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**THE USE OF MULTI-SENSORY METHODS IN SOME SELECTED  
GOVERNMENT PRESCHOOLS IN ADDIS ABABA**

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**The use of Multi-sensory Methods in Some Selected Preschools**  
**In Addis Ababa, Ethiopia**

This is to certify that this thesis presented by Rahel Ayele, entitled: “**The use of Multi-sensory Methods in Some Selected ECCE centers in Addis Ababa, Ethiopia**” *The case of selected Government ECCE centers in yeka, Arada and Gullele Sub-cities of Addis Ababa, Ethiopia*” and submitted in partial fulfillment of the requirement of Master of Arts in **Educational and Behavioral Studies**, complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **Abstract**

*This study examined the use of Multi-sensory Methods in Some Selected preschools in Addis Ababa. The case of selected Government preschools centers in Sub-cities of Addis Ababa, It is a descriptive survey research, which aimed at assessing the use of multisensory teaching methods in six purposively selected ECCE's in yeka, Arada and Gullele Sub cities. Data were collected using questionnaire and observation. The questioner administered to 60 teachers but only 45 Of them completed. Data were tallied and analyzed using percentages. Findings showed that, the uses of multisensory in preschools are encouraging. Although Visual stimulation and test and smell activities were list employed. This was found to be due to low budget allocated for ECCE. The academic staff, in terms of training was found to be inadequate and require continuous training. Recommendations were made towards incorporating various multi-sensory teaching methods in preschools.*

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## **Acronyms**

AAEB: Addis Ababa Education Bureau

DfES: Department for Education and Skills

ECCE Early: Childhood Care and Education

ECE: Early Childhood Education

ECD: Early Childhood Development

ESL: English as a Second Language

FDRE: Federal Democratic Republic of Ethiopia

MOE: Ministry of Education

NAEYC: National Association for the Education of Young Children

UNESCO: United Nation Educational, Scientific and Cultural Organization

UDL: universal design of learning

# Chapter One

## Introduction

### 1.1 Background of The Study

Department for Education and Skills (DfES, 2004), multisensory methods involve taking advantage of the impact of the visual, auditory, and tactile senses and awareness of body movements, or kinesthetic, to teach students. According to Al Sayyed (2013), learning styles can be primarily auditory, visual, or tactile. Students usually depend on their preferred styles of grasping and retaining information. Provide students with equal opportunity to learn through their strongest sense. Teachers should incorporate all styles into their teaching. Because teaching students via this method requires that teachers make use of a variety of equipment, they can make use of materials such as sandpits; three dimensional numbers, letters, and symbols; audio and visual representations, and or any other kind of material that supports the topic the students are learning.

Through this approach, teachers can present information in multiple ways and engage all students in the learning process. Because multisensory teaching allows teachers to present information to students using a number of different means of sensory input, this method adheres to the universal design of learning (Woyke, 2004)

Jubran (2012) conducted a study to determine the effects of using a multisensory approach to teach students English as a second language. The study's sample was comprised of 122 10th grade students divided into an experimental group that learned through a multisensory approach, and a control group that learned in more traditional ways. Both groups received eight Weeks of English language instruction, at the end of which statistically significant differences between the two groups' levels of achievement were found in favor of the experimental group, which was taught via the multisensory approach. Although these students did not have disabilities, their ESL status makes their outcomes relevant to the target group.

Prestia (2004) investigated the impact of using an approach that focused on auditory, visual, and tactile senses in order to teach mathematics to students with learning disabilities. Study participants were separated into an experimental group and a control group.

Both groups received eight weeks of mathematics instruction. Students in the experimental group were taught using a multisensory approach, while students in the control group were instructed with more traditional methods. At the end of the session, students who were taught using the multisensory approach achieved better outcomes on a post-test than students in the control group, suggesting that the multisensory approach helped students to have a better understanding of mathematics. This is an important finding given the challenges of teaching mathematics to students with disabilities.

Many studies have addressed the effectiveness of multisensory instruction as a method of intervention for students with disabilities (Ashbaugh, 2016). Standards delineated by the National Association for the Education of Young Children (NAEYC) support the facilitation of cognitive development through the provision of rich sensory experiences in early childhood classrooms. The NAEYC Accreditation Criteria for Physical Environment Standard 9.A.04 states that for all age groups (universal, infant, toddlers/twos, preschool, and kindergarten): A variety of age and developmentally appropriate materials and equipment (should be) available indoors and outdoors for children throughout the day. Specifically, sensory materials such as sand, water, play dough, paint, and blocks are listed in the criteria (NAEYC, 2006).

Furthermore, UNESCO(2013) also recommend Children with supportive and stimulating environments early in their lives are more likely to complete school, have better health outcomes, and are less likely to develop ‘anti-social’ behavior later in life.

In light of this, the constitution of the Federal Democratic Republic of Ethiopia (FDRE 1995) Article 36 deals with multisensory approach of learning. The Education and training Policy of FDRE states, “pre-school will focus on all round development of senses of child in preparation for formal schooling.”

These government documents and policy statements are encouraging steps to implement commitments made with regard to early childhood and family education. But still more effort is needed to translate policies into action. Consequently, there is a serious gap between policies, conventions and implementation of the commitments regarding education of children during their formative ages.

The essential issues that this study focus will be to assess multisensory intervention intended to understand how educators teach students in early years by using multiple senses, in the case of three preschools located in Arada sub- city, Addis Ababa.

## **1.2 STATEMENT OF THE PROBLEM**

Parents expect their children to master certain skills by the time they exit preschool. However, most teaching techniques do not incorporate all types of learners ‘which are visual, auditory, tactile and kinesthetic. Each learning type responds best to a different method of teaching. Most teaching engages either the vision or auditory system of students- use of black board and videos. Inadequate hands on school facilities; things to count, sort and classify (e.g. buttons, coins, rocks, color swatches), also things to smell and test such as cooking and baking opportunities with an adult (Piaget & Inhelder, 1969; Wadsworth, 1996). Moreover Students often depend on their preferred styles or ways of processing and retaining information. To provide equal opportunity to all students learn through their strongest modalities. Teachers should incorporate all models into their teaching (Sobe, 2004).

Past studies have shown agreement on the benefits of a multisensory approach. For example, Gaffan and Williams (1998) described how the approach helps students with disabilities to be more relaxed and improve their academic performance. Even though this study did not aim to investigate the benefits of the multisensory approach,

However the present study would provide much-needed research documenting teachers’ use of sensory experiences with young children. Very little is known about early childhood teachers’ perceptions of the importance of sensory activities or their use of sensory materials in the classroom. In addition to making a contribution to the existing literature, this study could provide important information to local practitioners; such information could in turn influence the way child care centers, family child care homes, and preschools develop and implement their curriculum, routines, and activities. By identifying areas in the classroom where sensory experiences can be explored above and beyond typical sensory activities such as sand and water play to include music, movement, creative art experiences, block play, and outdoor play, early childhood educators can enrich their classroom environments and in turn enrich the learning experiences of young children.

Furthermore, many teachers believe sensory materials are too messy, time consuming, and unproductive. Without access to sensory materials and activities, children's development is not optimally facilitated. Children who are given little opportunity to explore and experiment with their environment may fail to develop the necessary neural connections and pathways that facilitate later learning (Shonkoff & Phillips, 2000). Children who have difficulty achieving academically are at an increased risk for school dropout, gang activity, violence, depression, and drug use (National Research Council and Institute of Medicine, 2000).

Thus, early learning experiences that incorporate sensory activities are important for young children's development, and can potentially have both short- and long-term direct and indirect implications (Sobe, 2004). If early education centers to fulfill their promise, they should accommodate the above items and teaching approaches in classrooms especially in offering educational equality. Anything less than this is developmentally inappropriate, threatens to deprive the child's multi-sensory growth.

### ***1.3 Research Questions***

- How frequently do teachers provide sensory approach in their classrooms?
- What kinds of sensory materials and activities do teachers provide?
- What are teachers' perceived barriers/challenges to providing multisensory teaching?
- What are teachers' characteristics in using sensory activities?

### **1.4 Objective of the Study**

#### **1.4.1 General Objective**

The general objective of the study is to investigate the use of multisensory teaching for preschool children.

#### **1.4.2. Specific objective of the Study**

The specific objectives of the study will be the following;

- To assess teachers' perceptions of the importance of sensory experiences.
- To assess the frequency of teachers when they provide sensory approach in their classrooms.
- To observe kinds of sensory materials and activities teachers provide.
- To assess the teachers characteristics in using sensory activities.
- To put a way forward measures to be taken regarding teachers' perceived barriers/challenges to providing sensory use.

### **1.5 The Significance of the Study**

This study focused on the promotion of multisensory modality in teaching preschool children. By understanding the multisensory approach, teachers, school principals and administrations would address the needs of different learners by providing them with the equipment and opportunity to allow them to access learning using all of their senses.

It is therefore, important that the research findings can be written into the curriculum of Government schools across Addis Ababa by making recommendations that are not expensive and easy to implement. And stakeholders involved in the study area, at regional and country level to identify and grasp the general situations of multisensory approach of teaching.

### **1.6 Delimitation of the Study**

The study would more comprehensive if it includes more preschools in Addis Ababa. However, the present study will be conducted in only six preschools in sub cities; Arada, yeka and Gullele This is only done because of time constraint and out of 60 participants only 45 participants completed the questioner.

Thus another limitation of the present study is sample size, and in turn, representativeness of the sample. It is likely that schools with directors who actively support their teachers and the professional growth of their staff encouraged participation in the study.

### **1.7 Operational Definitions**

*The Use of Multisensory teaching*, which as the term implies refers to representations of material that address two or more of the five senses, and demonstrated ways it can motivate students, affect their abilities to learn, (Carbo, 2012).

**What is a multisensory method** A multisensory method, "also known as VAKT (visual-auditory-kinesthetic-tactile) implies that students learn best when information is presented in different modalities (Mercer & Mercer, 2018)"

**Multi-sensory teaching in preschools** the students can observe and learn from one another. It also uses technology to maximize success for all students. Thus, it gives all students a chance to socialize with one another and express their knowledge through engagement with and among learning communities that offer choices, incentives, and support. (Brand & Dalton 2012).

## **1.8. Organization of the Thesis**

The thesis is organized into five chapters. The first chapter would deals the introduction part which consists of the background of the study, statement of the problem, objectives of the study and others. The second chapter presents will deals the review of literature on the conceptual issues that provide a brief framework for the study. The third chapter will be devoted mainly to methodology of the study. Chapter four will deal with the presentation of results, analysis of the data gathered from the questioners and observation. Finally, conclusion and recommendations will be described in the last chapter of the study.

## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **2.1 What is multi-sensory teaching?**

Multisensory teaching is not just limited to reading and listening. Instead, it tries to use all of the senses. multisensory teaching allows teachers to present information to students using a number of different means of sensory input, this method adheres to the universal design of learning(UDL) (Metcalf, Evans, Flynn, and Williams, 2015) by providing a flexible learning environment that accommodates students' differences with regard to the ways in which they learn.

#### **2.2 Ways of applying multi-sensory methods**

##### **2.2.1 Visual Elements**

As students begin to learn new information, they can use visual supports to see how it looks by viewing pictures or videos, preferably in color. In addition, students can draw or use their own images that relate to the topic they are learning. Mount and Cavet (2011)

##### **2.2.2 Auditory Elements**

To present information auditory, teachers can read texts or questions aloud, engage students in group discussions, or the students can take turns explaining the information to each other. They may also acquire information through songs or music that relates to the topic. (Griffer, 2010).

##### **2.2.3 Kinesthetic Elements**

With these elements, students can be active and use their tactile and kinesthetic senses. For example, they may engage with information by acting out a story. Moreover, students can use their bodies to count numbers or enact sentences with peers before writing them. When engaged in this sort of learning, students may be out of their seats and involved in activities that are centered on movement.( Ayres, 2014, p.11).

## **2.3 Theoretical Framework of Effectiveness of multi-sensory Teaching methods**

Paget's constructivist theory of development postulates that children act on their environment to construct an understanding of how the world operates. The theory also emphasizes the need for children to be actively involved in constructing knowledge of their physical environment (Piaget, 2016). Children need to explore, experience, and receive feedback from their actions on objects in order to move from the sensorimotor stage to representational and formal operations. The environment is a crucial factor, as children construct knowledge by handling tangible objects and using their senses to learn through hands-on experiences (Sobe, 2010).

According to Piaget (2016), children pass through four stages of cognitive development, including the sensorimotor, preoperational, concrete operational, and formal operational stages. The sensorimotor and preoperational stages are relevant to the focus of early childhood classrooms. The concrete and formal operational stages apply to older children. The sensorimotor stage begins at birth and lasts until about age two. In this stage, children learn by reacting to what they experience through their senses of touch, taste, hearing, sight, smell, and physical activity. Piaget divided sensorimotor development into six sub-stages in which progressively more complex patterns of 6 intellectual behaviors evolve. It is in sub-stage 3-Secondary Circular Reactions (4 to 8 months) when infants actively experience the effects their behaviors have on external objects. Infants begin to link the association between behaviors and sensory consequences (Piaget & Inhelder, 2011; Wadsworth, 2016).

The second stage of cognitive development, preoperational, begins at about age two and lasts until about age seven or eight. Piaget believed that children learn best when they are actually doing the work themselves and creating their own understanding of what is going on, instead of being given explanations by adults. Children build upon their sensory experiences and begin to use symbols, language, and reflections to gain knowledge (Cohen & Kim, 2019). As children grow up, they gain more experience with direct, physical knowing, and they mature internally so that they are increasingly freed from having to carry out direct physical behavior in order to know something. They become able to produce mental images and symbols (e.g., words, mathematical figures) that represent objects and relationships (Piaget, 2016).

To further explain the roles of sensory information and reason, Piaget identified three kinds of knowledge. The three kinds of knowledge are physical, social (conventional) and logico-mathematical knowledge (Kamii & Ewing, 2015). Physical knowledge is knowledge of objects in external reality. Holidays, written and spoken languages are examples of social knowledge. Logico-mathematical knowledge consists of relationships created by each individual. It is in these relationships that knowledge is constructed. As children acquire knowledge through their senses, this knowledge is assimilated into the schemes that the child has previously constructed. Until children construct a certain level of logic at ages 4-16 years, they can base their judgment only on what they can see (Kamii & Ewing, 2015). The present study will provide information about use of activities in the classroom, which can serve as a means of facilitating children's construction of physical, social, and logico-mathematical knowledge.

Maria Montessori also believed that children learn best through sensory experiences. Montessori's period of unconscious absorbent mind and absorbent mind corresponds closely with Piaget's sensorimotor and preoperational stages of development. From birth until about three years of age, the child is in the phase of the unconscious absorbent mind, during which time the child explores the environment through the senses and through movement (Sobe, 2014). At about the age of three years, according to Montessori, the child's capacity for absorption shifts to a more conscious, purposeful type. At this point the child becomes a factual explorer, as well as a sensory explorer, noting relationships between things and making comparisons. The child begins to classify and refine sensory experiences, bringing to consciousness many impressions that were previously absorbed. In so doing, he constructs his mind until it becomes capable of "memory," the power to understand and the ability to think. This process evolves throughout the period of the "conscious absorbent mind," approximately between the ages of three and six years (Inhelder, 2011).

The Montessori learning environment for 3 to 6 year olds is generally divided into four basic areas: practical life, sensorial (materials focusing on one or more of the senses), language, and mathematics. Music, art, movement, and drama are also included in the curriculum (Inhelder, 2011). Sensorial materials are a series of sequenced exercises, aesthetically pleasing and seemingly simple in design. The children use these 8 materials to catalog and classify sensory

impressions. These activities refine and sharpen the senses and create a sensory foundation for further intellectual development. The emphasis of Montessori's and Piaget's theory on hands-on, sensory experiences as the vehicle for knowledge construction provides the theoretical foundation for the present study.

Providing sensory materials indoors as well as outdoors offers children the opportunity for hands-on, self-directed, and self-centered activity, as well as an opportunity to learn. Any material that stimulates the senses, especially the sense of touch, is considered a sensory material. Sensory materials such as play dough, shaving cream, cornmeal, and grains provide numerous occasions for exploration and experimentation.

Sensory experiences facilitate development in multiple domains. Sensory materials encourage cognitive development. As children manipulate the materials, they learn to understand concepts such as more/less, full/empty, and sink/float. Children learn math skills such as size, conservation, counting, matching, classifying, and sorting (Guha, 2012). Children reinforce and practice their large and small motor skills as well as eye hand coordination while pouring, molding, stirring, sifting, sorting, measuring, lifting and carrying sensory materials. Using descriptive words such as hard/soft, rough/smooth, liquid/solid, hot/cold to describe sensory materials helps children to expand their vocabulary.

Sensory experiences also provide children with a chance to build confidence and self-esteem as they use their decision-making skills. There is no right or wrong way to use the materials. Many children find sensory materials calming and soothing. Sensory materials can be used to help children manage feelings of anger and anxiety (Chilvers & Cole, 2016).

Much of the available literature related to sensory activities is very practical in nature, offering strategies for incorporating sensory activities into the early childhood classroom. These sources suggest that as children handle, manipulate, taste, touch, hear, and observe, they develop creative ideas and make discoveries (Krustchinsky & Weiss, 2017; Whaley, 2015; Wilcox, 2014). Sobe, 2016). suggests that when sensory choices are incorporated into the classroom activities and environment, children can choose what their bodies need in order to continue learning. For

example, adding texture to paint with oatmeal or allowing a student to stand or lie on the floor, and pairing verbal directions with visuals are sensory-specific strategies for facilitating learning.

## **2.4 The actual use of multisensory teaching and early childhood education**

Empirical research on the use of sensory activities with young children is limited. Much of the research that does exist focuses primarily on children with special needs. In short, research in the field of early childhood special education shows the benefits of providing sensory experiences to meet children's individual needs (Howe, Brittain, & McCathren, 2014; Lynch & Simpson, 2014). A study focusing on children with behavioral challenges found that an enriched sensory environment benefited the children (Chilvers & Cole, 2016). A special sensory room was filled with a variety of sensory resources for children who demonstrated feelings of anxiety or anger and needed a "special place." A mood lamp, bubble tube, fiber optic display, projector, aromatherapy, massage, and music were used to create an overall "sensory environment." A "sensory 10 record" was kept on each child visiting the sensory room. Reactions to the sensory room were positive, and the program helped many of the children improve their self-esteem and general emotional well-being (Chilvers & Cole, 2016).

As previously mentioned, research examining sensory experiences in early childhood education is sparse. Piaget's description of the sub-stages of sensorimotor development based on observations of his children remains the most detailed and comprehensive account of the nature of early play, its developmental progression, and its link to cognitive development. One study, however, is framed from a Piagetian perspective and provides support for the present project.

A study by Staley (2017) examined the effects of sensory experiences on typically-developing toddlers' knowledge of colors. Staley suggests that multisensory experiences help children to define colors, and children need these experiences to construct their own knowledge and to develop concepts of their world. Although most teachers limit experiences with color to what is visual, color can be experienced through other senses as well. By immersing children in an environment enriched with a wide variety of experiences, children can construct their own knowledge of color. Children can connect meaning to ideas of color by using their senses of smell, touch, and taste, as well as sight. Staley (2017) and a colleague worked together to demonstrate the need to immerse children in experiences of color. They worked with a class of

ten two-year-olds. The class studied one color each week, beginning with purple. Colors, scents, and flavors were matched up and presented to the children one at a time. The teachers painted colored containers and filled them with the different scents. After several colors had been learned, the children played an identification game by smelling and guessing the colors. 11 Another way that the toddlers were introduced to colors was by coordinating daily snacks with the current color being studied. The children were involved in the making of the snacks, which helped to enrich their experiences.

Other methods of immersing the students in color experiences included art, music, poetry, literature, and colored lights (Staley, 2017). Tables and rooms were decorated with coordinating colors. Because the toddlers loved to play dress up, the teacher provided color-specific outfits for an old bear. The items were changed regularly according to the specific color being explored. Other learning centers, such as a “store,” were stocked with color-specific items as well. The teachers enriched the toddlers’ understanding of color by asking the children to find items of specific colors that were in the store or hidden in other areas. To conclude the unit, the children marched through the school wearing color-specific outfits of their choice.

The project resulted in positive outcomes for children’s learning. The number of toddlers who knew all eight of the basic colors increased from four to ten (out of ten) from the beginning to the end of the project. Children used color names in conversation and could accurately identify colors by name (Staley, 2017). Additionally, parents reported satisfaction with the project and participated by providing food items and assisting with the culminating activity. Thus findings from this study support the use of multidimensional sensory activities to promote very young children’s development of basic knowledge.

In three studies conducted by O’Neill, Astington, and Flavell (2012), each study investigated young children’s understanding of the role that sensory experiences play in knowledge acquisition. Children’s understanding was assessed by their ability to state correctly whether they would need to see or to feel an object in order to determine whether it had a given visual or tactile property.

The results showed that three-, four-, and five-year-old children perform well when “seeing” is the mode of informational access, but three-year-olds do not perform well when “feeling” is the

mode of informational access. The three- and four-year-olds both performed significantly worse than the five-year-olds on all four experimental trials. They may have erred because they do not understand clearly what properties of an object are accessible through touch and what properties require seeing the object. They appeared to overestimate what could be learned from tactile experiences (O'Neill, Astington, & Flavell, 2012).

Children were asked to state which of two puppets knew that an object hidden inside a tunnel possessed a given visual or tactile property. The children were given a small introduction to the puppets (Ernie and Bert), the tunnel, and the task itself. The children were told that they were going to help the experimenter hide some toys inside the tunnel and that Ernie and Bert were going to take turns seeing or feeling what was inside. A pretest familiarized the children with the procedure of choosing one of the puppets in response to the experimenter's questions. A control task was used to assess if the children could easily distinguish between two actions of seeing or feeling what was inside the tunnel when the puppets performed them. The children, the 13 experimenter, and the puppets looked at and felt the pairs of objects until they all agreed that the two felt the same but looked different or looked the same but felt different. The puppets turned around and the child picked which object was to be placed in the tunnel. After the experimenter reinforced the properties by which the objects differed, the puppets performed the relevant actions. The children were asked to tell the experimenter which puppet--Ernie or Bert-- knew what was inside the tunnel.

The results showed that children three years of age and older performed well on primary knowledge assessment tasks (where only one of the puppets had visual or tactile access to the object hidden inside the tunnel) that involved seeing as the mode of informational access. Only children older than three years of age performed well on primary knowledge assessment tasks when feeling was the mode of informational access. On the see condition trials, four- and five-and-a-half-year-olds performed well for both primary knowledge assessment tasks and modality-specific knowledge assessment tasks (where puppets had either seen or felt the object hidden inside the tunnel). The three-year-olds performed above chance only for the primary knowledge assessment tasks. On the feel condition trials, four- and five-year-olds performed well for the primary knowledge assessment task, but at chance for the modality-specific knowledge

assessment task, and three-year-olds performed at chance for both tasks (O'Neill, Astington, & Flavell, 2012).

To state for each puppet whether he could tell, just by looking or by feeling, that the hidden object possessed a certain visual or tactile property. The two puppets, Ernie and Bert, were outfitted with either a blindfold to prevent them from looking at an object or with back pockets into which their hands could be placed to prevent them from feeling an object. Six pairs of objects were used. Three pairs of objects felt the same but looked different and three pairs looked the same but felt different. This task consisted of six trials: three see condition trials and three feel condition trials, given in random order. Sixty-seven percent of the five-year-olds and 50% of the four-year-olds passed all six trials; only 4% of the three-year-olds did so. In addition, the results of this study found that focusing the task on the sensory experiences enhanced the performance of the four and five-year-olds. The three-year-olds had difficulty with this task, even when it required only a rudimentary level of understanding (O'Neill, Astington, & Flavell, 2012).

Results of all three studies suggest that an appreciation of the different types of knowledge our senses can provide (i.e., modality-specific knowledge) develops between the ages of three and five. In the modality-specific task, children must understand which sensory experiences lead to which different types of knowledge. The level of understanding may depend on his or her experience and familiarity with exploring objects and the surrounding environment (O'Neill, Astington, & Flavell, 2012). These studies reinforce the importance of allowing young children opportunities to develop and use their senses in order to be able to distinguish the properties of objects in their environment.

Many activities typically offered indoors can be moved to the playground, where the numerous sounds, smells, sights, and feelings unique to the outdoors create a rich learning environment. Children experience sensory stimulation through access to natural play materials such as sand, water, grass, dirt, plants, and of course, fresh air (Rivkin, 2017). The outdoor environment gives children opportunities to explore, question, and develop theories about how things work.

Outdoor play also offers various opportunities for socialization with other children and with adults, supporting the development of negotiation, language, and cooperation skills.

Playing in natural environments provides opportunities for sensory experiences and motor development not available in the classroom or even on traditional playgrounds. Rivkin (2017) noted that the younger the child, the more the child learns through sensory and physical activity. The variety and richness of natural settings: the life cycle of plants, the hardness of rocks, the varieties of colors and sounds, and the wide range of permitted behaviors (shouting, running, and climbing), all contribute to physical, cognitive, and social-emotional development. Materials such as pinecones, berries, nuts, and flowers should be made available for children's pleasure and investigation. Seeing such things is only part of learning about them. Touching, tasting, smelling, and pulling objects apart are also vital processes (Rivkin). Another lasting benefit of natural environments is that children can learn to care for the environment, when provided with numerous positive outdoor experiences (Woyke, 2014).

Moving to music, dancing, playing instruments, and experimenting with materials that make sounds all foster the development of young children. "It's the doing, in addition to the listening, that offers the greatest positive benefit in all aspects of learning, especially in music" (Wilcox, 2019, p. 35). Music/movement is a powerful learning medium because it involves multiple senses: seeing, hearing, and touching. Developmentally, much is accomplished through music and its various forms: it promotes social interaction, contributes to emotional well-being, enhances physical coordination, and aids in cognitive and language development (Bredekamp & Coople, 2017).

Zachopoulou, Tsapakidou, and Derri (2014) compared the effects of a developmentally appropriate music and movement program and a developmentally appropriate physical education program on the development of jumping and dynamic balance in children ages four—six. The study consisted of an experimental and a control group. The study was conducted over a two month period with each group meeting twice a week for 35-40 minutes. The experimental group followed the music and movement program, based on rhythmic education principles of the Orff approach. A large part of the program consisted of three types of movement:

- (a) percussion movements (e.g., clapping, patting knees with both hands, tapping floor with foot, etc.);
- (b) readiness and reaction movements; and
- (c) improvisation and creative movements. The children were taught rhythm elements of tempo, intensity, and accent, using percussion instruments. The temporal rhythmic symbols taught to children, were eighth notes (two movements in one beat), quarter notes (one movement in one beat), and half notes (one movement in two beats).

The control group followed the physical education program. The content of the exercises, which focused on jumping tasks, included activities for jumping and landing, jumping for distance, jumping for height, jumping over a rope or obstacles, and jumping with a partner to mirror actions or to match actions (Zachopoulou et al., 2014). Exercises to develop balance were based on activities for balancing on different bases of support; balancing on different body parts; moving in space and stopping in balanced positions; balancing while walking in various body positions; moving while using different parts of the feet to touch the floor; and balancing while walking or running between or over cones/forms of equipment.

Results of the study showed that the experimental group improved significantly in both jumping and dynamic balance on the post-test measure compared to the control group. Through practice with certain fundamental movements, children begin to understand the structural elements of rhythm and are able to express this understanding through coordinated movements because moving to rhythm is an essential element of all coordinated movements (Zachopoulou, et al., 2014). This study illustrates the importance of music in fostering physical development.

Music also enhances math skills. Shilling (2012) explored strategies for helping young children explore mathematical concepts through experiences with beat, meter, duration of sounds, rhythmic patterns, and tempo. Bouncing rhymes provide young children with their first experiences with feeling subdivided beats, accompanied by the rhythmic patterns of the language. Chants were used to introduce rhythmic patterning by matching a set of rhythms to a set of actions. Nursery rhymes that have a clear steady beat pattern were used to reinforce the concept. Tempo was explored through the use of scarves. The children appeared to be fascinated

by the way the scarf seems to float in the air when they move it rapidly or slowly, while matching their own body movement to the speed of the scarf. Teachers can capitalize on their interest in exploring temporal change by providing a variety of fast and slow music. Embedding mathematics in music activities provides a way for children to develop their logical/mathematical and musical/rhythmic intelligences (Shilling).

Wiggins (2017) discussed how meaningful music activities can be used in early childhood classrooms to enhance literacy and language development. She stresses that the ability to listen is keenly developed in musical settings. A key to successful language reading is the development of attentive listening. As children participate in music integrated literacy lessons, which include reading stories, print symbols, singing, pretending to be characters of the story and playing musical instruments, their literacy skills are enhanced.

Music stimulates the senses and involves children at many levels, reaching them aesthetically and appealing to their emotions (Nichols & Honig, 2017). Young children can learn about their own feelings and moods through listening to music and singing songs. Children can become more in touch with their own feelings, as well as the feelings of others, through the harmonies found in music. Harmonies reflect how chords are put together and how they progress. It is this progression that can influence our moods. Music can sensitize children to moods as well as help children express their moods and feelings. As children listen to music they can express whether the composer or singer was feeling sad, joyous, perky, shy, dreamy, or angry (Nichols & Honig).

Movement is a sensory experience. Visual, auditory and kinesthetic senses are key sensations in movement through dance. These sensory skills facilitate awareness of response and reactivity to different conditions for the participant. Movement through dance facilitates motor skills. Participating in a group format also provides opportunities for social modeling and repetitive practice, promoting motor planning and sequencing skills. Dance techniques challenge children with new motor plans and sequences, increasing their repertoire of movements and facilitating developmental motor skills (Lorenzo-Lasa, Ideishi, & Ideishi, 2017). Dance techniques also help children become more aware of their physical presence, spatial relationships, breathing, and timing and rhythm in movement (Sousa, 2016). It is, therefore, important for early childhood

teachers to provide an environment rich with music and movement to allow for the exploration of sounds, musical instruments, singing, and dance.

For very young children, art is a sensory exploration activity. Open-ended materials such as paint, crayons, markers, scissors, glue, play dough, and an assortment of paper provide opportunities where the “process” is more important than the “product.” How children use the materials is much more important than what he/she makes with them. Children can explore many art materials directly with their hands. Tree branches, shells, sponges, found objects or simple kitchen tools can easily become art accessories. Art activities foster children’s motor, cognitive and social development.

Making art helps children develop eye-hand coordination (Koster, 2017). As children decide how to make parts fit together into a whole, where to place objects, and what details to include, they learn to coordinate what they see with the movements of their hands and fingers. This eye-hand coordination is essential for many activities, including forming letters and spacing words in formal writing.

Art experiences also aide in the development of children’s formation of self-identity. Ahn and Filipenko (2018) documented six kindergartners’ descriptive narratives of their drawings, paintings, and three-dimensional objects. Videotapes and audiotapes of the children’s narrative talk were also collected. The narratives reflected the ways in which these children constructed meaning about their world and their place in it. Narrative is an essential form through which children describe their own experiences and communicate their views of the world. The narratives created by these children revealed the self-identity forming process. Teachers in a developmentally appropriate classroom must recognize that children express their ideas and feelings through art. As such, teachers should make an assortment of art materials accessible daily to young children to help meet the needs of the whole child (Bredenkamp & Coople, 2017).

Sousa (2016) suggests that schools that integrate the arts with subjects in the core curriculum are more effective than stand-alone arts programs. In schools where arts were integrated into the core curriculum, students were found to have a greater emotional investment in their classes; students worked more diligently and learned from each other; and cooperative learning groups

turned classrooms into learning communities. Art and music teachers collaborated more and became the center of multi-class projects. The curriculum became more authentic, hands-on, and project-based as the teachers' expectations for their students rose. The arts play an important role in human development, enhancing the growth of cognitive, emotional, and psychomotor pathways in the brain.

Danko-McGhee and Slutsky (2017) focused on the professional development of early childhood and art education teachers. University students explored the many opportunities and ways of using art experiences to help students develop problem solving, visual perception/discrimination, critical thinking and social skills. The “cloud project” was used to facilitate the learning experience. The cloud project incorporated two components: a class discussion about clouds and a hands-on experience. First, the students discussed clouds and weather-related conditions. Stories about clouds were read, such as *It Looked like Spilt Milk* by Charles Shaw. Various art reproductions that included painting of clouds and books about clouds were also utilized. Then, the students explored ways of making their own clouds. Students were provided a variety of materials such as plastic bags, foam paint, an assortment of liquid watercolors, helium, and colored transparent and semi-transparent materials such as cellophane, feathers, and tissue paper. After choosing materials and cloud type they wanted to make (i.e. cumulus, stratus, cirrus, and nimbus clouds), the students made their cloud float by adding helium gas (Danko-McGhee & Slutsky, 2017).

The students made several key decisions during their cloud-making process involving collaborative social skills, language development, and critical thinking, creativity, and science concepts. After the university students completed their projects, children ages two—eight were invited into the classroom to help the university students implement the “cloud project.” The universities students worked with the children to identify their interests and helped them explore those interests through art experiences (DankoMcGhee & Slutsky, 2017). The cloud project enabled both the university students and children to construct their own ideas and use materials that are meaningful to them in their pursuit and construction of knowledge.

Research on the topic of sensory activities in the early childhood classroom is clearly narrow in scope. The limited research that exists suggests that sensory experiences are important for

children's development, thus the topic is a salient one for further study. A critical factor in providing sensory experiences to young children is the teacher. The role of the teacher, along with teacher characteristics, beliefs, and practices will be discussed next.

Early childhood teachers and caregivers who embrace developmentally appropriate practices (DAP) create learning environments filled with hands-on, concrete materials that encourage exploration, discovery, manipulation, and active engagement of children. Children in developmentally appropriate learning environments are active constructors of their own understanding, who benefit from initiating and regulating their own learning activities and interacting with peers. Therefore, teachers should strive to achieve an optimal balance between children's self-initiated learning and adult guidance or support. Teachers must learn to follow the lead of the children and allow them to have some freedom to direct where the project or the experience may need to go next. Teachers can build on a child's interest by providing children with inviting props, asking appropriate questions, and scheduling ample time for children to work through their play ideas (Bredekamp & Copple, 2017).

## **2.5 What are the challenges of Multisensory teaching teachings?**

Young children need exposure to a wide variety of learning experiences, including sensory experiences. Very little is known about how frequently early childhood teachers provide such experiences for young children. In reality, sensory experiences can present unique challenges for teachers. For example, sensory materials such as sand, water, and chalk are "messy"; musical instruments are "noisy"; and cooking can be "dangerous." However, early childhood educators are encouraged not to let these challenges become barriers, as avoiding experiences because they take time, are too messy, or require supervision means not providing strong learning opportunities for young children (Bredekamp & Copple, 2017). To date, little if any research exists pertaining to teachers' perceived barriers to offering sensory activities in the classroom.

**Teacher Beliefs and Practices** Teacher practices appear to be deeply embedded within value and belief systems that are rooted in ethnicity, community, and social class (Shonkoff & Philips, 2010). Beliefs are formed from personal experiences, education, and values. Teachers' beliefs are often implicit and unarticulated, yet they influence teachers' perceptions, judgments, and

decisions, and direct teachers to act in certain ways (Vartuli, 2015). Practices are the particular strategies that the teacher intends to and actually uses to enhance children's development. Previous research indicates that teachers' practices are associated with their beliefs (Buchanan, Burts, Bidner, White, & Charlesworth, 2018; Maxwell, McWilliam, Hemmeter, Ault, & Schuster, 2011; McMullen, 2019; Stipek & Byler, 2017).

There are several characteristics that may influence whether or not teachers use developmentally appropriate practices, including level of education and years of experience. The child care literature suggests that teachers with more education are more likely to implement developmentally appropriate practice (Cassidy, Buell, Pugh-Hoese, & Russell, 2015). Snider and Fu (2010) found that teachers in licensed centers with academic degrees in child development or early childhood education scored significantly higher on developmentally appropriate practice measures than teachers with other academic degrees. Teachers with degrees in child development/early childhood responded in a significantly more developmentally appropriate manner when asked to rate audio taped vignettes of teacher-child interactions as being appropriate or inappropriate when compared with teachers with academic degrees in other fields of study. Cassidy et al. (2015) found that teachers who completed at least 12 to 20 credit hours of community coursework demonstrated significantly more developmentally appropriate beliefs and practices compared to a group of teachers who did not attend such college classes.

The school age literature has not revealed a relationship between level of education and implementation of developmentally appropriate practices (Buchanan et al., 2018). Vartuli (2019) studied practices of Head Start, kindergarten, first-, second-, and third-grade teachers and found that teachers with more years of teaching experience and higher educational levels were not found to use more developmentally appropriate practices. However, higher education levels do not guarantee that coursework covered developmentally appropriate practices. Teachers with less teaching experience were observed to use more developmentally appropriate practices. An additional finding that emerged from the literature was that as grade level increased, the level of self-reported developmentally appropriate beliefs and practice decreased (Buchanan et al., 2018; Vartuli, 2019).

## **2.6 Teachers' awareness of multi-sensory method**

Existing research supports the idea that teachers' beliefs influence their practice, and that practices are related to certain teacher characteristics. However, no research exists examining how teachers' awareness of the importance of sensory experiences are linked to their use of sensory activities in the classroom. Furthermore, it is unclear how teacher characteristics such as level of education and years of experience are related to beliefs about sensory activities. Based on previous research, it might be hypothesized that the higher the level of education of the teacher, the more frequently they provide sensory experiences in their classroom. One could also hypothesize that teachers who hold degrees in early childhood or child development are more likely to use sensory experiences on a daily basis when compared to teachers with degrees in other areas. (Slutsky, 2017)

## **Chapter Three**

### **Research Methods**

This chapter describes the research design, sources of data, characteristics of the study population, sample and sampling techniques and statistical tools used in the study. It explains the type of data used and investigates the use of multi-sensory teaching methods in some selected ‘government ECCE centers in Addis Ababa. Thus, throughout the period of the study the researcher observed a total of 24 sessions and 6 sections. The researcher enters each section twice in different times. The maximum observation with in a day was 2 and the minimum was one. The observation checklist had 13 points to be observed. Here is the summary of the classroom observation.

The study was conducted in Arada , Gulele, Yeka sub cities.

#### **3.1 *Research Site***

The study was conducted on four schools which are Bhere Ethiopia, Meskerm 2, ( Arada sub city) Negat Kokeb, Miss Ford(Yeka sub city)Yekatit 12, Misrak Chora (Gulele sub city) preschools in Addis Ababa. The main reason for selecting these schools for the study the researcher was conducted a study in these schools previously and had good communication with most of the school community. Hence, the researcher believed that adequate information could be easily found out.

#### **3.2 *Study Population***

The study was conducted in Addis Ababa; the main reason conducting this study is to add a study document on multisensory teachings: According to the Education Statistics Annual Abstract report (2018/19), access to preschool has gone up from 5.3% in 2018to 26.1% in 2019 in Addis Ababa region. The Annual Abstract states 94% of the enrolment involves non-government organization. Moreover to minimize expenses like allowance and transportation fees.

**Table1. Number of ECCE centers in Addis Ababa**

| Ser. no      | Sub city            | No.of ECCE Centers |          |            |           |              |
|--------------|---------------------|--------------------|----------|------------|-----------|--------------|
|              |                     | Gov't              | public   | private    | Others    | total        |
| 1            | Addis Ketema        | 16                 | -        | 20         | 4         | 40           |
| 2            | Arada               | 15                 | 1        | 22         | 5         | 43           |
| 3            | Kolfe Keranio       | 14                 | 1        | 152        | 10        | 177          |
| 4            | Kirkos              | 17                 | -        | 23         | 3         | 43           |
| 5            | Gullele             | 18                 | 0        | 37         | 3         | 58           |
| 6            | Lideta              | 11                 | 3        | 127        | 2         | 143          |
| 7            | Bole                | 19                 | -        | 119        | 1         | 139          |
| 8            | Nefas Silk<br>Lafto | 20                 | 1        | 178        | 9         | 208          |
| 9            | Akaki Kaliti        | 25                 | 1        | 100        | 5         | 131          |
| 10           | Yeka                | 28                 | 0        | 123        | 3         | 154          |
| <b>Total</b> |                     | <b>183</b>         | <b>7</b> | <b>809</b> | <b>41</b> | <b>1,040</b> |

**Source:** Addis Ababa Education Bureau 2019

### 3.4 Sample Size and Sampling Techniques

As explained earlier preschool teachers are the participants of this study. From (yeka28) (Arada15) (gulele18) total of 61 preschools found in these three sub cities, six sample preschools were taken. From the total of 119 preschool teachers 60 teachers were selected. In the case of selecting teachers, schools purposive sampling was used, as they are role model schools so these schools are better equipped than other government schools plus they get supported by NGOS who provide them with different kinds of school supplies. (Audio books playground equipment like swings, slides and monkey bar) The study was conducted at Arada (Meskerm 2 and Bihere Ethiopia), Gulele (Yekatit 12 and Misrak Chora), Yeka ( Miss ford and Diel Betigel) When selecting three sub cities from ten sub cities found in Addis Ababa, purposive sampling is used. As those sub cities have role model schools, according to MOE 2019 report: annual statistics of current schools, teachers and student number in Addis Ababa. As shown in question 1, Age of participants was responded as 11% (20-25), 33 % ( 26-30), 26 % ( 31-35), 15 % ( 36-40), 13% are 40 and above.

All of participants in the study were women (100%). No men found in these preschools. Marital status of participants was reported as 38% Married or single with partner, 33% single (never married), and 28% single (separated, divorced).

The levels of education of child care teachers were noted with the largest number of teachers (44%) having Certification in Early Childhood Education, while 12% reported having diplomas and 13% completing Degree and above

Teaching experience the highest 21 (24.4%) then, 11 years (26%) 15.5%, the least 6-10(13.3%), (Question#7) For the number of children in their class this year responded all more than 36 averages of 50 /class

(Question#8) When they been asked if they attended any workshops about sensory development 100% replayed yes.

### ***3.5. Instruments***

The questionnaire was designed to gather information about sensory use in preschools (see Appendix A). The questionnaire tapped teachers' use of sensory materials (25 items), perceived importance of sensory experiences (7 items), and barriers to using sensory activities in the classroom (14 items). Demographic information about teachers was also gathered, including age, gender, education, certification, teaching experience.

**Questionnaire:** used to investigate the use of multi-sensory teaching methods in preschool setting in Addis Ababa. Questionnaires were developed to answer the research the **questions**. The contents of the questionnaire included: background data about teachers and the use and availability of multisensory teaching materials, training experiences particularly in using multisensory teaching methods, and problems encountered and solutions.

**Observation** The classroom observation was held in order to observe the use of multi-sensory teaching methods in selected preschools in Addis Ababa. This data gathering instrument helped the researcher to identify the actual use of multi-sensory teaching methods and difficulties the target face. Thus, throughout the period of the study the researcher observed a total of 24 sessions and 6 sections .The researcher enters each section twice in different times. The maximum observation with in a day was 3 and the minimum was one.

### **3.5.1 Data Collection Procedure**

Participation in the research was voluntary. The teachers were asked to complete the questionnaire. The researcher distributed the questionnaires to the teachers, along with a permission letter from Addis Ababa university (see Appendix A). Completed questionnaires were returned.

Data sources would include observations of six different classrooms. While observing the teachers and students in their classroom environments the researcher recorded the observations on a data collection sheet. The researcher focused on types of sensory materials or methods being used, the classroom arrangement student's understandings when they thought with multi-sensory teaching approach and the teachers' explanations of the lesson's materials or topics. Finally, the researcher try to understand whether the teachers thought that the multisensory method helped them better deliver information to their students and in what ways

### **3.6 Method of data Analysis**

The researcher first read through all the gathered data carefully and got the idea about the various questioners answers and observations were selected and identified as ways of multi-sensory teaching approach in preschool. Then the researcher grouped themes that relate to each other and minimized the categories and make the grouping simple. Finally the researcher brought together the data, belonging to each category in one group then, start the analysis.

The data from classroom observations were analyzed qualitatively. On the other hand, the data gathered using questionnaires were tailed tabulated and analyzed using percentage.

## **Chapter Four**

### **Data Presentation and Discussion**

#### **4.1 Introduction**

In this section the results (findings) of the general and specific research objectives are discussed. Accordingly, results and discussions of the classroom observation and questionnaire are presented consecutively.

#### **4.2 Results and discussions of the classroom observation**

The classroom observation was held in order to observe the use of multi-sensory teaching methods. This data gathering instrument helped the researcher to identify the actual use of multi-sensory teachings in some preschools. The size of the classroom seemed not enough for average of 50 children per class. The classroom was so crowded for the teacher as well as for the students to move around, to play or to explore teaching aids around the class room.

The teachers mostly focused on visual and auditory experiences, while teaching academic skills. For instance, a number of measures were not carried out in order to engage students' senses. Students sat in traditional chairs, and they were not able to move around, sit on the ground, and walk while learning.

The lesson began with a review of the prior day's lesson; this was involved the use of pencil, exercise book, and color pencils. Then, the teacher introduced the new letter and asked to give her words that have same initials to the new word. After the teacher gave copied pictures to sort

out only the pictures with same initials to the new word to color, cut out and stick them in their exercise books. In short, only the teaching aid cards on the wall supported visual, verbal, and auditory learners. Seeing the word and corresponding image on the paper, completing the movements, and reading the words, the students practiced writing the name of the pictures on their exercise books using a pencil. Also the students run the index finger the new word on a sand letter, providing tactile stimulation. Then they sang Alphabet songs and asked to write A to Z. Then, the students counted the letters orally, during this activity the students were sitting and did not explore any other scene other than auditory

In most observations, the teacher writes words, letters or numbers and ask the students to copy what is on the board in their books finally the teacher asks the students one by one to come out and read loud with the rest of the class. The students usually asked to repeat after each student who is chosen. Usually was boring for most of the students in class. Teachers focused primarily on visual and auditory senses while teaching academic skills.

### ***4.3. Data Presentation and Interpretation of the Questionnaire***

The second tool used in this study was questionnaire for teachers. The main purpose of the questionnaire was to gather information on the use of multi-sensory teaching methods and challenges they face in the school while teaching in preschools. This tool will also help to back up the data gained through observation. It contains closed ended questions. In this section the researcher analyzed the closed ended questions.

#### **Part I. General Teachers Background Information**

Table 2

| No |     | 20-25        | 26-30         | 31-35                  | 36-40        | 40 and above      |
|----|-----|--------------|---------------|------------------------|--------------|-------------------|
| 1  | Age | 5<br>(11.1%) | 15<br>(33.3%) | 12<br>(26.6%)          | 7<br>(15.5%) | 6<br>(13.3%)      |
|    | sex |              |               | Female<br>45<br>(100%) |              | male<br>0<br>(0%) |

|   |                           |   |               |                                |               |               |
|---|---------------------------|---|---------------|--------------------------------|---------------|---------------|
| 3 |                           | Married or<br>Single with<br>partner                | Single        | Single (separated or divorced) |               |               |
|   | Marital status            | 17<br>(37.7%)                                       | 15<br>(33.3%) | <b>13</b><br>(28.8%)           |               |               |
| 4 |                           | certification in<br>Early<br>Childhood<br>Education | diplomas      | Degree and above               |               |               |
|   | Educational<br>Background | 20<br>(44.4%)                                       | 12<br>(26.6%) | <b>13</b><br>(28.8%)           |               |               |
|   |                           |   | 0-5           | 6-10                           | 10-1          | 16 and above  |
|   | Teaching experience       |   | 7<br>(15.5%)  | 6<br>(13.3%)                   | 11<br>(26.6%) | 21<br>(24.4%) |
|   |                           |   | 4-5           | 5-6                            | 6 and above   |               |
|   | Classroom age range       |   | 12<br>(26.6%) | 13<br>(28.8%)                  | 20<br>(44.4%) |               |

*\*Note: The number in the bracket shows the percentage and the one on top indicates the frequency of the response.*

## **Part II: Teachers use of sensory methods in their classrooms**

**Underneath each item listed below, tick the answer that best describes how often you Provide those materials/activities to children in your classroom.**

**Table 3**

| S.No | Use of Sensory Methods In Classroom   | Never 1-2 x/ a year n (%) |       | 1-2 x/a month n (%) |      | Once a week n (%) |      | Several times/weekly/ Daily n (%) |      |
|------|---|---------------------------|-------|---------------------|------|-------------------|------|-----------------------------------|------|
|      |   | n                         | (%)   | n                   | (%)  | n                 | (%)  | n                                 | (%)  |
| 1    | Water play  | 17                        | 37.7  | 23                  | 51.1 | 5                 | 11.1 | -                                 | -    |
| 2    | Bubbles   | 33                        | 73.3  | 12                  | 26.6 | -                 | -    | -                                 | -    |
| 3    | Sand  | 5                         | 11.1  | 10                  | 22.2 | 5                 | 11.1 | 15                                | 33.3 |
| 4    | Food in sensory table (e.g., cornmeal, sand, flour, beans, rice)            | 16                        | 35.5  | 9                   | 20.0 | 2                 | 4.4  | 18                                | 40.0 |
| 5    | Food in art (e.g. beans, rice, salt)  | 1                         | 2.2   | 7                   | 15.6 | 5                 | 11.1 | 31                                | 68.9 |
| 6    | Play dough/Clay/Bread dough   | 17                        | 37.78 | 14                  | 31.1 | 6                 | 13.3 | 8                                 | 17.8 |
| 7    | Paint (e.g., finger-painting, sponge painting, etc.)                        | 19                        | 42.22 | 8                   | 17.8 | 7                 | 15.6 | 10                                | 22.2 |
| 8    | Chalk   | -                         | -     | 5                   | 11.1 | 5                 | 11.1 | 35                                | 77.8 |
| 9    | Color mixing  | 29                        | 64.4  | 6                   | 13.3 | 10                | 22.2 | -                                 | -    |
| 10   | Fine motor tools (e.g., scissors, crayons, colored pencils)                 | 6                         | 13.33 | 8                   | 17.8 | 9                 | 20.0 | 22                                | 48.9 |
| 11   | Smell jars  | 10                        | 22.2  | 21                  | 46.7 | 6                 | 13.3 | 8                                 | 17.8 |
| 12   | Tasting   | 26                        | 57.78 | 9                   | 20.0 | 3                 | 6.7  | 7                                 | 15.6 |
| 13   | Distinguishing sounds (e.g., sound cans)                                    | 18                        | 40.00 | 9                   | 20.0 | 20                | 44.4 | 8                                 | 17.8 |
| 14   | Distinguishing materials/objects/textures in a bag (e.g., "Feely bags")     | 24                        | 53.33 | 14                  | 31.1 | 7                 | 15.6 | 0                                 | 0.0  |
| 15   | Visual displays (e.g., children's artwork, art, photographs, picture books) | 9                         | 20.00 | 19                  | 42.2 | 8                 | 17.8 | 11                                | 24.4 |
| 16   | Listening to music  | -                         | -     | 6                   | 13.3 | 8                 | 17.8 | 31                                | 68.9 |
| 17   | Singing   | -                         | -     | -                   | -    | 10                | 22.2 | 35                                | 75.5 |
| 18   | Musical/Rhythm instruments  | -                         | -     | 13                  | 28.9 | 11                | 24.4 | 21                                | 46.7 |
| 19   | Soft lighting   | -                         | -     | 13                  | 28.9 | 11                | 24.4 | 21                                | 46.7 |
| 20   | Movement (e.g., dance)  | 3                         | 6.6   | 7                   | 15.6 | 10                | 22.2 | 25                                | 55.6 |
| 21   | Soft materials (e.g., pillows, stuffed                                      | 2                         | 4.4   | 9                   | 20.0 | 16                | 35.6 | 18                                | 40.0 |

|    |  |   |      |   |      |    |      |    |      |
|----|--|---|------|---|------|----|------|----|------|
|    | animals, soft blocks,)                           |   |      |   |      |    |      |    |      |
| 22 | Textured manipulative and materials (sandpaper)  | 6 | 13.3 | 8 | 17.8 | 9  | 20.0 | 22 | 48.9 |
| 23 | Gross motor activities (e.g., push, pull, climb) | - | -    | 5 | 11.1 | 8  | 17.8 | 32 | 71.1 |
| 24 | Nature experiences                               | 4 | 8.8  | 6 | 13.3 | 10 | 22.2 | 25 | 55.6 |

\* 0 = Never 1 = 1-2x/year 2 = 1-2x/month 3 = Once a week 4 = Several times/week 5 = Daily

Sensory experiences that teachers reported providing most frequently included: listening to music (68% daily), chalk (78% daily), singing (76% daily), Food in art (69% daily) and gross motor activities (71% daily). Other activities were used much less frequently, including: Bubbles (73% never), Color mixing (64% never), tasting (57% never) and Distinguishing materials (53% never). Participants were asked to write in (question #25) other sensory experiences that they provide in their classrooms. Responses included: sensory bottles, play dough, and clay making.

### Part III. Teachers' Perceptions of the Importance of sensory Use/ Experiences for teachers

Thick the answer that best reflects your response to the following questions:

**Table 4**

| No | Importance of sensory use/experience through:   | Very Important<br>n (%) | Somewhat Important<br>n (%) |
|----|---|-------------------------|-----------------------------|
| 1  | sensory table<br>Activities? (e.g., sand, water)  | 36(80)                  | 9(20)                       |
| 2  | Outdoor play activities?  | 40( 90)                 | 5( 11)                      |
| 3  | Music & movement?   | 42( 95)                 | 3( 7)                       |
| 4  | Art materials and activities?   | 43( 96)                 | 2( 4)                       |
| 5  | Taste/smell activities?   | 13( 35)                 | 30 (66)                     |
| 6  | Visual stimulation?   | 41 (94)                 | 4( 8)                       |
| 7  | Activities that help children distinguish differences? (e.g., distinguishing sounds, temperature, textures) | 33( 75)                 | 12 (26)                     |

Teachers' Perceptions of the Importance of Sensory Experiences

Participants were asked to respond to the seven questions regarding how important it is for teachers to provide sensory experiences on a scale from “Very important to Unimportant”. Participants in the study overwhelmingly reported that in general, it is “very important” to provide sensory experiences and activities to young children. Only 4% reported it to be “somewhat important”. When asked about individual importance of subgroups of sensory experiences and activities, the majority of participants stated that they viewed the areas of art materials and activities (96%), Music & movement (95%) and Visual stimulation (94%) as “very important”.

**IV. Teachers Perceived *Barriers* Barriers/challenges to providing methods Use Experiences**  
**Thick the answer that best describes how much each of the following items is a barrier to**  
**Providing sensory materials and activities in your classroom:**

Table 5

| No | Barrier                            | Not at all |       | Somewhat |       | Very Much |       |
|----|------------------------------------|------------|-------|----------|-------|-----------|-------|
|    |                                    | n (%)      |       | n (%)    |       | n (%)     |       |
| 1  | Administrator(s)                   | 38         | 84.44 | 4        | 8.9   | 3         | 6.67  |
| 2  | School policy                      | 4          | 8.9   | 12       | 26.7  | 30        | 66.67 |
| 3  | Hygiene (e.g., cleanliness issues) | 22         | 48.89 | 15       | 33.3  | 8         | 17.78 |
| 4  | Health and safety concerns         | 25         | 55.56 | 18       | 40.0  | 2         | 4.44  |
| 5  | Money (e.g., purchasing materials) | 1          | 2.22  | 5        | 11.11 | 39        | 86.66 |
| 6  | Upkeep of materials                | 13         | 28.89 | 12       | 26.7  | 22        | 48.89 |
| 7  | Lack of equipment                  | 2          | 6.67  | 9        | 17.77 | 34        | 75.55 |
| 8  | Time constraints                   | 5          | 11.11 | 12       | 26.7  | 28        | 62.22 |
| 9  | Space constraints                  | 9          | 20.00 | 16       | 35.6  | 30        | 66.67 |
| 10 | Personnel constraints              | 1          | 2.2   | 2        | 4.4   | 42        | 93.33 |
| 11 | Parent opposition                  | 31         | 68.88 | 9        | 20.00 | 5         | 11.11 |
| 12 | Cultural beliefs                   | 24         | 53.33 | 13       | 28.89 | 8         | 17.78 |
| 13 | Personal beliefs/preferences       | 23         | 51.11 | 15       | 33.3  | 7         | 15.56 |
| 14 | Curriculum demands                 | 6          | 13.3  | 7        | 15.56 | 32        | 71.11 |

### *Teachers' Perceived Barriers to Providing Sensory Experiences*

Participants were asked to rate identified barriers to providing sensory experiences in the classroom (Not At All to Very Much). The strongest barriers to providing sensory activities were: Health and safety concerns (40% somewhat), Hygiene (33% somewhat), money (86% very much, 11% somewhat), Lack of equipment (76% very much) and Personnel constraints (93% very much). In general, teachers reported that Participants were also asked to list (question #15) any other barriers they faced in using sensory materials and activities in the classroom. Several teachers identified child behaviors such as hyper activity, and negative behaviors like throwing and breaking, and children putting things in their mouths as barriers. Another teacher stated that getting other teachers interested in using sensory materials was a barrier. Finally, two teachers commented on the fact that they were the only teacher in the classroom and such activities usually leave a mess that would require help cleaning up.

Further research into sensory experiences may also aid teachers in addressing early learning standards and observing children's progress in many areas of development. Sensory activities and materials can be used as a vital tool in facilitating academic assessment and linking such activities to developmental domains. As accountability through assessment at younger and younger ages moves closer, it becomes increasingly important to identify effective ways to assess children's growth and development over time, in their natural environment. By incorporating uses of sensory activities and materials, preschool educators can enrich their classroom environments and in turn the learning experiences of young children.

## CHAPTER FIVE

### 5. DISCUSSION

The study was to provide much-needed research documenting teachers' use of sensory experiences with young children. Until recently, little was known about teachers' perceptions of the importance of sensory activities or their use of sensory materials in the classroom. Existing research supports the idea that teachers' perceptions influence their practice. The majority of teachers in the study reported that it is "very important" to provide sensory experiences and activities to young children. It is also interesting to note that most of the teachers reported attending workshops/trainings about using sensory activities in the classroom. Yet, after examining frequency of use of sensory experiences and activities in the classroom, teachers reported that they were not providing a variety of sensory experiences in the classroom. Experiences provided by the majority of teachers tend to be limited to the areas of music and movement, art materials and activities, distinguishing differences, and outdoor play activities. Areas least utilized were visual stimulation, sensory table activities, and taste/smell activities. money, time constraints, and health and safety concerns as barriers to providing sensory experiences, thus potentially impacting their practice. The study explored how frequently teachers provide sensory experiences in their classrooms and what kinds of sensory experiences and materials they provide. In standards affirmed by the ministry of education for Young Children, water, play dough, paint, and blocks are listed as sensory materials that should be available indoors and outdoors for children throughout the day. Participants reported that sand, water, and paint were offered one to two times per month. Play dough was most likely to be offered daily. This is disappointing in that the data suggests that early childhood teachers continue to struggle to implement standards and guidelines on a daily basis. This translates into lost opportunities to provide hands-on, active learning experiences, where children actively construct physical, social, and logico-mathematical knowledge, as suggested by Kamii and Ewing (1996).

The current study also provided valuable documentation of teachers' perceived challenges to providing sensory experiences. Two challenges to providing sensory experiences that were identified by teachers as "very much" a barrier included health/safety concerns and hygiene. Health/safety concerns and hygiene can be addressed through training, discussion of supervision,

and proper hand washing to limit the spread of disease. Time constraints were reported to be “somewhat” of a barrier by a large number of teachers. Classroom schedules and routines must be adjusted to allow children to explore the learning environment uninterrupted. Contrary to previous research (Buchanan et al., 1998; Stipek & Byler, 1997), administration and school policy were not considered barriers to providing sensory experiences by most of the participants in the current study.

*Relationships among Teacher Characteristics and Use of Sensory Experiences* Finally, the study examined: “How are teacher characteristics and use of sensory activities related?” Although there was no relationship between years of teaching experience and use of sensory experiences, there was a difference in teachers’ use of taste/smell activities by teachers’ level of education. Specifically, teachers with a two year degree were more likely to use taste/smell activities than teachers with a graduate degree. Existing research (Cassidy et al., 1995) suggests that teachers with more education in Early Childhood/Child Development are more likely to use developmentally appropriate practices, such as providing sensory experiences. Differences by level of education may be accounted for in that teachers with graduate degrees listed deaf education, elementary education, and an unspecified education as their areas of stud furthermore, teachers reported very few barriers to providing sensory experiences and activities. Therefore, it is perplexing as to why teachers are not providing various sensory experiences when they regard them as important and do not feel there are strong barriers to providing activities. This leads one to speculate that perhaps the content of training/workshops may not be adequate to train teachers in classroom management and implementation of various sensory experiences, without follow-up mentoring. Also, high teacher-child ratios may impede the provision of sensory-rich experiences.

# Chapter Six

## 6.1 Summery

The majority of teachers in the study reported that it is “very important” to provide sensory experiences and activities to young children.

Participants reported that sand, water, and paint were offered one to two times per month. Play dough was most likely to be offered daily. The data suggests that early childhood teachers continue to struggle to implement standards on a daily basis.

Frequency of use of sensory experiences and activities in the classroom, teachers reported that they were not providing a variety of sensory experiences in the classroom. Experiences provided by the majority of teachers tend to be limited to the areas of music and movement, art materials and activities, distinguishing differences, and outdoor play activities perceived barriers/challenges to providing sensory experiences. Two challenges to providing sensory experiences that were identified by teachers as “very much” a barrier included money, personal constraint and lack of equipment. Although there was no relationship between years of teaching experience and use of sensory experiences, there was a difference in teachers’ use of taste/smell activities by teachers’ level of education.

## 6.2 Conclusions

The main purpose of this study was to explore the use of Multi-sensory teaching Methods in Some Selected preschools centers *in yeka, Arada and Gullele Sub-cites*. And the following basic questions were raised and answered

- What are teachers’ perceptions of the importance of sensory experiences?
- How frequently do teachers provide sensory approach in their classrooms?
- What kinds of sensory materials and activities do teachers provide?
- What are teachers’ perceived barriers/challenges to providing multisensory teaching?
- What are teachers’ characteristics in using sensory activities?

Based on the findings of the study, the following conclusions have been drawn in line with each of the above research questions.

- *Teachers' Perceptions of the Importance of Sensory Experiences*

The purpose of this study was to provide much-needed research documenting teachers' use of sensory experiences with young children. Until now, little was known about teachers' perceptions of the importance of sensory activities or their use of sensory materials in the classroom. Existing research supports the idea that teachers' beliefs/ perceptions influence their practice. The majority of teachers in the study reported that it is "very important" to provide sensory experiences and activities to young children. It is also interesting to note that most of the teachers reported attending workshops/trainings about using sensory activities in the classroom.

- *Frequency and Type of Sensory Activities Provided in the Classroom*

Next, the study explored how frequently teachers provide sensory experiences in their classrooms and what kinds of sensory experiences and materials they provide. In standards affirmed by the Ministry of Education sand, water, play dough, paint, and blocks are listed as sensory materials that should be available in outdoors for children throughout the day. Participants reported that sand, water, and paint were offered one to two times per month. Play dough was most likely to be offered daily. This is disappointing in that the data suggests that early childhood teachers continue to struggle to implement standards and guidelines on a daily basis. This translates into lost opportunities to provide hands on, active learning experiences, where children actively construct physical, social, and logico-mathematical knowledge.

- **kinds of sensory materials teachers provide**

Yet, after examining frequency of use of sensory experiences and activities in the classroom, teachers reported that they were not providing a variety of sensory experiences in the classroom. Experiences provided by the majority of teachers tend to be limited to the areas of music and movement, art materials and activities, distinguishing differences, and outdoor play activities. Areas least utilized were visual stimulation, sensory table activities, and taste/smell activities. In the study, teachers reported space, money, time constraints, and lack of equipment as barriers to providing sensory experiences, thus potentially impacting their practice.

- *Teachers' Perceived Barriers to Providing Sensory Experiences*

The current study also provided valuable documentation of teachers' perceived barriers/challenges to providing sensory experiences. Two challenges to providing sensory experiences that were identified by teachers as "very much" a barrier included money, personal constraint and lack of equipment. Personal constraint can be addressed through training, discussion of supervision. Hygiene was reported to be "somewhat" of a barrier by a large number of teachers. Classroom schedules and routines must be adjusted to allow children to explore the learning environment uninterrupted.

- **Teachers' characteristics in using sensory activities**

Finally, the study examined: "How are teacher characteristics and use of sensory activities. Although there was no relationship between years of teaching experience and use of sensory experiences, there was a difference in teachers' use of taste/smell activities by teachers' level of education. Specifically, teachers with a preschool certificate were more likely to use taste/smell activities than teachers with elementary education degree suggests that teachers with more education in Early Childhood/Child Development are more likely to use developmentally appropriate practices, such as providing sensory experiences. Differences by level of education may be accounted for in that teachers with graduate degrees listed deaf education, elementary education, and an unspecified education as their areas of study. The majority of preschool certified teachers studied early childhood education and child development. It could be speculated that teachers with preschool certified were more likely to have covered developmentally appropriate practices utilizing hands-on, active learning activities in their coursework than teachers with a elementary education degree.

### **6.3 Recommendations**

On the basis of the conclusions drawn from the findings, the researcher would like to offer the following recommendations. An expanded study may offer additional information as to why teachers are not providing a variety of sensory experiences and activities in the classroom. Participant recruitment at national early childhood conventions and workshops may provide a broader participant pool. An observation component can be added to obtain information as to how teacher-child interaction plays a role in the use of sensory experiences.

This study suggests a number of implications for practice. First, workshops and training sessions should encourage early childhood educators to embrace developmentally appropriate practices, including the use of sensory activities, thereby increasing teacher knowledge and ability to provide learning environments filled with opportunities for children to be actively involved in constructing knowledge. Second, teacher training and professional development programs need to address teachers' perceptions of barriers to providing sensory experiences and materials. This can be accomplished by encouraging teachers to reflect on their beliefs of developmentally appropriate practice and use of sensory experiences. This may help to eliminate the conflict between teacher perceptions/beliefs and what they practice in the classroom.

Third, training should be followed up with a session to discuss progress and impact on classroom practice and share how experiences and activities were accomplished. Fourth, teachers should develop ways to utilize floater staff and volunteers to aid in supervision of the classroom while sensory experiences and activities are provided. This will allow for crucial teacher-child interaction. Finally, teachers, directors, and administrators need to discuss and formulate a plan to not only fully integrate sensory experiences into the curriculum, but to modify daily schedules and routines to allow ample time to explore sensory-rich learning environments and become fully engaged in sensory activities.

## REFERENCES

- Ahn, J., & Filipenko, M. (2017). Narrative, imaginary play, art, and self: Intersecting worlds. *Early Childhood Education Journal*, 34(4), 279-289.
- Al Sayyed, M. O. (2013). The impact of using multi-sensory approach for teaching students with learning disabilities. *Journal of International Education Research*,
- Bredenkamp, S., & Copple, C. (Eds.). (2017). *Developmentally appropriate practice in early childhood programs* (revised edition). Washington, D.C.: The National Association for the Education of Young Children.
- Buchanan, T. K., Burts, D. C., Bidner, J., White, F., & Charlesworth, R. (2018). Predictors of the developmentally appropriateness of the beliefs and practices of first, second, and third grade teachers. *Early Childhood Research Quarterly*, 13(3), 459-483.
- Cassidy, D. J., Buell, M. J., Pugh-Hoese, S., & Russell, S. (2015). The effect of education on child care teachers' beliefs and classroom quality: Year one evaluation of the TEACH Early Childhood Associate Degree Scholarship Program. *Early Childhood Research Quarterly*, 10(2), 171-183.
- Chilvers, D., & Cole, A. (2016). Using sensory approach with children who challenge. *Support for Learning*, 21(1), 30-32.
- Cohen, L., & Kim, Y. (2019). Piaget's equilibration theory and the young gifted child; A balancing act. *Roper Review*, 21(3), 201-215.
- Danko-McGhee, K., & Slutsky, R. (2017). Floating experiences: Empowering early childhood educators to encourage critical thinking in young children through the visual arts. *Art Education*, 60(2), 13-16.
- Department for Education and Skills. (2014). A framework for understanding dyslexia. Retrieved February, 2017 from [www.dfes.gov.uk/readwriteplus/understandingdyslexia](http://www.dfes.gov.uk/readwriteplus/understandingdyslexia)
- Guha, S. (2012). Integrating math for young children through play. *Young Children*, 57(3), 90-92.
- Howe, M., Brittain, L. A., & McCathren, R. (2004). Meeting the sensory needs of young children in classrooms. *Young Exceptional Children*, 8(1), 11-19.
- Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, Eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education, Washington, DC: National Academy Press.
- Kamii, C. & Ewing, J. (2016). Basing Teaching on Piaget's Constructivism. *Childhood Education*, 72(5), 260-264.
- Koster, J. (2017). *Growing artists: Teaching art to young children*. Albany, N.Y.: Delmar.
- Krustchinskly, R., & Weiss, A. (2011). Sensory science: Activities for young children. *Science Activities*, 28(2), 8-14.
- Lochmiller, C. R. (2015). Examining administrators' instructional feedback to high school math and science teachers. *University Council for Educational Administration*, 52(1), 75-109.
- Lorenzo-Lasa, R., Ideishi, R., & Ideishi, S. (2017). Facilitating preschool and learning through Dance. *Early Childhood Education Journal*, 35(1), 25-31.

- Lynch, S., & Simpson, C. (2014). Sensory processes: Meeting individual children's needs using the seven senses. *Young Exceptional Children*, 7(4), 2-9.
- Maxwell, K. L., McWilliam, R. A., Hemmeter, M. L., Ault, M. J., & Schuster, J. W. (2011). Predictors of developmentally appropriate classroom practices in kindergarten through third grade. *Early Childhood Research Quarterly*, 16(4), 431-452.
- McMullen, M. B. (2019). Characteristics of teachers who talk the DAP talk and walk the DAP walk. *Journal of Research in Childhood Education*, 13(2), 216-230
- Montessori, M. (2014). *The absorbent mind*. New York, N.Y.: Dell Publishing Co. National Association for the Education of Young Children. (2016). *Early Childhood Program Standards and Accreditation Criteria*. Washington, DC: Author.
- National Research Council and Institute of Medicine. (2010). *From neurons to neighborhoods: The science of early childhood development*.
- Nichols, B. & Honig, A. (2017). Music teaches children about themselves and others. *Early Childhood Educational Journal*, 24(4), 213-216.
- O'Neill, Astington, J., & Flavell, J. (2012) Young children's understanding of the role that sensory experiences play in knowledge acquisition. *Child Development*, 63(2), 474-490.
- Oklahoma Department of Human Services. (2017). *Early Learning Guidelines*. Oklahoma City, OK: Author.
- Oklahoma State Department of Education. (2013). *Priority Academic Student Skills*. Oklahoma City, OK: Author.
- Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press, Inc.
- Piaget, J., & Inhelder, B. (1969). *The psychology of the child*. New York: Basic Books. Prestia, K. (2014). Incorporating sensory activities and choices in the classroom. *Intervention in School and Clinic*, 39(3), 172-175.
- Rivkin, M. (2017). The schoolyard habitat movement: What it is and why children need it. *Early Childhood Education Journal*, 25(1), 61-66.
- Shilling, W. (2012). Mathematics, music, and movement: Exploring concepts and connections. *Early Childhood Education Journal*, 29(3), 179-184.
- Shonkoff, J., & Phillips, D. (Eds.). (2010). *From neurons to neighborhoods: The science of early childhood development*, Washington, DC: National Academy Press.
- Snider, M., & Fu, V. (2019). The effects of specialized education and job experience on early childhood teachers' knowledge of developmentally appropriate practice. *Early Childhood Research Quarterly*, 5(1), 69-91.
- Sobe, N. (2014). Challenging the gaze: The subject of attention and a 1915 Montessori demonstration classroom. *Educational Theory*, 54(3), 281-297.
- Sousa, D. (2016). How the arts develop the young brain. *School Administrator*, 63(11), 26-31.
- Staley, L. (2017). Teaching strategies: "What does purple smell like?" *Childhood Education*, 73(4), 240-242.
- Stipek, D. J. & Byler, P. (2017). Early childhood education teachers: Do they practice what they preach? *Early Childhood Research Quarterly*, 12(3), 305-325.

- Vartuli, S. (2015). Beliefs, the heart of teaching. *Young Children*, 60(5), 76-86. Vartuli, S. (2019). How early childhood teacher beliefs vary across grade level. *Early Childhood Research Quarterly*, 14(4), 489-514.
- Wadsworth, B. (2016). *Piaget's theory of cognitive and affective development*, (5<sup>th</sup> ed.). White Plains, N.Y.: Longman Publishers
- Whaley, K. L. (2015). Programs for infants and toddlers. In J.L. Roopnarine & J. E. Johnson (Eds.), *Approaches to early childhood education*. (4<sup>th</sup> ed., pp. 44-61). Upper Saddle River, NJ: Pearson Prentice Hall.
- Wiggins, D. G. (2017). Pre-K music and the emergent reader: Promoting literacy in a music-enhanced environment. *Early Childhood Education Journal*, 35(1), 55-64.
- Wilcox, E. (2014). Teaching the whole child. *Teaching Music*, 2(2), 42-44.
- Wilcox, E. (2019). Straight talk about music and research. *Teaching Music*, 7(3), 29-34. Retrieved September 11, 2007 from Academic Search Elite database.
- Woyke, P. (2014). Hopping frogs and trail walks: Connecting young children and nature. *Young Children*, 59(1), 82-85.
- Zachopoulou, E., Tsapakidou, A., & Derri, V. (2014). The effects of developmentally appropriate music and movement program on motor performance. *Early Childhood Research Quarterly*, 19(4), 631-642.

# Appendices

## APPENDIX A

### I. OBSERVATION CHECK LIST

- Classroom location:**
- Teacher name:**
- Date:**
- Additional Information:**

| <b>R n</b> | <b>Type of MS Used</b>                   | <b>yes</b> | <b>No</b> |
|------------|--|------------|-----------|
| <b>1</b>   | <b>Visual</b>                            |            |           |
| <b>2</b>   | <b>Auditory</b>                          |            |           |
| <b>3</b>   | <b>Tactile</b>                           |            |           |
| <b>4</b>   | <b>Kinesthetic</b>                       |            |           |
| <b>5</b>   | <b>Simultaneous</b>                      |            |           |
| <b>6</b>   | <b>Verbal</b><br><b>Rhythmic</b>         |            |           |
| <b>7</b>   | <b>Indirect</b><br><b>experience</b>     |            |           |
| <b>8</b>   | <b>Direct experience</b><br><b>Other</b> |            |           |

# APPENDIX B

## II QUESTIONNAIRE

Addis Ababa University  
College of Education and Behavioral Studies  
Department of Special Needs Education

Questionnaire for employees

Good morning/Good afternoon!

I am Rahel Ayele, final year Master of Art in Special Needs Education student in Addis Ababa University. Currently I am conducting a research on “*The Use of Multi-sensory Methods in Addis Ababa: The case of selected Government ECCE centers in Yeka, Arada and Gullele Sub-cities of Addis Ababa, Ethiopia*”. You are kindly requested to provide information for this research. The information you provide will help me to understand the issues and come up with relevant information.

The questionnaire may take about half an hour to complete. The information provided will be treated as strictly confidential and at no instance will your name be mentioned in this research. This research is intended for an academic purpose only.

Consent given                      YES                       NO

Result:                                      1. Complete                                       2. Incomplete

\*\*\*\*\*

Please indicate the class range of the children you currently teach: KG-2       KG-3

### Part I. General Teacher Background Information

1. Age: \_\_\_\_\_
2. Sex: \_\_\_\_\_ Female \_\_\_\_\_ Male
3. Educational Background: \_\_\_\_\_ High school \_\_\_\_\_ KG Certificate \_\_\_\_\_ Diploma \_\_\_\_\_ Degree and above
4. Teaching Experience: \_\_\_\_\_
5. Please indicate the class range of the children you currently teach: \_\_\_\_\_ KG2 \_\_\_\_\_ KG3
6. Number of children in your class this year: \_\_\_\_\_

7. Have you attended any training about using sensory activities in the classroom?  Yes  
 No

8. Type of school you teach  government  private

**Part II: Teachers use of sensory methods in their classrooms**

Underneath each item listed below, tick the answer that best describes how often you provide those materials/activities to children in your classroom.

| S.No | Use of Sensory Methods In Classroom                              | Never x/ a year | 1-2 month | x/a | Once a week | Several times/weekly/Daily |
|------|--|-----------------|-----------|-----|-------------|----------------------------|
| 1    | Water play   |                 |           |     |             |                            |
| 2    | Bubbles  |                 |           |     |             |                            |
| 3    | Sand   |                 |           |     |             |                            |
| 4    | Food in sensory table (e.g., cornmeal, sand, flour, beans, rice) |                 |           |     |             |                            |
| 5    | Food in art (e.g. beans, rice, salt)                             |                 |           |     |             |                            |
| 6    | Play dough/Clay/Bread dough                                      |                 |           |     |             |                            |
| 7    | Paint (e.g., finger-painting, sponge painting, etc.)             |                 |           |     |             |                            |
| 8    | Chalk  |                 |           |     |             |                            |
| 9    | Color mixing   |                 |           |     |             |                            |
| 10   | Fine motor tools (e.g., scissors, crayons, colored pencils)      |                 |           |     |             |                            |
| 11   | Smell jars   |                 |           |     |             |                            |
| 12   | Tasting  |                 |           |     |             |                            |
| 13   | Distinguishing sounds (e.g., sound cans)                         |                 |           |     |             |                            |

|    |   |  |  |  |  |
|----|---|--|--|--|--|
| 14 | Distinguishing materials/objects/textures in a bag (e.g., “Feely bags”)     |  |  |  |  |
| 15 | Visual displays (e.g., children’s artwork, art, photographs, picture books) |  |  |  |  |
| 16 | Listening to music  |  |  |  |  |
| 17 | Singing   |  |  |  |  |
| 18 | Musical/Rhythm instruments  |  |  |  |  |
| 19 | Soft lighting   |  |  |  |  |
| 20 | Movement (e.g., dance)  |  |  |  |  |
| 21 | Soft materials (e.g., pillows, stuffed animals, soft blocks,)               |  |  |  |  |
| 22 | Textured manipulative and materials (sandpaper)                             |  |  |  |  |
| 23 | Gross motor activities (e.g., push, pull, climb)                            |  |  |  |  |
| 24 | Nature experiences  |  |  |  |  |

**25. Besides the items listed above, what other sensory experiences do you provide in your classroom?**

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**Part III. Importance of sensory Use/ Experiences for teachers**

**Thick the answer that best reflects your response to the following questions:**

| <b>No</b> | <b>Importance of sensory use/experience through:</b>   | <b>Very Important</b> | <b>Somewhat Important</b> | <b>Not Very Important</b> | <b>Unimportant</b> |
|-----------|--|-----------------------|---------------------------|---------------------------|--------------------|
| <b>1</b>  | <b>sensory table Activities? (e.g., sand, water)</b>   |                       |                           |                           |                    |
| <b>2</b>  | <b>Outdoor play activities?</b>  |                       |                           |                           |                    |
| <b>3</b>  | <b>Music &amp; movement?</b>   |                       |                           |                           |                    |
| <b>4</b>  | <b>Art materials and activities?</b>   |                       |                           |                           |                    |
| <b>5</b>  | <b>Taste/smell activities?</b>   |                       |                           |                           |                    |
| <b>6</b>  | <b>Visual stimulation?</b>   |                       |                           |                           |                    |
| <b>7</b>  | <b>Activities that help children distinguish differences? (e.g., distinguishing sounds, temperature, textures)</b> |                       |                           |                           |                    |

**IV. Barriers/challenges to providing methods Use Experiences**

**Thick the answer that best describes how much each of the following items is a barrier to Providing sensory materials and activities in your classroom:**

| No |                                    | Not at all | Somewhat | Very Much |
|----|------------------------------------|------------|----------|-----------|
| 1  | Administrator(s)                   |            |          |           |
| 2  | School policy                      |            |          |           |
| 3  | Hygiene (e.g., cleanliness issues) |            |          |           |
| 4  | Health and safety concerns         |            |          |           |
| 5  | Money (e.g., purchasing materials) |            |          |           |
| 6  | Upkeep of materials                |            |          |           |
| 7  | Lack of equipment                  |            |          |           |
| 8  | Time constraints                   |            |          |           |
| 9  | Space constraints                  |            |          |           |
| 10 | Personnel constraints              |            |          |           |
| 11 | Parent opposition                  |            |          |           |
| 12 | Cultural beliefs                   |            |          |           |
| 13 | Personal beliefs/preferences       |            |          |           |
| 14 | Curriculum demands                 |            |          |           |

**15. Please list any other barriers you face to using sensory materials and activities in your classroom:**

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