noted that sensopathic-focussed sensory play pedagogy is a more specialised subset of play pedagogy as a whole and shares the benefits of play-based education.

### **6.3 Secondary research questions**

In this section I examine the results of the thematic analysis performed in chapter five. In order to answer these questions, each has been associated deductively and inductively with a statement in section 4.5.3 – the results of the thematic analysis provide the basis of the discussion. The secondary research questions (posed in section 1.4.2) are as follows:

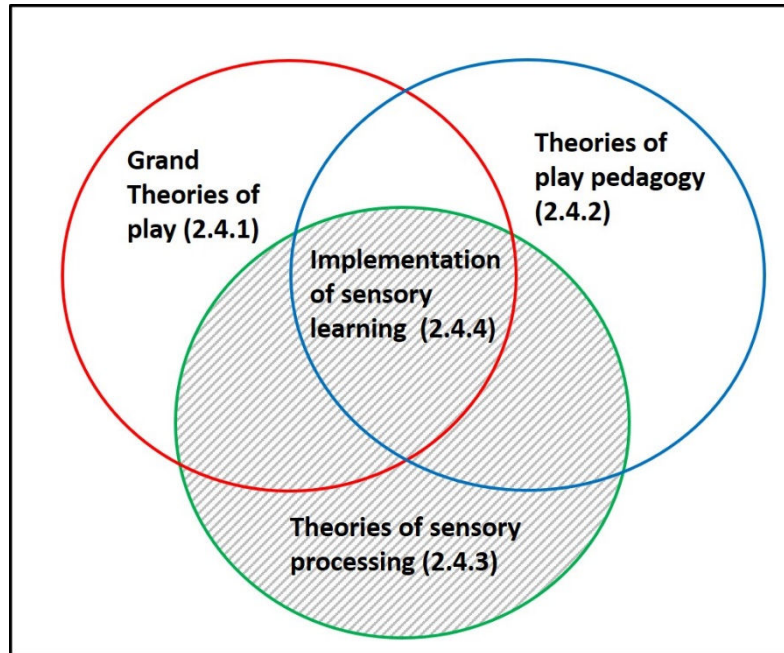
- What is the role of sensory processing in the school readiness of Grade R learners?
- How do teachers implement sensopathic-focussed teacher-led sensory play in accordance with play pedagogy principles?
- What guidelines can be formulated for implementing sensopathic-focussed sensory play pedagogy in policy and practice?

#### **6.3.1 Secondary research question 1**

Secondary research question 1 is aimed at examining the interaction between sensory processing and school readiness.

What is the role of effective sensory processing in the school readiness of young learners?

The shaded area of Figure 6-3 indicates the context of secondary research question 1 in the conceptual framework discussed in section 6.2.



**Figure 6-3** Contextual position of secondary research question 1 in the conceptual framework

When contemplating this question, the effect of sensory processing on school readiness must be considered. In discussions with the participants, the general agreement was that improving the sensory processing of learners improved the regulation of the body, emotions and sensory information, which enabled them to grow on cognitive, affective, normative and social levels. When these aspects are compared with the criteria described in section 1.5.3, which define school readiness, it can be deduced that the learners' school readiness might be improved. I also found that effective sensory processing allowed learners to settle into a more comfortable situation and to be positively assisted with learning due to their improved self-regulation.

As noted previously, encouraging and guiding sensory processing opportunities empower apprehensive learners and allow them to grow their experience to a level where they are comfortable with the situation. The learners' enthusiasm for learning was improved, as they did not really understand that they were in fact learning – the engagement with the materials as well as the group experience was perceived as play. Learners who were apprehensive at the beginning of the year tended to join fully in sensory activities by the end of the year, even in an



environment where the level of challenges in the activities increased. The greater self-confidence the learners experienced was particularly noticeable when I observed learners on the sensopathic pathway.

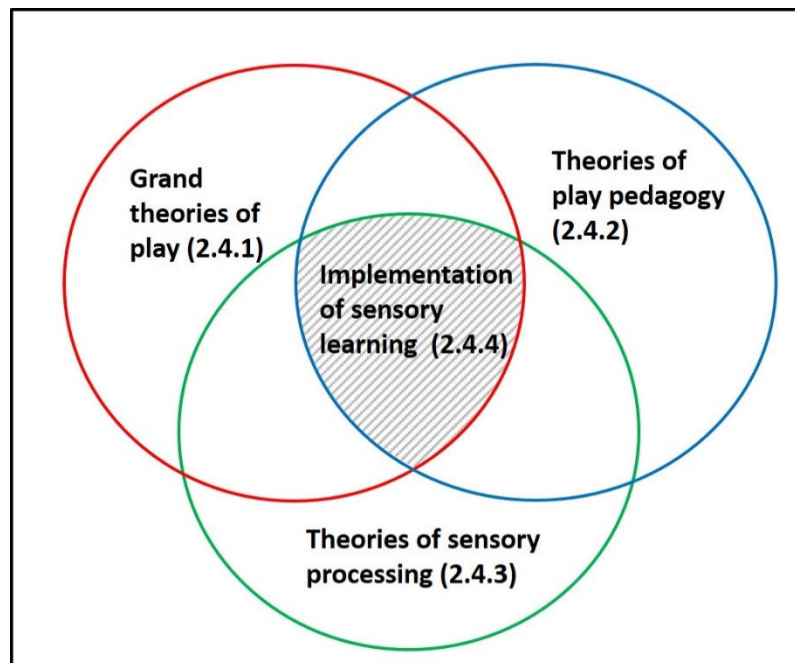
The consensus amongst participants was that if learners' sensory needs were met, they could learn better, and that there seemed to be a positive association between sensory processing and academic achievement. Sensory processing therefore has a constructive influence on school readiness.

### 6.3.2 Secondary research question 2

Secondary research question 2 examines the methods that teachers use to introduce sensopathic play activities into the curriculum.

How do teachers implement sensopathic-focussed teacher-led sensory play in accordance with play-pedagogic principles?

Secondary research question 2 is expanded in Figure 5-11. The context of the question in terms of the conceptual framework is shown in the shaded area of Figure 6-4.



**Figure 6-4** Contextual position of secondary research question 2 in the conceptual framework

Looking at the ECE landscape, especially in the private school environment, government and society seem to be more open to novel teaching strategies, and especially to the movement

toward a more play-based pedagogical approach where learners can develop skills in a playful setting. Unfortunately, some schools do not yet recognise that play pedagogy is not mere ludic play, but a solid pedagogy for learning in a playful and enjoyable way. The implementation of sensopathic-focussed teacher-led sensory play does not only consist of introducing a few sensory activities into the daily programme, such as art, baking and fantasy corners. Rather, the intentional implementation of sensopathic-based teacher-led play pedagogy requires adequate and competent teachers and resources that facilitate and sustain these activities on a regular basis.

Sensory materials and activities are part of the picture, but the opportunities for development and assessment that a sensopathic-based teacher-led play pedagogy provides are only unlocked with careful planning and integration, as well as skilled execution of a carefully considered curriculum. Participants with experience in both traditional and sensory play pedagogies noted the changes required in terms of effort, training and continuous research when compared with a school merely complying with the national CAPS curriculum. There is certainly a perception amongst teachers and schools that it is difficult and expensive to implement and maintain a sensory play pedagogy, which inhibits wider acceptance of such a programme.

The benefit of the teachers' knowledge and skill levels and the continuing professional development required in the process can certainly not be overstated. The level of effort required to make a sensopathic-focussed teacher-led play activity reach its goals is much more intensive than in "normal" schoolroom activities. The skills of the teacher in terms of planning, observation and adapting an activity to generate learning experiences were seen as the key aspects of a sensory play programme. Such a programme also requires teachers to interface with other professionals, both on a peer level as well as with therapists.

In terms of the specific curricula, I found that it was less important to choose one particular curriculum than to be able to select the best elements from all the curricula available. Of course, this would add an additional development burden on the school and teachers to ensure that the elements that were selected from the various curricula are properly integrated. The problem with using new curriculum systems is that it increases the training requirement of the teachers and reduces the benefits of consolidation or scaffolding on top of existing curriculum systems – it is important for a school to find a proper balance. Interestingly, I found different perceptions of the implementation of sensopathic-focussed teacher-led play pedagogy between participants at the same school. What was obvious was that if the framework within which they operate was well-defined, individual interpretations did not detract from the process, but rather added to the richness of the implementation.

I also found that the difficulty of finding and using sensory materials was overestimated by some teachers. Sensory materials abound on all playgrounds, and the essential elements are easily available, but not always recognised. For the most part, though, teachers understood the possibilities of repurposing and reusing waste material. The sensopathic pathway I used in the research also showed teachers how open-ended materials can be used to create sensopathic activities in an inexpensive way.

Schools that do successfully manage the transition to a sensopathic-focussed teacher-led sensory play pedagogy have found that the inhibitors, such as teachers' lack of understanding and the cost and commercialisation of schools, 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 due to the benefits to the learners and to themselves on a professional level. Once the initial investment in skills has been made, the process becomes self-sustaining as long as continuous training and peer relations are maintained.

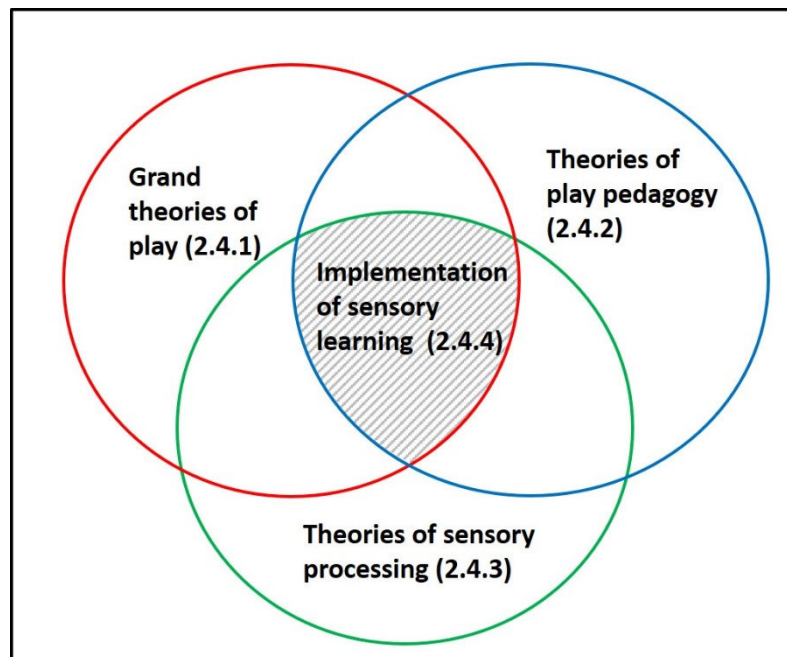
In terms of the research question, the consensus view amongst participants was that with a suitable curriculum, proper training and motivation of the teachers and a willingness to embrace the change, any school can successfully implement a sensopathic-focussed teacher-led sensory play pedagogy.

### **6.3.3 Secondary research question 3**

The aim of secondary research question 3 is to examine the key performance points for the implementation of a sensopathic-focussed teacher-led sensory play pedagogy, from the perspective of the teachers involved as well as the schools.

What guidelines can be formulated for implementing sensopathic-focussed sensory play pedagogy in policy and practice?

Figure 5-15 shows the expansion of secondary research question 3. The context of the question in terms of the conceptual framework is shown in the shaded area of Figure 6-5.



**Figure 6-5** Contextual position of secondary research question 3 on the conceptual framework

### 6.3.3.1 Guideline 1: The skills requirement for teachers

The most significant guideline is that the teacher must plan each activity based on the desired outcome, the sensory profile of the learners and the available resources. Participants emphasised repeatedly that planning and being flexible to accommodate changing outcomes as children explore made the difference, not only the curriculum used. The participants also mentioned that successfully implementing a sensory-based play pedagogy required more time and effort than implementing a more traditional curriculum such as CAPS or IEB.

To implement any curriculum, it is imperative that the stakeholders, including teachers, school management and parents, understand the scope of the actions that are required. Teachers are the cornerstone of the curriculum, and participants noted that in their experience teachers require the following key skills to successfully implement a sensory-based play pedagogy:

- **Planning:** Teachers must plan activities, scenarios and materials and integrate these with the curriculum and the required outcomes.
- **Observation:** Teachers must have the observational skills required to recognise teaching opportunities and promote learning moments. They have to work closely with the learners and use all opportunities a situation allows to scaffold learning.
- **Assessment:** Teachers must continually informally assess the learning and teaching milestones achieved in the programme based on their observation of the learners performing activities. Learners' overall proficiencies must be continuously assessed in this manner to ensure that all aspects of the curriculum are adequately covered.

- Adapting: Teachers must be able to adapt activities and scenarios to encompass the observations and assessments. They also need to be able to direct activities in order to take advantage of learning opportunities presented in the moment. Teachers lead by creating the environment for child-initiated play and must exploit the opportunities for learning experiences when and as they occur and adapt the lesson according to the opportunity.

These skills should form part of a continuing professional development (CPD) programme, and schools should ensure that teachers undergo a sustainable development path to support the curriculum in place.

### **6.3.3.2 Guideline 2: Teacher training**

The skills of the teacher are a determining factor in the effectiveness of a sensory play pedagogy, particularly with reference to the influence skill has on the learning process. However, since teacher training in South Africa currently does not encompass sensory play pedagogy in any meaningful way, training in the skills discussed in section 6.3.3.1 must form part of continuing professional development, and amendments of existing teacher training curricula with a specific focus on sensory play would be preferable. Schools need to invest in their teachers to obtain the skills required, otherwise the implementation of a sensopathic-focussed teacher-led sensory play pedagogy curriculum will not be effective.

Participants reported that for the most part their own training consisted of external workshops and special courses. An important part of this training was also to establish networks with other schools and to transfer knowledge between teachers.

It was furthermore noteworthy that some schools had invested in learnerships, where they provided training and guidance to education students attending university to ensure that there would be a large enough pool of skills to draw on once the students graduated. As noted before, investment in skills is a major requirement to successfully implement and sustain a sensory play programme.

### **6.3.3.3 Guideline 3: Curriculum requirements**

The thematic analysis considered Reggio Emilia and Montessori along with the CAPS curriculum. What became obvious was that none of the participants believed that a single curriculum or pedagogy was the answer; they tended to pick elements from a number of sources, including non-play-based programmes such as OBE and EYFS. Participants indicated that in their experience it was not necessarily the curriculum or pedagogy that mattered, but that the most important factor was learning with the whole body, i.e. sensory learning. The participants agreed with theorists that the more the senses were involved, the more

comprehensive the learning experience and retention of learning will be. Best practices such as Reggio Emilia, Montessori and similar pedagogies all have valid areas that they address, but none are necessarily better than the others. In the end it hinges on the teachers that implement the curriculum and that they have the skills and training required as discussed in sections 6.3.3.1 and 6.3.3.2.

Given this experience, it was interesting to note that brand-aware parents were more concerned with the image than the substance of the curriculum and that they still favoured a more “formal” education approach which led to the “schoolification” of the learners, although the emergence of new practices had become more attractive. In this sense, the established programmes such as Montessori were seen as a selling point rather than a curriculum. The name appealed to the parents and gave schools a marketing edge in a commercial sense.

For the sake of clarity: none of the participating schools identified itself with a particular programme or curriculum. One would possibly obtain different results from a franchised school.

#### **6.3.3.4 Guideline 4: Sensory activities**

As I noted in section 5.5.3, participants offered little guidance regarding specific sensory activities. This seemed to be due to the large existing body of knowledge and literature in this regard and the relative ease with which a teacher could plan a set of activities based on this knowledge. The most important point raised was again that the skills of the teachers in selecting the most appropriate activities were crucial when deciding on the sensory activities to be used.

Participants noted that the activities on the sensopathic pathway were appropriate examples of sensory activities. The sensopathic pathway was constructed as proposed mainly by Gascoyne (2012, 2016) and Kranowitz (1995, 2003). Whichever source is used, it is important that the source of activities be authoritative and peer-reviewed. It is easy to obtain suggested activities from various sources on the internet, but their origin and academic validity may be in doubt, and the user should approach unattributed sources with care.

Close co-operation with occupational therapists was also mentioned as good practice, especially in schools which had access to in-house therapists. Importantly, participants furthermore noted that teachers needed to plan the sensory activities in such a fashion that the challenges posed to learners increase over time, otherwise the benefit of the sensory activities would diminish with repetition.

#### **6.3.3.5 Guideline 5: Space requirements**

Interestingly, it was found that some participants, especially those with less experience than other participants, assumed that sensory activities require large amounts of space and therefore did not introduce sensory activities. However, with proper planning sensory activities

can be done in compact spaces, and indeed sensory play activities which are all indoors are entirely possible. A reference to typical activities is the sensory pathways used for this study (refer to section 4.3), which created considerable interest among participants. The sensory path is by no means an exhaustive guide, and examples of similar activities can be found in Gascoyne (2012, 2016) and Kranowitz (1995, 2003), as well as a large number of other authors.

To plan the space required for sensory activities properly, teachers need to decide on the following:

- Are activities to be indoors, outdoors or both?
- Do I need to have all the learners in the class participate simultaneously or will they be split into smaller groups?
- Do I need space for large body movements?

Once these questions have been answered and teachers have made their choice as to which specific activities will be used, the amount of space required can be planned.

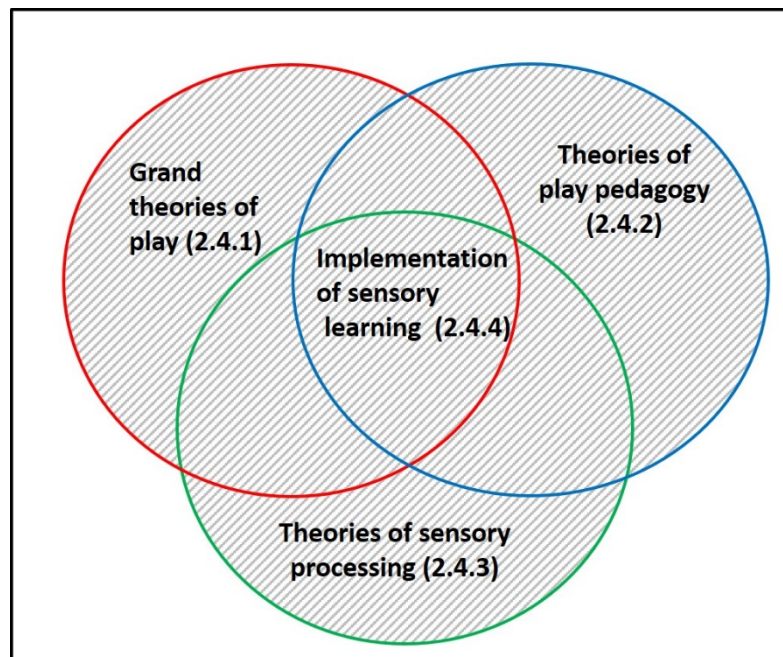
#### **6.4 Primary research question**

In my primary research question, I examine the interaction between sensory processing and sensory play.

How can sensopathic-focussed teacher-led sensory play in the play-pedagogic context influence sensory processing?

The primary research question is addressed by Statement PRQ. The statement itself is expanded in Figure 5-1 to show the contributions of the underlying categories and codes. To put the question in the context of the conceptual framework, the shaded area of Figure 6-6 must be considered. In this case, the overarching conceptual framework is applicable.

My analysis of the data indicated a more complex relationship than I had originally expected. All participants agreed that a sensory play programme is of assistance to learners with sensory processing deficiencies, and that at least superficially it seems as if there are benefits to all learners. The overall benefit to other learners is less obvious, although it seems to indicate a correlation between sensopathic-focussed teacher-led play pedagogy and sensory processing, confirming the literature.



**Figure 6-6** Contextual position of the main research question in the conceptual framework

All participants indicated that when comparing their experience in a more traditional school environment with a curriculum that included sensopathic-focused teacher-led play pedagogy, learners appeared to benefit from the sensory environment. Most of the participants reported that they observed an improvement in learners' ability to retain information after a learning experience as well as their sensory processing abilities after implementing a sensopathic-focused teacher-led play pedagogy. The result agrees with that experienced by Ayres (2005:50–51), who notes that if all the senses are not utilised in play, the sensory system may not develop optimally. The outcome supports the “whole-body learning” concept, and it confirms the benefits of a sensory play-based pedagogy. However, if the sensopathic-focused teacher-led play pedagogy is not sustained into Grade 1, these benefits will be lost in the follow-on programme (Grade 1 and further).

As noted above, learners with sensory processing deficiencies seemingly benefitted the most from the sensory play programme. It follows that learners with sensory processing inhibitors can be accommodated in mainstream classes if there is a proper sensory programme to support them, sensory material in the environment and teachers that are able to recognise the symptoms and plan activities accordingly.

The participants and my own observations indicate that a sensory-play-based programme is beneficial, as the whole body is involved in learning. My observations led me to the phrase “play to learn”, but in essence this confirms the conceptual framework I presented in chapter two. It was clear that sensopathic-focused teacher-led play pedagogy did not sacrifice any



teaching opportunity in favour of play, but rather allowed teachers to adjust the learning to be more playful. Weisberg *et al.* (2013:104-112) support this point of view and show that play can be defined by referring to an activities' locus of control (that is child-centred or teacher-led), as shown in section 2.3.2, and therefore the shift of the locus in the play activity would determine the type of play. Teachers can move learners from free play (with a child-centred locus of control) to a teacher-centred locus of control and thus manage the learning process.

Playing to learn is a more appealing approach for the learners, as they develop skills in a playful manner, which theorists such as Fler (2011) and Moyles (2013) that I discussed in chapter two agreed to be more conducive to not only acquiring new knowledge, but also to entrenching that knowledge. However, as noted in section 2.3.2, Pramling-Samuelson and Johansson (2006:49) note that play is generally of little value if there is not a learning goal associated with it – and achieving that learning goal requires the knowledge and skill of the teacher.

Based on my first-hand experience of the sensopathic pathway, I observed that the end result of learning and developing skills at the same time do not depend solely on the activity or the material *per sé*, but also on the balance between the teacher's intervention and the learner's initiative and reaction – this requires a mutual trust and reciprocity between the teacher and the learner in either taking the lead or following in order to entrench and consolidate the activity in a playful yet learning manner. Gascoyne's (2012:157) continuum of play (section 2.4.3.3) shows the impact of play and how this supports learning and shows how teachers can influence the learners' locus of control during play. Teachers create opportunities for sensory play and set boundaries for it, but it must be planned and implemented in such a fashion that learners play as if the activity had been child-initiated to improve the “learning while playing” experience.

In my examination of the theories of play in chapter two, I noted that theorists propagated contact with nature during play; yet my observations (and those of others) confirm that learners are more sedentary and devote too much time to indoor activities in the virtual world. In the Reggio Emilia approach, for instance, the sensory environment is seen as the “third teacher” (Gordon-Biddle *et al.*, 2014:61; Wurm, 2005:38). As suggested by the theorists and confirmed by participants, the environment supports the learning experiences of the learner and teachers need to integrate their teaching practices with the environment in every way possible to create sensory experiences for learners. In this sense, the environment does not refer to outdoors only, but more to a sensory environment which can be created indoors as well as outdoors.

Although the environment encompasses both indoor and outdoor settings, participants noted a preference for outdoor settings as regards the influence on learners' sensory processing. The preference seems to be predicated on the fact that learners in the first place associate outdoors more with play than the indoors, but also because outdoor play is typically more physical and taxing, which absorbs the excess energy of overstimulated learners. I did not find a notable

difference between indoor and outdoor sensory play, even though that was not my focus. This difference may be an area for further study.

One of the basic requirements for school readiness is self-regulation (Bodrova & Leong, 2006:204). This is closely aligned to the self-regulation behavioural response as described by Dunn (1999) and discussed in section 2.4.3.2. She describes a point (indicated in Figure 2-5) where sensory inputs are balanced, i.e. where self-regulation is balanced between passivity and activity. Sensory play provides training for learners with sensory processing challenges that make it easier for them to achieve a balance where the sensory challenges no longer affect their ability to learn. It is this promotion of self-regulation that is the primary benefit that sensory play offers in terms of school readiness. As mentioned previously, the influence on self-regulation was most noticeable in learners who had sensory processing challenges, and it could not be conclusively shown that it assisted learners without problems to the same extent.

An additional benefit can be ascribed to the influence that sensopathic-focussed teacher-led sensory play has on learners that have sensory processing problems. Learners that are either sensory-avoiding or sensory-sensitive, as described in Dunn's (1999) model, discussed in section 2.4.3.2 and depicted in Figure 2-5, are commonly timid and scared of sensations. Teacher-led activities provide reassurance and assistance to learners due to the presence and guidance of the teacher and co-regulate the learner's feelings of anxiety and apprehension.

An additional important aspect noted was that teachers with the applicable skills and training were able to identify learners with poor sensory processing abilities by their unease during sensopathic-focussed teacher-led activities. The identified learners could be either specifically catered for when planning activities or, in extreme cases, be referred for therapy. Participants agreed that teaching in a more sensory focussed way improved sensory processing by the learners.

One of the most important benefits of sensopathic-based teacher-led play pedagogy seemed to be the fact that learners with sensory processing deficiencies were more at home in the learning environment. The sensory play provided support for normative and social growth, meaning that learners with sensory processing challenges can be identified and taught to self-regulate to improve their school readiness. In this sense, I regard the research question as answered positively, albeit less comprehensively than I had anticipated. The question remains whether it is the sensory aspect of play, or just the play itself, that provides the benefit on a general level. I believe that I have shown that it is the combination of sensory activities within the broader scope of play, but a formal quantitative study may be of value. Based on the results of the thematic analysis I conclude that sensopathic-focussed teacher-led sensory play influences the sensory processing abilities of learners for the better.

## 6.5 Findings contradicting the body of scholarship

I observed no instances in the data that contradicted the theorists discussed in chapter two. However, it was found that some of the participants were less skilled in implementing the required balance between child-initiated and teacher-led play, and therefore some of the experiences did not support the literature, specifically in schools A, B and C, where the sensory activities were less well planned, monitored and adapted than in schools D and E. The data from these schools was less rigorous and highlighted the requirement for training as discussed in the guidelines 1 and 2 respectively.

## 6.6 Silences in the data

Silences in the data are defined as features of my collected data that do not allow me to either confirm or contradict the available literature.

Participants from schools that regularly performed sensory activities reported that learners with sensory processing deficiencies could be accommodated in the existing class structure. If teachers monitored the learners and implemented special activities when required (such as running around the class), the problem could be managed. I found this response from the participants surprising, as the current trend would have it that sensory processing disorder (SPD) is more prevalent – according to the Star Institute (2020), between 5% and 16% of learners have sensory processing issues. My observations during the study and the experience of my participants would seem to indicate that the problem is overstated, but in my data the number of learners that either seemed to struggle on a sensory processing level or had been diagnosed with SPD were so few that no deduction could be made.

I would also be negligent if I did not point out that the use of reflective journals and questionnaires was less effective than the semi-structured interviews and the direct observations. While it could be ascribed to a time factor on the side of the participants, it was also noticeable that the participants' experience and the level of understanding of the theory behind sensory play activities at times limited the richness of participants' responses.

During the study I also observed that while sensory activities are generally seen to encompass all the far senses (see section 1.5.2), the schools that I studied used sensopathic (visual and tactile) activities almost to the exclusion of all other senses. Participants were generally unaware of the definition of sensopathic senses and the difference between sensopathic and all other senses.

## 6.7 Gaps in the literature

With regard to gaps in the literature, the correlation between learners' sensory processing challenges and their school readiness remains anecdotal – while some quantitative studies, such as at Gazi University in Turkey in 2018 (<https://clinicaltrials.gov/ct2/show/study/NCT03172767>) have started, no results have been made available. While the aspect of sensory processing disorder has resulted in a substantial amount of literature, for the most part this focusses on individuals and their difficulty in coping with sensory overload. As the focus of this study does not include comparisons between groups' participation in sensory activities and a measurable effect on their school readiness, this is a suggested area for further study.

The available literature does not indicate whether the developmental benefits of sensory play and ordinary play respectively should be seen as equal or not. The focus of sensory play is treatment of SPD rather than its benefit to the larger community of young learners. In my research I saw that the influence of both types of play seems similar when the subjects are young learners as a group and not just young learners with sensory processing challenges. This begs the question whether it is the sensory aspect of play that provides the benefit on a general level or just the play itself. I believe my study has indicated that it is the combination of sensory activities within the broader scope of play that is of value, but a formal study of this subject will be of value.

## 6.8 Areas for further study

In this section I focus on areas that fell outside of the focus of my study and may prompt additional research. These areas were identified during the thematic analysis.

### 6.8.1 Sensory environment – indoors or outdoors?

I observed that there was no real preference for either indoor or outdoor sensory activities. Responses ranged from noting a gender-specific preference (girls inside, boys outside) to no preference at all, from a teaching point of view. What was of interest is the notion that learners themselves tend to associate indoor activities more with learning and outdoor activities more with play. As a result, converting the indoors into an environment where learners have fun (such as indoor messy play) will allow the teacher to do more effective teaching indoors, as it is perceived by learners to be more playful – with the benefits that playful learning provide. “Playing to learn” is the essence of play pedagogy and means that placing learners in a situation or environment where they learn while playing is an effective method of teaching (Fleer, 2011:58).

### **6.8.2 Transferring international best practice to the South African context**

The participating schools tended to follow a mixture of international best practices and curricula by using portions of each and combining these into a single curriculum. While such an approach has its benefits, it is still to be seen if international experiences can be directly applied to all South African schools, and if not, the extent and nature of the adaptations required.

An aspect to keep in mind is that South African schools are embedded in a diverse community, and the learners attending the school would be representative of the community. That being said, I noted that no participant was able to offer an opinion on Te Whāriki model, which was devised to meet New Zealand's obligations to the indigenous Māori and works well for their ethnically diverse population. The reason(s) for this is difficult to explain but may be related to a Eurocentricity prevalent in our schools.

### **6.8.3 Capital and resources: Human and material**

South Africa is a country with limited resources, and the cost of any educational system is probably as important as the outcome. The cost associated with implementation of a sensory-based play pedagogy is not limited to materials and equipment only; the total investment also includes the research and development of a curriculum, the training and skilling of teachers and the sustainment of those skills.

Quantifying the total cost of ownership of a sensory-based play pedagogy would be an important input into a cost-benefit exercise. Improving the effectiveness of a curriculum would probably result in a cost saving, which would be to the benefit of the community that pays for it.

Additional study could also be done on methods to further teacher training at lower cost by for instance using shared research during workshops with various teams doing literature searches and presenting their results for discussion. It could also be beneficial to invite researchers to collaborate on workshops, whether physical or virtual.

### **6.8.4 Evaluation of the correlation between SPD and school readiness**

Sensory Processing Disorder (SPD) has gained prominence recently, which has resulted in learners with sensory processing difficulties being less able to play (Bundy, 1989:84). As the ability to play is seen as contributing to school readiness (Wild & Steeley, 2018:746), an evaluation of the correlation between SPD and school readiness is recommended.

### **6.8.5 The combination of sensory play and ordinary play**

While conducting my research, I observed that it was quite difficult to determine whether learners preferred sensory play activities or normal play activities, and their enthusiasm for both seemed equal. This led me to consider whether learners that do not have sensory processing difficulties would benefit more from a combination of both sensory play and normal play than from either one or the other. I suggest that this would be an interesting and useful subject for a separate study.

## **6.9 Contributions to the body of knowledge**

### **6.9.1 Conceptual contribution**

My study contributes practice-based information to the existing body of knowledge. While I may not have shown an incontestable general correlation between sensopathic-focussed teacher-led play pedagogy and school readiness, I am convinced that I have shown the benefit and necessity of sensory play pedagogy in the Grade R environment and the implied benefit to school readiness. Whether my findings can be generalised to the population at large is not clear, but I have shown that the conceptual underpinnings of play-based pedagogy and sensory play are valid for the sample I studied.

### **6.9.2 Contextual contribution**

Besides confirming the literature, the guidelines I developed for implementing sensory play-based programmes in section 6.3.3 provide methods and areas of interest that teachers and schools can use when implementing a sensopathic-focussed teacher-led play pedagogy curriculum. The experience of the participants and the observed methods are, in my opinion, important contributions to the field.

## **6.10 Limitations of the study**

In this section I discuss the limitations of the applicability of the results of the study, specifically in terms of the repeatability and the representativeness of the study in terms of the general South African school system.

### **6.10.1 Sample size and knowledge of participants**

The sample size used, while large enough for representative observations, was limited as a result of the number of participants as well as the number of schools I could incorporate in the

study. I therefore did not have the opportunity to observe the sensory play aspects of other curricula, such as Waldorf or High/Scope.

It must also be noted that some of the participants, while qualified in terms of my original requirements, simply did not have sufficient training and experience to fully understand the theory underpinning sensopathic-focussed teacher-led play pedagogy, and thus added fewer insights than I expected.

### **6.10.2 Homogeneity of research sites**

The research sites, while differing in the curricula used and the resources available, were all sub-urban private schools. This study did not consider public schools, either suburban or rural. As a result, the transferability of the results to all schools in the country will be limited. However, the guidelines I presented for implementation of a sensopathic-focussed teacher-led play pedagogy are not constrained by the type of school or the geographic location and will therefore be applicable to any school that implements a similar pedagogy. The results show very definitely that teachers are the most important link in the chain, as their skills, abilities and attitude make a significantly larger contribution than the curriculum or the school environment as such.

### **6.10.3 Mode of enquiry and role of the researcher**

The study was qualitative, and as noted I found that some of the participants provided feedback of lower insight than the others. A mixed methodology might provide additional insight, as the influence of the perceptions of the participants would be offset by more objective observational data.

A more participatory role by the researcher may also improve the quality of feedback from participants.

### **6.10.4 Data generation strategy**

Because I was able to react to responses from participants, I found the semi-structured interviews to be of more value than the observation sheets and reflective journals of some of the participants, again as a result of their differing levels of experience and training.

### **6.10.5 Sensory Processing Disorder diagnoses**

None of the learners that were observed during the study had been diagnosed with SPD, although some of the learners I observed exhibited sensory processing challenges; as a result, the analysis is more applicable to a general school population. If it had been possible to

compare learners with confirmed SPD diagnoses, the comparison with other learners would have been insightful.

## 6.11 Final thoughts

While some of the results I obtained may have been more noticeable in learners who do have sensory processing challenges, on balance the influence of sensopathic-focussed teacher-led play on learners seemed beneficial. I am also honest when I state that at times the distinction between a sensopathic-focussed teacher-led sensory play pedagogy and a more general play-based pedagogy was not obvious – however, the observed benefits of sensory play were never in doubt, and most participants noted that when they changed their teaching practices from the traditional to a sensory-play based approach, they observed an improvement in their learners' retention of information and sensory processing abilities. The number of teachable moments and learning opportunities created by sensory activities, especially when play was more open-ended, were noteworthy.

My journey through the research process also demonstrated to me, on a practical level, what the strengths and weaknesses of a sensopathic-focussed teacher-led sensory play pedagogy are, and did so much more clearly than the literature suggested. All theories are based on samples or case studies, while my research gave me a broader perspective on not only the individuals, but also the teaching communities that are involved. These are insights that, in my opinion, bridged the gap between paper and playground for me.

As always, the implementation of a programme depends on research, planning and, above all, on committed teachers who go above and beyond their professional responsibilities to ensure that systems and programmes are put in place and sustained. The teachers I worked with brought all their training and experience to the table and really showed me how. I have built up enormous respect for the teachers who are involved and their labour of love on behalf of their learners.

Theory and practice show that play pedagogy does not decrease teaching opportunities, but rather creates opportunities for learning in a more appealing environment, which has proved to be more conducive not only to the acquisition of new knowledge, but also to entrenching acquired skills.



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