

2019

# Promoting classroom participation: teacher training program

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BOSTON UNIVERSITY  
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**PROMOTING CLASSROOM PARTICIPATION:  
TEACHER TRAINING PROGRAM**

by

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Submitted in partial fulfillment of the  
requirements for the degree of  
Doctor of Occupational Therapy

2019



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*“Teach your children that the strength doesn’t come from what you can do. It comes from overcoming the things that once you thought you couldn’t.”*

*Sumitha Bhandarkar (A fine parent)*

## **DEDICATION**

This thesis is dedicated to my family who have always been a constant source of support and encouragement during the challenges of my doctoral project. I am truly grateful for having such a wonderful family who love me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve.

To my family who have been the symbols of love and giving throughout my life. Also, this work is dedicated to my partner who was the one who encouraged me to pursue my dreams and finish my dissertation. For his patience, support, love and faith and for lighting all my dark days with his smile.

## **ACKNOWLEDGMENTS**

I would like to thank my mother and father who have taught me the importance of having life goals and fighting to achieve them and for giving me strength to reach for the stars and chase my dreams. My sister and brother who love me with all their heart and have been my best friends and supporters throughout my life. My family deserve my wholehearted thanks and my full appreciation for their confidence in me.

Also, a big thank you to my partner for his understanding and encouragement in many moments of crisis. His faith in my abilities and his encouragement throughout the doctoral project were very motivating.

Last but not least I would like to thank my friends and for making our friendship a wonderful life experience.

## **PROMOTING CLASSROOM PARTICIPATION:**

### **TEACHER TRAINING PROGRAM**

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#### **ABSTRACT**

In Cyprus elementary classrooms, as in many classrooms around the world, there is an increasing number of children learning with attention difficulties and sensory difficulties. International researchers have focused on creating and promoting sensory programs, play-based activities, and teaching approaches to assist students with these difficulties to participate during classroom time (Hildreth, 2013; Mere-Cook, 2016; Mills & Chapparo, 2017). However, in Cyprus there is still an important gap for both recognizing students' difficulties and promoting new teaching approaches in elementary schools. This situation is leading to teachers' inefficiency in understanding children's behaviors and needs and acting to minimize students' challenges in the classroom. This doctoral project was undertaken to develop an evidence-based and theoretically-grounded teachers' training program to address both recognition of student problems and implementation of approaches to support students (Foran et al., 2017; Hildreth, 2013; Mere-Cook, 2016; Mills & Chapparo, 2017). It is an innovative program, designed from an occupational therapist's perspective, to educate elementary teachers about sensory and attention difficulties and ways to minimize challenges of children in the classroom. This teacher training is comprised of three phases. During the first phase,



teachers will be invited to a two-day training. The training will focus on the presentation of case studies of students with attention and sensory challenges, practice training and open discussion. Teachers will be provided with information for recognizing students' attention and sensory challenges in the classroom and suggestions for activities and strategies to use in the classroom to address these challenges. Then through case studies of children with sensory and attention difficulties and open discussion, training participants will use and analyze the manual content. In the second phase, teachers will receive the manual and implement the program for their classroom. Consultation is the last phase of the training program where teachers will have the opportunity to reflect on their practice experiences after the implementation of the program, and also the concerns and thoughts on the activities and strategies implementation. The implementation of this innovative program will help teachers and students, and promote the profession of occupational therapy in Cyprus and the country's school system.

## **PREFACE**

Competing a doctoral project was a life goal I set in high school. I was saying that one day I will be Dr. Evanthia Theodoulou. However, I was always thinking that I want to develop something useful, something that will make a difference to this world. After working as a pediatric occupational therapist for 6 years I realize that teachers are both sunshine and a shadow in children's life. They have an important role in educating children and providing them with the foundation to move on with their life but they can become a shadow if they do not know how to deliver knowledge appropriately. I realize that there are gaps in their knowledge regarding disability and this can become a barrier for children's learning. In 2017 I decided that this could be a subject for my doctoral project, as it can be eventually a step towards change in the educational setting. It was a summer day and I was away for vacations in a Greek island when I got the response for my application. I read it out loud to my partner. It was the best present I could have, and then the story began...

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## **CHAPTER ONE - Introduction**

Attention problems are very common among early elementary children. Often inattention is a normal variation observed in typical child development among this age range (Mahone 2005). Young children may have difficulties with concentration during academic programming. A study from Pavuluri, Luk, and McGee (1999) showed that the number of preschoolers described as “always on the go [or] driven by the motor” is as high as 72.7 %. The phrase “driven by a motor” is commonly used when describing children with attention disorders and means that they are always on the go. Changes in academic time have intensified in the past decade, challenging children to sit and attend longer to tasks during the school day (Mulrine, Prater, & Jenkins, 2008).

Even though this issue has been a concern and research topic for many years, unfortunately in Cyprus, this is a topic that only recently been explored. Therefore, research regarding attention problems and resources for improving attention and participation of children are limited or non-existent in Cyprus. Educational programs need to understand these problems and how to meet children’s needs. With my professional background, I have experience collaborating with teachers who seek advice from occupational therapists to support children.

Challenges reported by teachers include children’s sensory seeking behaviors, such as constantly being in motion even when they sit, poor sustained attention, lack of self-organization and behavioral issues. Educators are concerned that attention difficulties may lead to poor academic performance. Classroom participation sometimes is affected due to some students’ need to “do something” during teaching, which may result in

distracting other students.

Moreover, due to the fact that few studies are using occupational therapy practice with typically developing children, this doctoral project will attempt to address this gap in practice by developing a school-based occupational therapy program for supporting and facilitating early elementary students' attention in school. This project will synthesize the existing literature on attention for children aged 5-7, highlight children's educational needs related to attention, and develop a school-based program to address these needs.

The program will include classroom activities and educational approaches to improve the attention span of children, and therefore their academic performance. This program will add to teachers' knowledge regarding methods they can use to minimize these common classroom problems. Ideas for games and management of time during the school day, as well information about sensory and physical breaks, will be included. Information will be based on sensory integration theory and research on physical activity during classroom time. After developing this program, I intend to implement the program and study whether classroom-based physical and/sensory breaks are effective for student's attention, participation, and academic performance during teaching.

### **Importance and consequences of the problem**

Attention encompasses several important neuropsychological processes that develop rapidly during childhood, including the ability to focus on and attend to stimuli over a period of time and to demonstrate comprehension (White et al., 2009). Each of us has our own way in which we attend and modulate our sensory systems. It is important for educators to be familiar with differing preferences and respect each child's needs.

Children with typical development are expected to organize the sensory stimuli they receive in the classroom and filter out unimportant sensory information in order to respond and behave appropriately to situations. However, high expectations for behavior and participation start as early as kindergarten. Failure to fulfill these expectations can lead to great challenges for students, such as decreased self-esteem and consequently participation in school activities.

In Cyprus, children who appear to have even mild difficulties are commonly labeled as problematic or are not allowed to attend regular school. Often, teachers make clear to parents that they will not have the responsibility for these children's progress. Teachers may not even accept these children to the school program as they disturb the other children's academic progress. In other cases, teachers may characterize a child as naughty, while failing to realize the challenges that a child may experience every day. Criticism or verbal punishment is often a solution for teachers.

Both treatments can end up in damaging outcomes for students. Negative interaction between teachers and students can cause feelings of frustration and embarrassment for the children and can influence their self-esteem, social life and future options (Reinke, Herman, & Newcomer, 2016). It is important to encourage participation, life roles and quality of life for these children and to make sure they have equal opportunities (OTPF, 2014).

Behavioral issues in the classroom are a consequence of children's vulnerable psychological state. The negative strategies that teachers may use, including negative reinforcement or punishment, can lead to student misbehavior (University of Missouri-

Columbia, 2016). Amongst students who receive negative attention from teachers, there are increased problems related to behavior (Reinke et al., 2016). The increase of behavior issues, which tend to disrupt the teaching-learning process, can have an immediate effect on student's motivation to participate. Educating teachers would assist with minimizing these situations and negative behaviors within classroom.

Even in the case where teachers can recognize students' difficulties, due to limited training, they may not be able to manage these problems. They often refer children for assessment or seek advice from occupational therapists for possible solutions that they can use within the classroom setting to help them overcome their challenges.

Decreased ability to attend also contributes to increased fidgeting by students. Studies show that fidgeting is an indicator that children are not moving enough during the day (Strauss, 2014). Recess times have been shortened due to increasing educational demands, so children are not moving as regularly and therefore becoming progressively more off task (Hanscom & Louv, 2016).

Moreover, attention difficulties matter because they can also be counterproductive to children's academic performance. Having children sit for prolonged periods of time is not always an effective way of learning. Several studies reported that attention difficulties predicted subsequent declines in academic achievement (Breslau et al., 2009; Duncan et al. 2007).

The AOTA Occupational Therapy Practice Framework identifies attention and participation as significant for achieving health and well-being in life. It is an occupational therapy belief that "active engagement in occupation promotes, facilitates,



supports, and maintains health” (OTPF, 2014, p. S4).

Occupational therapy is a dynamic and evolving profession that uses everyday activities and meaningful occupations as the main domain of practice. Within this domain, occupational therapy services enable clients to participate in their daily activities and desired roles. Since some of the most important occupations of childhood are learning and participating in their role as students, occupational therapy can assist children with engagement in these activities (AOTA, 2014).

### **Contributors to this problem**

There are many factors responsible for the limited performance of some children at schools. It has not been long since Cyprus began to educate teachers with seminars regarding children with learning differences. The Turkish invasion in July 1974 might have had an effect on that. The island's economy disintegrated and many people lost their homes. As you can understand, the first concern of people was to survive and rebuild their lives, leaving education behind. Greek Cypriots were very successful in recreating a functioning economy, however Cyprus did not have the same resources and time as other countries to develop educational laws in 1960s and 1970s (U.S. Department of Education, 2018). Valuable time was lost as the efforts began in 1990s. Cyprus began to create national frameworks for children with disabilities and educational laws in 1990s, so everything regarding this subject is still very new (Government web portal, 2018). The consequence can be seen nowadays by experiencing how the educational system works and what educational opportunities are offered to educators. As a consequence of that, the knowledge of teachers on sensory needs, the use of more inclusive approaches, and

knowledge on how to overcome challenges within the classroom is very limited.

Moreover, cultural beliefs are also worsening the situation. Parents may have difficulty accepting that their children are experiencing challenges. The fear of having a child with academic problems and the difficulty accepting it makes many teachers afraid to talk to parents about learning challenges. As this problem is still misunderstood in Cyprus, many children may not participate in therapeutic programs that could improve their quality of life. Therefore, it is important to educate teachers about how to assist children with academic difficulties.

Additionally, based on a study conducted in 2005, children are diagnosed with Attention Deficit-Hyperactivity Disorder usually when they are experiencing the most severe symptoms of the disorder (Peck, Kehle, Bray, & Theodore, 2005). Therefore, there is a significant number of children with mild inattentive behaviors who are not diagnosed at all. Additionally, sensory modulation disorders, which are not well known by teachers in Cyprus, may also be contributing to academic problems. Consequently, children could be diagnosed very late or never.

Moreover, teachers are expected to meet curricular goals and increase student academic achievement. This has resulted in increasing the instructional time and reducing the amount of recess time (Holmes, Pellegrini, & Schmidt, 2006; Mahar et al., 2006). Teachers, in an attempt to handle this pressure, are changing their pedagogical approaches, replacing play-based activities with instructional activities, which is often less effective for learning (Moyer & Wenner, 2017). "Somehow, somewhere, we decided that success for our children is how well they do on math and reading tests," (Moyer &

Wenner, 2017, p. 27) says Kathy Hirsh-Pasek, a psychologist at Temple University who studies how children learn. "We kind of forgot that what's really important is raising humans" (Moyer & Wenner, 2017, p. 27).

### **Addressing this problem**

According to Blythe (2005), "Effective education reaches all levels and systems in the brain through a combination of instruction and physical development" (p. 177). Given the importance of a physical activity for children's healthy development, a question rises about how schools can provide students with the movement and physical activity that is needed. Each child's needs are a little different. It is well known that children learn best through movement. "Running and jumping and spinning and twirling and swinging, are very important for the development of children's central nervous systems, their brain, and their body" (Lynch, n.d., p. 1) says Diana Henry, an occupational therapist.

Research suggests this gross motor play helps kids learn important concepts. In a 2016 study, Trawick-Smith and colleagues recorded interactions between 47 teacher-student pairs in preschool. The researchers found that the students whose teachers scaffolded their play by introducing mathematical games and gross motor play later scored better on tests that measure math ability. Moreover, a research study from Ali, Aziz, and Majzub (2011) demonstrated that learning through play can enhance academic development and sustain children's attention span.

Classroom teachers can integrate movement-based activities to energize students during teaching, after lunch, or breaks at the end of the day. There are many names for

physical activity breaks such as brain breaks, energizers, and brain boosters. Regardless of what you call it, the goal is to get kids out of their seat and physically active throughout the school day. During these breaks, children will have the opportunity to gain the sensory input through movement and sensory stimulating equipment in order to reset, stay alert, and focused on task. Yale's Christakis says that "Children can be engaged in, for example, looking at a pile of sand or a leaf under a microscope. It's not necessarily play, but it's very engaging and requires active, hands-on and usually social experiences" (as quoted in Moyer and Wenner, 2017, p. 33).

The intervention that will be designed through this doctoral project will include developing a school-based program for sensory or physical breaks, and educating teachers about the challenges children may experience in the classroom. The program manual will be developed to guide the teachers' knowledge and practice by encouraging a better understanding of children's needs and children's differences in the way they receive and organize sensory information. The teachers' manual will include the following:

1. Red flags for attention problems, which will help teachers detect difficulties the children may be having.
2. Red flags for sensory modulation, which will also be used to detect possible difficulties.
3. A section for explaining the terms that are used in the checklists.
4. Suggestions of how teachers can approach each difficulty with students.
5. Suggestions of structured classroom activities.

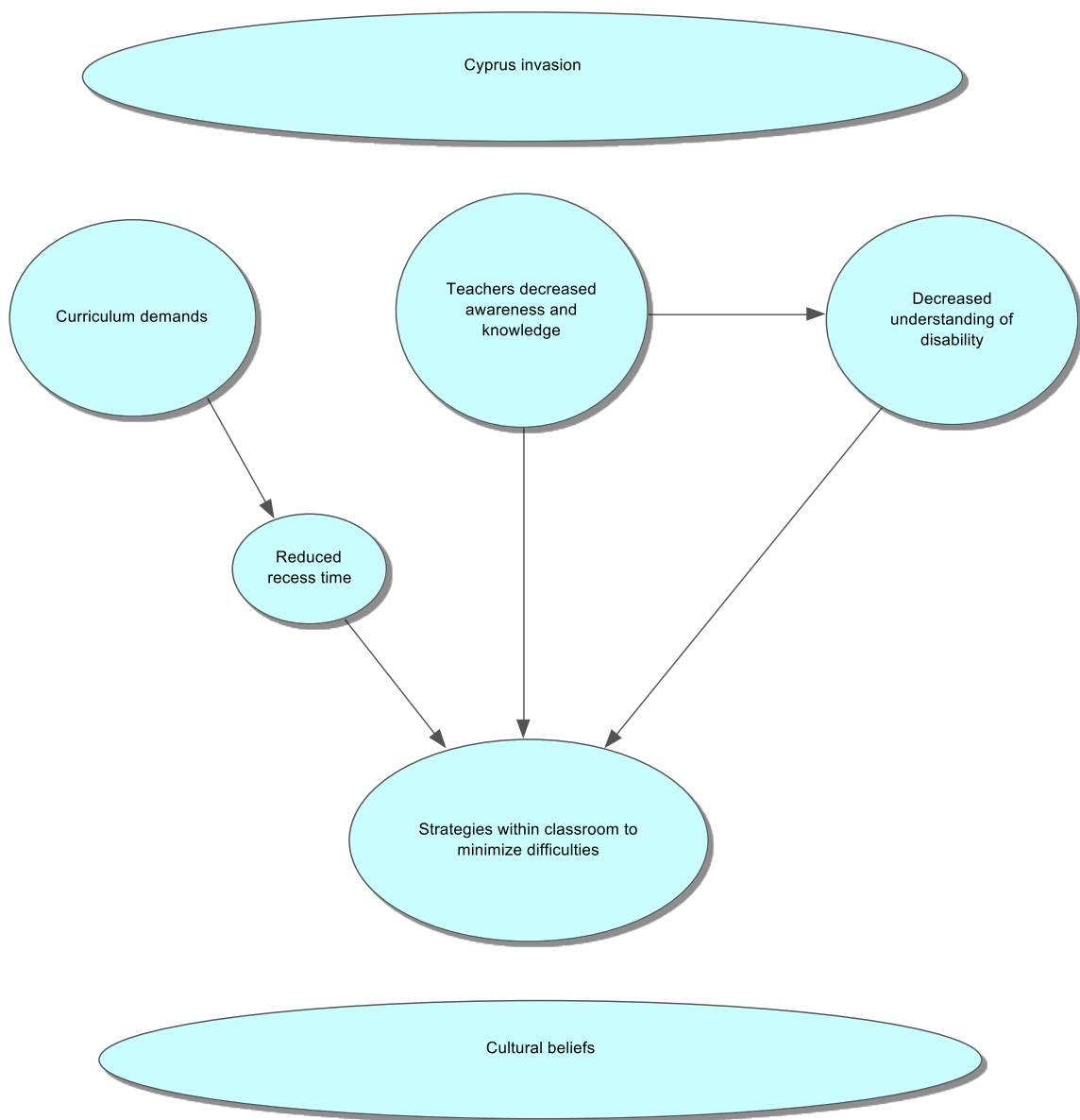
Educating teachers about the way they will use the manual will take place before the implementation of the program.

## CHAPTER TWO

### Theoretical and Evidence Base to Support the Proposed Project

#### Overview of the Problem

The diagram below illustrates the factors influencing the limited attention span of children during classroom time. Three main factors play an important role to this situation. Firstly, school policies have advanced curriculum goals and increased expectations for teachers' performance, resulting in a reduction of recess time and greater allocation of time to instructional subjects and tests aiming to improve student achievements. Teachers' decreased awareness and knowledge as well their reduced understanding of disability are the other two factors that have an important impact of children's attention in the school setting. The Cyprus invasion and cultural beliefs have been identified as the external factors affecting the development of educational legislation, services and programs, and developing negative responses. The negative position some teachers hold on students' classroom behaviors may result in late or no diagnosis of children; without help from therapist or doctors, children will continue to have the same attention and sensory processing difficulties and the classroom behavior or problem will remain the same. All these factors further influence teachers' responses to difficulties the children may face within the classroom.



Educators, parents, and occupational therapists in Cyprus are concerned about the limited attention span during classroom time of elementary children in Cyprus. Of particular concern are the attention spans of children with concentration and sensory modulation difficulties. Limited attention span may be impacted by a combination of different reasons, which then influence children's participation and performance in the classroom. This doctoral project examines some of the factors that may play a role in the decreased attention span of children in the classroom.

Based on the visual model, the hypothesized factors influencing the limited attention span of children during classroom time are (1) the curriculum goals which have increased teacher's expectations and stressed them allocate more time to instructional subjects and tests to improve student achievements and (2) the reduction of time available for recess time and play-based activities within the classroom as a result of the curriculum goals. Inadequate training for teachers (factor 3) and their decreased awareness and knowledge of disability issues as well as inclusive approaches they can use in the classroom (factor 4) have been also identified to have an important impact on children's attention. The Cyprus invasion and cultural beliefs have been identified as the external factors affecting the development of educational legislation, services and programs and are also reviewed and discussed below.

The purpose of this literature review is to examine whether the above factors are influencing the problem identified in elementary classrooms by using both articles and personal communication with principals and teachers working in elementary schools in Cyprus. The problem and the contributing factors led to the creation of four research



questions. These questions were used to search for, identify, and critically evaluate research related to the impact of academic time on recess time, the influence of the Cyprus invasion on Cypriot people's understanding of disability, the influence of cultural beliefs towards disability on teachers' classroom approaches with children with attention or sensory difficulties, and the impact of teacher's training on the strategies they use to support children with disabilities in their classrooms.

As the goal of this doctoral project is to create a manual for teachers to guide them through challenges related to attention and participation issues they come across in elementary classrooms, it is important firstly to examine the factors affecting concentration difficulties and then understand the educational and cultural factors that possibly influence teacher's general behavior in the classroom. The outcomes of this review will help me create a feasible, culturally relevant, effective, well-organized manual that will eventually fill the particular gaps in the educational system.

In order to evaluate the multifactorial influences on inclusive education for children with sensory modulation and attention difficulties in the classroom, the review was conducted across several databases such as CINAHL, ERIC and PsycINFO through Boston University Library and Google Scholar searches. The search included combinations of key search terms such as "teachers", "curriculum", "attention on task", "sensory modulation" and "recess time". To focus searches on teachers' influence, additional search terms like "teachers' training", "disability understanding", "teachers' beliefs" and "strategies used in classroom" were used. Specific description of the terms and databases employed will be described under each question in the following

paragraphs. During initial searches, approximately 150 research articles were considered to be related to the subjects of concern. Due to the fact that searches were restricted to recent publications (most often within the past 20 years), studies published in peer-reviewed journals, online accessible papers and English written articles, 34 articles were selected for more in-depth review. The articles selected were determined to provide informative evidence to answer the literature search questions and to offer any relevant data to examine the validity of the proposed hypotheses.

Due to the limited research studies conducted in Cyprus in relation with the situation at schools, in addition to literature and evidence searches, information from teachers and principals in elementary schools was gathered through personal communication with them. The conversations with teachers and principals were also used to target data on cultural factors, the impact of the Cyprus invasion, and information about the existence of the hypothesized problem. Information from several websites with teachers' forums were additionally utilized to increase understanding about the teaching methods used in the classrooms around the world and also the beliefs, views, and experiences of teachers with children with attention and sensory modulation difficulties in their classrooms.

### **Is there evidence that the academic time impacts the recess time in elementary grades?**

One of the factors of concern that has driven the decision to develop this manual is the fact that the curriculum goals and the school policies developed in Cyprus have increased teachers' expectations, resulting in reduction of recess time. The review of

evidence to answer this question suggest that teachers are allocating more time to instructional subjects and tests in order to improve student achievements and achieve goals set from previous schools, instead of incorporating play-based approaches during classroom time. Moreover, based on the research articles reviewed (Bassok et al., 2016; Beni, 2016; Graue, 2009; Jez & Wassner, 2015; Lynch, 2015), this phenomenon is not only observed in Cyprus, but is a subject of concern in other countries such as the U.S.A.

A part of the current review of the literature examined evidence regarding the time spent on academics and any impact on recess time and play-based activities in classroom time. For answering this question, approximately 45 articles were found by using the terms, “academic time”, “elementary school”, “increase” and by applying limits such as publication date (2008-2018), language (English), peer-reviewed articles and online access. Only five (Bassok et al., 2016; Beni, 2016; Graue, 2009; Jez & Wassner, 2015; Lynch, 2015) of those were more relevant to answer the question and are presented in this review. Since it is vital to understand the current situation in Cyprus and because no peer-reviewed articles conducted in Cyprus exist to date, the personal communication I had with educators in elementary schools is also included in this review.

A study from Bassok et al. (2016) was conducted to provide a detailed account of how public-school kindergarten classrooms have changed by using nationally representative data from U.S.A. The results of this study showed that relative to their counterparts in 1998, public school kindergarten teachers in 2010 are far more likely to believe that academic instruction should begin prior to kindergarten entry and they are also more than twice as likely to expect that most children will leave their classrooms

knowing to read. There is also a heightened focus on literacy and math instruction crowding out coverage of other subjects. In the same study, teachers in 2010 reported that there is a corresponding increase in literacy and math content instruction in kindergarten classrooms and a reduction of activity centers such as art areas, dramatic play areas, science areas, or water/ sand tables (Bassok et al., 2016). The study from Jez and Wassmer (2015) who conducted a study at California's elementary school sites, agreed with these findings by examining the relationship between the number of instructional minutes in an academic year and school-site standardized test scores. They found that when they increased instructional time there were statistically significant increases in academic achievements. They further discuss that the result of the increasing demands in academic standards but no corresponding increase in the school time, is the increase of academic and instructional time, which therefore affects the amount of time spent on play-based activities and in recess.

A Netnographic study by Lynch (2015) examined the change in teaching approaches from teachers' perspective by using the discussion boards of seventy-eight kindergarten teachers about play in kindergarten. The study concludes that the amount of play in American kindergarten classes remains on a steady decline, that kindergarten teachers feel pressures from other teachers, principals, and school policies to focus on academic goals, and that these pressures lead them to limit play-based approaches during class time. A study from Beni (2016) corroborates the above findings by examining teachers' and administrators' perceptions on recess time, the current length and frequency of recess at public schools, the factors that determine the decision on recess, and how

students feel about recess at the elementary schools. The data analysis found that striving for better test scores on standardized tests played a role in the amount of time on recess as well as state requirements for physical activity and recess. Another interesting result was that the teachers, even if they recognize the benefits of recess time, considered taking away recess as the one of the few disciplinary actions left for them to take to make the students cooperate; they would take recess away as a punishment (Beni, 2016). Teachers recognized the benefits of recess time and indicated that on days of no recess time, the behaviors of children were less focused, lethargic, poorer listeners, lacked attention span, fidgeted noticeably more, and that their behaviors impacted the teacher and student performance (Beni, 2016). The study concluded by raising the need to examine the benefits of recess time and emphasizing the importance of including recess time and breaks in schools' program (Beni, 2016). The research paper from Graue (2009), also conducted in U.S.A., discusses the need to restore a developmental approach to kindergarten and resist pressure to turn playtime into structured formal instruction and emphasize the necessity to restore a developmental approach at schools for the youngest learners, resisting demands to turn playtime into structured formal instruction.

The findings from the above studies were parallel with the concerns of the teachers and principals in Cyprus. Teachers and principals of elementary schools in Cyprus (D. Ioannou, personal communication, August 20, 2018; I. Michael, personal communication, August 20, 2018; A. Kyriacou, personal communication, August 21, 2018) expressed concerns about the time they have available to spend on activity breaks during lessons, the policies and the legislations which add pressure to teachers and the

limited resources available to implement activity programs in schools. Similar to the above research findings (e.g., Bassok et al., 2016; Lynch, 2015), several teachers in Cyprus stated that the goals for academic achievement are very high and therefore the time they spend to reach these goals has increased the last ten years.

The pressure sometimes derives from the parents as well, who are becoming very demanding with teachers to help their children achieve academic goals (D. Ioannou, personal communication, August 20, 2018). Due to the parental aspiration which refers to the expectations, desires and goals that parents have formed regarding their children's future attainment, many times they fail to understand what their child realistically is able to achieve. As a result of parent's high expectations, private kindergartens are setting high goals for their students to impress parents and then elementary public schools are requested to follow these goals (A. Kyriacou, personal communication, August 21, 2018). However, achieving the goals set from private kindergartens is very challenging since children from public kindergarten have lower academic levels than children coming from private kindergartens (I. Michael, personal communication, August 20, 2018). Many children attending private kindergarten start having homework and academic goals very early whereas children in public kindergartens have less academic goals and more time for learning through play (I. Michael, personal communication, August 20, 2018). Teachers are struggling to reach the high standards set from private kindergartens and often they end up pushing the percentage of children coming from public schools to learn a large amount of information in less time than expected by the curriculum (A. Kyriacou, personal communication, August 21, 2018).

Moreover, several teachers (I. Michael, personal communication, August 20, 2018; A. Kyriacou, personal communication, August 21, 2018) also stated that the time at school sometimes is not enough and therefore parents spend a large amount of money paying teachers after school to do homework with their children. Consequently, children spend many hours every day in the afternoon with a teacher to understand and complete their homework. Recess and play time is placed second in the priority list of parents, as they fail to understand the importance of play and leisure for children to get ready for the next day at school (D. Ioannou, personal communication, August 20, 2018).

**Is there evidence that the Cyprus invasion influenced the Cypriot people's understanding of disability?**

By reviewing the literature, I realized that there are no peer-reviewed studies conducted and published in Cyprus for answering this question. Therefore, personal communication was employed to gather information about this era. Teachers and principals shared many interesting and conflicting answers to this question. They all concluded that the Cyprus invasion did not have an immediate effect on the cultural beliefs of people toward disability but they described how the invasion set an unstable political and economic ground, which therefore affected the educational growth and possibly the misconceptions and limited awareness of people, and specifically teachers, for disability issues. The principals of the schools, based on their personal experiences on the invasion, provided further information on the situation after the invasion and share their perception on the relationship of the invasion outcomes with the cultural beliefs towards disability.

Many countries have strong cultural beliefs and misconceptions about disability that are influenced by factors such as religion, cultural values and educational level. Cyprus has an additional factor that is hypothesized to have an important role for individual's perception on disability. This factor is the Turkish invasion of Cyprus in July 1974, when Turkish forces invaded Cyprus and forcibly expelled about 180,000 Greek Cypriots from their homes and also 20,000 Greek Cypriots who remained in the occupied areas and were forced to eventually abandon their homes, killed over 3000 persons and caused the loss of 1400 Greek Cypriots who are still missing. The invasion resulted in the capture of approximately 40% of the island. The problem remains unsolved and the northern area of Cyprus is still under illegal occupation since 1974.

The personal communication with the teachers and principals of elementary schools in Cyprus, tried to give answers to the hypothesis of the connection between Cyprus invasion and cultural beliefs. Based on teachers' responses during the personal communication I had with them, interestingly, all of them reported that they have never thought of the roots of this problem before. At the beginning of our conversation, teachers start talking about the present issues they observe. These issues include the decreased teacher's training opportunities to learn about disability issues, inadequate disability research articles conducted in Cyprus and the insufficient number of events to raise awareness for disability issues. Their responses regarding the present issues also focused on the lack of attention placed on disability issues and also insufficient disability courses included in education degrees in Cypriot Universities. A combination of all the above played an important role for the way people and specifically teachers understand



the words “disability” and “children with disabilities”. Based on D. Ioannou, an elementary school teacher, disability could still be replaced with the words “problem”, “handicapped” and “special needs” (personal communication, August 20, 2018).

Following that, teachers were asked about the factors they believe are influencing this situation. Their answers were mainly focused on the economic and political situation in Cyprus and also the implementation of laws and legislations related to inclusion and disability. At the end of the discussion, and as we were analyzing the major historical events going back in time, teachers concluded that Cyprus invasion possibly had a vital role in the growth and development of the educational system as it is linked and influenced from the socioeconomic and political reformations and challenges the island gone through. They considered the challenges they experience everyday as the outcome of the economic and political crisis that the invasion caused.

Parallel answers have been obtained from the ministers of the schools who have been working in schools more than 10 years, which is closer to the date of the invasion. Due to their years of experience, principals have given more information on the immediate effect of the invasion on economic and political situation, which they reported is still affecting the educational system growth. Most of them began by providing some background information for this historical event. After the invasion, as discussed previously, the island’s economy disintegrated as thirty percent of its inhabitants fled their homes and many farming, manufacturing, and commercial relationships were shattered. Consequently, after the invasion the first goal was to recreate a functioning economy. The Republic of Cyprus targeted investments that led the Greek Cypriot

economy to reach pre-1974 levels within a few years and achieve an astonishing accomplishment, however the remaining political issues have been a barrier for educational development (G. Georgiou, personal communication, August 22, 2018). Principals reported that many laws and legislations have been applied, however due to the unsolved Cyprus issue with Turkey which is the main concern of the Cypriot government, the implementation and evaluation of the legislations have many gaps (G. Georgiou, personal communication, August 22, 2018; P. Petrou, personal communication, August 22, 2018).

Another principal from an elementary school, Mr. Petrou, agreed with Mr. Georgiou's insights and explained that the unstable political and economic ground caused from the invasion affected the development of the country in all areas. Additionally, he discussed how the following economic crisis in 2013 led to a rapid bounce back. While Cyprus was trying to attain an ascending stable development in economy and education, the economic crisis in 2013 came to challenge the island again, "you see, while Cyprus is trying to get over one thing, has to face another challenge" (P. Petrou, personal communication, August 22, 2018). The economic crisis involved the exposure of Cypriot banks to overleveraged local property companies, the downgrading of the Cypriot government's credit rating and the consequential inability to refund its state expenses from the international markets. The outcome was Cypriot Government once again to place its focus on other challenges other than education.

As discussed, Cyprus invasion, Cyprus solution and also the crisis followed have been the focus of government for more than 40 years now which consequently affected

the time spend on educational and disability issues. The decreased time on disability issues, apart from the outcomes discussed before, has influenced the application of inclusive practices from the government. This includes reduced inclusive programs introduced in elementary schools, an inadequate number of special teachers and therapists employed in public schools to support inclusion for children with disabilities, and the reduced constructional reformations and provision of required resources, materials and equipment. All these factors are necessary for placing the foundations of an inclusive era in education and for supporting and fulfilling children with disabilities' needs. Unfortunately, as it will be explained below, the development of inclusive schools is affected from the reduced budget available.

The results from the decreased focus on educational issues can be observed nowadays. The current crisis in education which Cyprus is experiencing, was discussed by the teachers. The Ministry of Education just recently identified the problems in the educational system, and started acting to minimize problems such as insufficient number of special education teachers in schools and lack of employment criteria and evaluation of the employees, in an attempt to increase the quality of education. An analysis of the annual expenses by the Ministry of Education shows that only 10% of the money available for educational purposes are available for construction, training programs, reformations in legislation for disability issues; the other 90% is spent on salaries (Andreou, 2018). As a result, educational adaptations and educational training programs are not being developed due to a reduced budget.

Furthermore, based on the personal communication with a few principals, there

are other influential factors that may affect the cultural beliefs of teachers. The lack of organization and skillful leaders in the Ministry of Education who are not being representative to the inclusive theory and the corruption of the state, dated back in 1974, are some of these factors. Based on M. Charalambous (personal communication, August 22, 2018), the main concern for several leading people is how they will earn money and “steal” from the budget available for educational purposes. Similar to that, the procedures to employ educators at schools is also corrupted and is lacking from assessments and evaluation procedures, (M. Charalambous, personal communication, August 22, 2018). Some other concerns include the limited knowledge teachers gain from the programs at universities; this limited knowledge is believed to have an immediate association with the misconceptions, beliefs and behaviors of teachers towards children with disabilities (D. Ioannou, personal communication, August 20, 2018; I. Michael, personal communication, August 20, 2018).

**Is there evidence that cultural beliefs towards disability affect teachers’ approaches they use in the classroom for children with concentration or sensory difficulties?**

The search conducted to answer this question included both research articles and the insights of the teachers and principals from the personal communication. The search terms used to reveal articles for this question were “cultural beliefs”, “disability”, “perceptions”, teachers”, “teaching methods”, “teaching approaches” and “inclusive education”. The range for the publication year changed to 2006-2018 with an exception of one article which was published in 1988. The number of the related articles was less

than the expected but the chosen articles in combination with the information gathered from personal communication were adequate to answer the question.

Reviewing the literature and listening to teachers and principals helped me realize how influential the cultural beliefs could be on teaching approaches used in the classroom. All studies and conversations raised the need to change cultural misconceptions on disability as they found out and believe that they could be the reason for not incorporating inclusive approaches or not having successful inclusive practices in schools.

The “onion model” from Sergiovanni and Starratt (1988) presents a belief system where the beliefs, understandings, and cultural assumptions of people begin at the core of the onion, which then affects the outer layers (Sergiovanni & Starratt (1988). The reason for selecting this model is because it shares the importance of cultural factors and explains the expanded relationship between culture and artifacts, perceptions and behaviors. This model could be used to understand the way teachers have been influenced from cultural factors, the way they perceive and behave in relation to disability issues, and whether their perceptions and beliefs characterize their teaching approaches and methods used in the classroom. Placing culture at the center of the concern, has guided my research and help me find related articles and organize findings from both the review and the personal communication in order to answer this research question.

The concern about how impactful culture could be both from a theoretical point of view as well as in practice could be seen in a number of studies. Researchers from around the world tried to explain the effect of cultural beliefs on the behaviors of people and

some of them explored the hypotheses that cultural beliefs can affect teaching approaches for children with disabilities. An example is the research from Tiwari and Sharma (2015) who tried to examine the perceptions and beliefs of general education teachers in Delhi, India, about the inclusion of students with disabilities in regular education classrooms. They concluded that teachers' sociocultural beliefs on disability have affected negatively the inclusion of teaching approaches used for students with disabilities. They also found that the systematic institutional barriers have led teachers to accept inclusion only in theory and not apply it to practice. The results from a comparative review of 15 studies in Serbia agreed with the above study (Rajovic & Jovanovic, 2013). The review showed that the main barriers for incorporating inclusive strategies and innovative teaching approaches are teachers' misconceptions on disability, the negative cultural beliefs for disability issues and the low status that children gain when they are diagnosed with disabilities. Moreover, the insufficient education and inadequate professional development programs for teachers in Serbia as well as the lack of resources and equipment to apply approaches for children with disabilities had been barriers to inclusive education (Rajovic & Jovanovic, 2013).

Vlachou (2006) conducted a study with 63 special education teachers from 63 schools in Greece to explore their beliefs towards inclusion. Due to the commonalities with Cyprus (ethnicity, heritage, language, and religion), results from Greek studies provide a foundation to answer the research question for Cyprus. The results of the study revealed very interesting insights on their ideology. The findings imply that children with special needs belong to a different pedagogical category and thus cannot be taught by

ordinary teachers. Taking a better look on the views of special education teachers and the quality of the programs they use, Vlachou (2006) concluded that even though the issue of collaboration with regular teachers was not reported as being one of their major responsibilities, it appeared in almost all the interviews as affecting both their role and the effectiveness of special education teachers' intervention.

This study discusses the influence of misconceptions about disability not only on teachers' behaviors but also for special education teachers. The way teachers in regular classes view special education teachers, disability, and children with disabilities is very important for the development of the educational system and inclusion for all. Moreover, as it was revealed from the results in a study by Zoniou Sideri and Vlachou (2006), teachers may show willingness to include children with disabilities in schools but with a deeper look on their beliefs and practical concerns, it is obvious that the majority of them are not ready to take an active role in the implementation of changes towards inclusive education. They believed that special segregated education should be part of the system since it offers a 'shelter' to disabled children (Zoniou Sideri & Vlachou, 2006). They also showed that their beliefs towards disability are mostly philanthropic and some of them believed that is better to keep children with disabilities in different schools in order to be protected since they believed that inclusive education is not feasible for all children (Zoniou Sideri & Vlachou, 2006). This study provides insights into the beliefs of general education teachers at schools about including children with disabilities in the general classroom.

These results are corroborated by the responses of the teachers in Cypriot school

from our personal communication (P. Petrou, personal communication, August 22, 2028; M. Petridou, personal communication, August 19, 2018; I. Savidou, personal communication, August 19, 2018). Several teachers, when asked about how children with disability should be treated at schools, reported that they would like to help them. However, they believe that it would be more effective for teachers and for the other children in mainstream classrooms, if children with disabilities were to attend a special school. Similar to the responses of teachers in Dubai (Gaad & Khan, 2007), Cypriot teachers felt that students with special educational needs lack skills needed to master the mainstream regular classroom course content and this could also affect the academic development of the other children in the classroom.

Some other teachers also stated that several changes have to take place like changes in the curriculum, size of classrooms, increase of support and increase of their annual salary to follow an inclusive educational system. This is parallel with the findings from Zoniou Sideri and Vlachou (2006). The next important outcome from the conversation with the teachers and which is also matching with the results of the study above is the use of phrases such as “what a “pity” “children with special needs”, “I feel sorry for them” which are showing a philanthropic misconception about children with disabilities. Teachers tend to use the word disability for all children without paying attention to the difficulty each child has (P. Petrou, personal communication, August 22, 2018). Mr. Petrou also reported that most of the time, the separation of the children that are “seriously disabled” is established when a disability can be recognized visually. Based on the conversation with teachers, I realize that they have the need to categorize



children and they tend to label children by using names of diagnosis like ADHD, dyslexia, autism although most of the time they are using the diagnoses in the wrong way.

Cultural factors are recognized as one of the most influential factors for teachers' behaviors towards disability. While social and educational changes need to happen at the systemic level in Cyprus, it is important to consider the role educators may play in applying teaching approaches to help children with disabilities and circumventing barriers in the classroom by creating an inclusive learning environment. A culturally responsive approach should be implemented to educate teachers and enhance their knowledge on disability issues and strategies they can use in the classroom.

Based on the personal communication with D. Ioannou and I. Michael, both teachers at elementary school in Cyprus, the lack of knowledge about disability issues and training programs to learn how to deal with related challenges in the classroom, is pulling them away from developing inclusive practices (August 20, 2018). The following paper was selected due to its analogous results, the sample size and the examination of the implementation of inclusive practices. Savolainen and his colleagues (2012) report on results from a comparative study of in-service teachers' attitudes and self-efficacy in implementing inclusive practices in South Africa and Finland and its implications for teacher education in these countries. A sample of 319 South African and 822 Finnish primary and secondary education teachers expressed overall positive sentiments towards disabilities and inclusion however they had concerns about the consequences of including children with disabilities in their classrooms due to the lack of knowledge they have on

this area (Savolainen, et al., 2012).

Teachers from personal communication also express their thoughts about the pull-out programs. Some of the teachers rely on the help from special teachers and speech and language therapists from the pull-out programs, believing that children with disabilities have enough assistance from these programs and is not their responsibility to be involved in their therapeutic programs. Adding to this belief, they support that children with “special needs” can only be taught by special education teachers (M. Petridou and I. Savidou, personal communication, August 19, 2018). It has to be acknowledged though that this pull-out program was designed to promote inclusion in school setting and has played a vital role in the implementation of more inclusive practices in school communities. However, there is lack of education regarding inclusive practices countering the assumption that part-time withdrawal from the regular classroom is the most effective way of encouraging the educational inclusion of children with disabilities. This contradicts the need for regular classroom teachers to use inclusive practices in their teaching (Vlachou, 2006). In Greece, in an attempt to explore the way special education teachers of primary education perceive their role, Vlachou (2006) conducted a study with 63 special education teachers from 63 schools. The results of the study revealed very interesting insights on their ideology. The findings imply that children with special needs belong to a different pedagogical category and thus cannot be taught by ordinary teachers. A better look at the answers from the teachers showed that the system separates teachers in the same way that it isolates and categorizes students (Vlachou, 2006; Floratou, 1996 cited in Vlachou, 2006).

Mr. Petrou supported that limited knowledge can cause misconceptions and misunderstandings about the role of a teacher in a school. Many teachers, due to the lack of knowledge create an incomplete explanation of their role. They believe that is not their responsibility and children with disabilities should attend special schools with specialized teachers (P. Petrou, personal communication, August 22, 2018). In order for teachers to appreciate their role, be able and confident to teach children with disabilities, and change their beliefs about disability, training and awareness programs are fundamental (G. Georgiou, personal communication, August 22, 2018).

A study conducted in Cyprus also agrees with the above findings regarding the problematic conceptualizations of teachers for inclusion and the philanthropic behaviors they have towards children with disabilities. According to the findings of this study, teachers tend to think on the basis of a medical and charity model and they favor special schooling for children with disabilities (Symeonidou & Phtiaka, 2009). The discussion in this article considers how a training course for inclusion can be academically robust and professionally useful, while at the same time taking into consideration teachers' prior knowledge and training (Symeonidou & Phtiaka, 2009).

The next study's results are equivalent with some of the responses from the teachers during the personal communication, mentioned earlier. The findings indicate that 79% of the children defined as learning disabled and partially excluded from their regular classes, had nothing to do with impairments and are mainly characterized as having 'learning and/or behavioral difficulties' (Vlachou, 2006). The limited knowledge they have on diagnosis, even the most common ones, affects the way they categorize children.

Very often the labels they give to children do not correspond with the difficulties the children actually have. As it can be recognized, examining this situation from an educational point of view, the educational gaps they have result in misconceptions, inappropriate behaviors and beliefs which have an immediate effect on student's participation and development.

**Is there evidence that teacher training impacts the strategies teachers use to support children with disabilities in their classrooms?**

After using the terms “teachers”, “training programs”, “teaching”, “education” and “knowledge”, the term “inclusive practices” were also applied as a term for narrowing down the results to articles concerned with disability issues and inclusive education as well. The databases searched (EBSCO, ScienceDirect, Education Database) provided 80 articles. From those, 6 (Fyssa & Vlachou, 2015; Vaze et al., 2015; Avramidis & Norwich, 2002; De Boer et al., 2011; Avramidis et al., 2000; Angelides et al., 2006) were selected for their content and for fulfilling the inclusion criteria (date: 2000-2018, English language, peer-reviewed).

The review of those articles in combination with the personal communication with the teachers and principals, suggest that training teachers to implement inclusive programs is vital for having effective outcomes for students. The age in relation to training is discussed below as well as the reduced confidence they have due to the limited knowledge they earn from university and from professional development programs later in life. This outcome calls attention to whether some responses of the teachers, which say that is not their responsibility to teach children with disabilities, is due to the limited

knowledge and training they have.

Along with acknowledging the importance of the development and implementation of inclusive programs, it has to be also recognized the significance of having trained people to work with them. In Greece further programs have been implemented in relation to Cyprus, however following an evaluation of the quality of the programs, the poor-quality of the programs was identified (Fyssa & Vlachou, 2015). The quality of an inclusive education in Greek context was tested by using the Inclusive Classroom Profile (ICP) which has been designed specifically to assess the quality of practices used by teachers to promote the inclusion of children with disabilities within daily classroom processes. The analysis of the results from descriptive statistics revealed the existence of mainly poor-quality practices in the participated classrooms. Authors discussed the influence of decreased training opportunities on the quality of teaching practices and emphasize the need for additional studies in order to be able to generalize the results and demonstrate national and cross-national validity of the study (Fyssa & Vlachou, 2015).

Age was also raised as an influential factor on applying inclusive practices. Almost all teachers from personal communication, were young in age and they raised the need for the establishment of an age limit for working in elementary schools. They have agreed that older teachers do not have the passion and excitement and also the energy to do play-based approaches and learn new approaches to incorporate in their lessons. A concluding phrase was used from I. Michael who summarized the beliefs of all teachers: “older teachers are drawn in the system and they don’t have the motive to work like us

the younger teachers” (August 20, 2018).

In order to make clear whether this outcome was due to the limited training opportunities or the willingness they have to apply new approaches, teachers were asked whether they think that was due to age or training. Most of the teachers discussed age in combination with training (Cyprus (D. Ioannou, personal communication, August 20, 2018; I. Michael, personal communication, August 20, 2018; A. Kyriacou, personal communication, August 21, 2018). They reported that all teachers have equal learning opportunities however older teachers are more likely to refuse to participate due to the limited time they have from family responsibilities in combination with the belief they have “many years of experience and that is enough” (I. Michael, personal communication, August 20, 2018). Teachers expressed their concern on the willingness and motivation of older teachers to learn and apply different approaches in classroom and also the physical abilities they have. Based on the response from D. Ioannou (personal communication, August 20, 2018), older teachers do not show interest in applying inclusive practices because they do not want to change the way they teach after so many years of teaching and “they do not feel able to apply play-based activities which incorporate a lot of moving and playing around”. Furthermore, I. Michael (personal communication, August 20, 2018) tried to explain this situation in terms of training and reported that the training opportunities were much less 15-20 years ago, and this is a big barrier for older teachers to understand disability issues and the importance of inclusive education.

Results from several studies have provided evidence to the above concerns. The

outcomes of the study from Vaz and colleagues (2015) aligned with previous studies from Avramidis and Norwich (2002) and De Boer et al. (2011), and indicate that older teachers tend to have more negative attitudes towards inclusion. This may not be a surprise, as older teachers are to have had limited or no training in inclusive teaching. Hence, older teachers may have to adapt not only to the needs of students that require additional support and alternative teaching strategies, but also to a general concept of inclusive school that might differ from the school they envisioned themselves and used to work in.

It has been also reported in an older study from Avramidis and colleagues (2000) that a lack of confidence with regards to teaching students with disabilities was associated with negative attitudes to the implementation of inclusive practices. They have also hypothesized that teachers' attitudes are probably related to how much they struggle with identifying solutions to problems, how able they are to accommodate students with severe disabilities and how educated and prepared they are to deal with students with a disability (Avramidis et al., 2000). Unfortunately, these statements still correspond with the Cypriot teachers' responses at the present time, 18 years after this research study. During the personal communication with teachers, and after analyzing their concerns about their limited educational levels, the effort they need to accomplish the inclusive goals will be set, was also reported in an indirect way. They tried to explain that there is a long way towards the implementation of inclusive practices and improving the training and knowledge of teachers for disability, and "this requires a lot of time and effort" (I. Savvidou, personal communication, August 19, 2018).

A conflicting outcome from the conversation was that most of the teachers have shown an interest in learning and willingness to help children with disabilities, even if they stated that it is not part of their duties and is a “hard job to be accomplished”. They shared experiences with children with disabilities, raising the need of training programs and guidance in order to assist those children in any way they can. Teachers expressed a complaint for the limited learning opportunities they have in relation to disability issues, especially those funded by the government. The approaches like play-based activities or sensory breaks were for the majority of the teachers an unknown subject. They reported having no or limited knowledge on using play-based, sensory based approaches and generally inclusive practices to increase attention on task and improve behaviors of student in the classroom. The findings from Avramidis and colleagues (2000) once again corroborate with teachers’ concerns about their limited awareness on disability issues and approaches, which is having a negative effect on their confidence to use inclusive practices.

The study in Greece from Angelides and colleagues (2006) has also shown parallel results with teachers’ responses. They have explored a number of questions related to the education of teachers at the universities and the design of these programs to meet inclusive education goals. The results indicate certain factors that act as barriers in the development of inclusive practices by student teachers. One of them is the curricula of the university programs which do not give emphasis to disability issues and to the notion of inclusion and is resulting in decreased awareness and confidence to apply teaching approaches because they were not trained in these areas (Angelides et. al.,



2006).

More concerns have been reported from teachers regarding the reasons for the limited application of new teaching approaches. One of them is the limited time they have available to spend on helping a child and applying new approaches. Also, the inappropriate classroom setting and the limited resources they have available as well as the media which are affecting the beliefs and behaviors of the typical developing children in the classroom are also been identified as obstacles towards building an inclusive environment. However, training needs was the most important concern among both principals and teachers and there is an immediate need to start acting and for the government to become an agent of change for this situation.

### **Discussion**

After reviewing and analyzing the content of evidence-based literature and personal communications that inform the postulated problem, the information gathered makes apparent that the links between teachers' beliefs and knowledge, cultural factors, curriculum, and children's difficulties with concentration in the classroom involve a complex array of factors. Some of the contributing factors, like teachers' training, have an immediate connection with the problem (children's reduced participation and attention in the classroom) and other have an indirect connection, such as the Cyprus invasion. However, going through the outcomes of this summary paper helped me realize that the consequences of all the contributing factors are related to teacher's knowledge, confidence, and the resources available to them in order to make possible the implementation of inclusive practices to help children increase their concentration and

participation in academic lessons.

The implementation of approaches to help children is basically affected from teachers' limited training on disability issues, followed by the impact of the crisis in education which was a result from the decreased attention on educational system, dated back to 1974 when Cyprus invasion was placed at the center of government's concern. It seems like there is not a primary factor leading to decreased use of inclusive and innovative approaches in the classroom to help children with sensory and attention difficulties. The evidence gathered confirms my hypotheses about the influence of Cyprus invasion however I define this factor as a bad beginning and not the main factor affecting the current situation. The factors determined as influential remind me of dominoes game, when one domino is affecting all the rest and sets off a chain. In the case of the situation in Cyprus, Cyprus invasion was the first domino, which has set the chain and a linked sequence of the rest of the factors, affecting all the rest of the factors, but each one having its own important role for the outcome, which is what the visual model presents.

After reviewing and determining the content of literature that informs the factors affecting the teaching methods used in elementary classrooms and their behavior towards children with disabilities, the primary pathway proposed in the initial model was substantiated. However, through the information gathering it became apparent that parents' beliefs were not included in the causal pathway of the complex array of factors reported from the teachers and principals. For this reason, parents' beliefs, which was included in the initial visual model as a contributing factor, has to be removed.

Concluding, it is important to evaluate the quality of the evidences used in this review. Due to the limited studies conducted in Cyprus, there are many gaps and validity issues in the outcomes. Including personal communication with teachers was the only way to report the situation in Cyprus however they have to be used with caution. The findings from personal communication cannot be generalized and since they are not representative of Cypriot population, the need to gather representative data should be consider in future studies.

### **Intervention literature review**

The literature was reviewed on attention and sensory challenges with children in classrooms in order to have a better understanding for the program's content (Ben-Sasson & Briggs-Gowan, 2009; CDC, 2018; Chang et al., 2014). The existing programs that address those challenges and improving participation in classroom are described and analyzed in terms of their design and effectiveness (Nixon et al., 2008; Hildreth, 2013; Kibbe et al, 2011; Goh, 2014).

Some children enter school with the attention, motor, cognitive, and social skills ready to meet academic demands, while other children require additional support to meet the school curriculum goals. Most adults are able to effectively process sensory input, having learned to modulate sensory information and process only what they need to focus on the task at hand. However, children must develop this ability and be able to distinguish which sensory input merits attention and which does not in order to screen out distractions or welcome them. Unfortunately, there are many children for whom this

natural biological and neurological maturation process is a struggle; it is these children who are often identified as having attention difficulties and sensory integration (SI) issues (Ayres & Robbins, 2005; Tomcheck & Dunn, 2007).

Some of the behaviors that can be observed in a classroom when a child has difficulty with attention and/or integrating sensory input are: having trouble sitting still or concentrating, being very fidgety, melting down when they are expected to make a transition from one activity to the other, and being distracted by background noises that others do not seem to hear (Ben-Sasson & Briggs-Gowan, 2009).

These behaviors are often associated with Attention Deficit-Hyperactivity Disorder (ADHD). According to the United States' Centers for Disease Control and Prevention (CDC, 2018), there has been a 50 percent increase in the number of U.S. preschool children—kids between the ages of 4 and 5—who take ADHD medications. Additionally, about 1 out of 2 children with ADHD had a behavior or conduct problem (CDC, 2018).

Another reason for some of these behavior problems in the classroom may be sensory processing deficits. Children with sensory processing differences may have trouble handling the information their senses take in such as sound, touch, taste, sight, and smell. They may be oversensitive, under sensitive, or both to some of the 5 senses or the other two less well-known senses. The other two senses are proprioception or the sense of body awareness, and vestibular, which involves movement, balance, and coordination. Approximately 5-16% of typically developing children in the United States have a sensory processing disorder that may adversely affect school performance (Ahn,

Miller, & Milberger, 2004; Chang et al., 2014). This paper will consider classroom interventions that have been designed to address classroom behaviors of children with attention and/or sensory processing challenges.

Attention and sensory modulation difficulties can be challenging for a child and can affect their school performance (Ben-Sasson et al., 2009). A review from Dalley and Birchwood (2010) aimed to examine the relationship between attention deficit hyperactivity disorder (ADHD) and academic performance. The authors concluded that attention deficit hyperactivity disorder is associated with academic underachievement across the developmental spectrum, from preschoolers to adults and is associated with some of the basic features of ADHD such as inattentive symptoms and executive function deficits (Dalley & Birchwood 2010). A year later Basch (2011) conducted a similar review in an attempt to outline the prevalence and disparities of inattention and hyperactivity among school-aged children and the causal pathways through which inattention and hyperactivity adversely affects academic achievement. The results indicated similar findings with the previous study, explaining that inattention and hyperactivity are highly and disproportionately prevalent among this population and both difficulties have a negative impact on academic achievement and educational attainment through their effects on sensory perceptions (Basch, 2011).

This part of the chapter synthesizes peer-reviewed literature about interventions that assist the growing number of children who are struggling to integrate and organize the sensory stimuli in a classroom and maintain on-task attention behaviors in the classroom. Existing intervention programs, such as sensory-based interventions, for

improving attention and participation of children in the classroom will be presented in this section. Moreover, the difficulties for implementing these programs to increase the participation and concentration of children with sensory modulation and concentration difficulties will be explained based on the review of the literature.

**What interventions exist for improving attention of children with sensory modulation and concentration difficulties in classroom and what is the evidence of their effectiveness?**

The literature search terms used to answer this question were: classroom, sensory modulation, intervention, children, attention, participation, and teachers. The databases searched were PsycInfo, CINAHL and ERIC. A number of filters were also applied to the search such as date published (2008- 2018), language (English language), peer-reviewed articles and accessible online. The results of these searches revealed 29 articles; the twelve most related to the research question were selected for summary and synthesis in this paper.

Beginning with research from 2008, the study from Nixon et al. (2008) examined the impact of movement breaks on the attention of children in the classroom. The movement breaks were short periods of time consisting of physical movements that were conducted within the classroom and lead by classroom teacher-research assistants to elementary school children in the first grade between the ages of 5 and 8 years old. The study showed that there was in fact a significant difference in children's scores on the Conners' Teacher Rating Scale Revised (CTRS-R: S) during the times in which they received movement breaks in their classroom. The authors concluded that attention in a

classroom is enhanced by movement breaks (Nixon et al., 2008).

A quantitative study in 2010 (Helms, 2010) was conducted in order to examine the effectiveness of sensory strategies after training teachers how to focus on challenging behaviors and implement SI strategies into the classes. The teachers were asked to implement the strategies for a 4-week period. At the end of the period, the teachers were administered a survey to complete. The findings of this study show evidence that the SI training strategies applied to students with ADHD or hyperactivity do have a positive effect on reducing frequency of occurrence of on task behaviors in the classroom.

Next, reviews and research studies were conducted to evaluate the Take 10! Program (Goh, 2014; Hildreth, 2013; Kibbe et al, 2011). Take 10! is a classroom-based physical activity program, combining academic instruction with 10-minute physical activity breaks to get kids moving without sacrificing time dedicated to academic learning (Goh, 2014). It was designed by teachers for teachers to engage students in movement while reinforcing specific academic objectives in math, reading, language arts, science, social studies, and nutrition and health.

Ten years of the implementation of Take 10! program was examined by Kibbe and colleagues (2011) through evidence from journal articles, published abstracts, and reports. The authors of the review summarized the impact of TAKE 10! on student health and other outcomes, including the reductions of time-off-task, improved reading, math, spelling and composite scores, and the increased student concentration, as reported from teachers who implemented the program 30–50 minutes per week (Kibbe et al., 2011).

Three years later a quantitative study (Goh, 2014) was conducted to add to the

evidence regarding the effectiveness of Take 10! Program by implementing it with 210 children in one elementary school for eight weeks from trained classroom teachers (Goh, 2014). The analysis of the findings revealed very promising results for the use of this program. There was a significant decrease in mean on-task behavior from pre-no TAKE 10! to post-no TAKE 10! during baseline and an increase of on-task behavior during intervention. Classroom breaks were shown to be effective in improving on-task behavior in the classroom (Goh, 2014).

The literature review paper from Hildreth (2013) not only agreed with the previous findings but moved a step further by describing the effectiveness of a sensory-designed environment to meet students' needs. The author discussed children's difficulties with learning, regulating and adapting behavior based on sensory sensitivities, and sensory-seeking experiences within their environment. Hildreth, based on the literature review conducted, suggested that multi-sensory teaching practices and the creation and design of the general education classroom environment to support the student's sensory profile is of great importance for improving their behaviors and concentration in the classroom (Hildreth, 2013).

Further programs were designed in an attempt to determine whether a classroom-based program will improve attention and behavior of children. The Sensory Activity Schedule (SAS) is one of them. The authors of this program, Mills and Chaparo (2016), in an attempt to provide empirical support for teachers using planned sensory activities in special education classrooms, designed the SAS and conducted a single-subject study to examine its effectiveness. Despite the fact that this study has the limitation of a single



subject design, which does not allow generalizability of the results, the findings of this study are very promising. They demonstrate preliminary evidence that sensory-based interventions may be effective for managing sensory-based challenging behaviors including reduced concentration and distractibility (Mills & Chapparo, 2016).

A year later, the same authors conducted a second study to examine the effectiveness of the SAS, though this time they employed qualitative methods to examine teachers' views of the implementation of the program (Mills & Chapparo, 2017).

Nineteen special education qualified teachers who participated in the classroom that used the SAS reported that learning new ideas, working with an occupational therapist, and seeing an increase in concentration and a reduction in undesired behaviors were positive aspects of utilizing the intervention. They also reported that they believed that SAS intervention had a positive impact on the students' sitting ability and attention during school work (Mills & Chapparo, 2017).

Another program was examined, the Sensory Diet Curriculum (SDC), with an important difference from the previous studies. The author recognized the importance of sensory enriched program for both children with and without disabilities (Mere-Cook, 2016). Since sensory regulation is the body's physiological process of adapting arousal or alertness levels to cope with sensory events and situational demands, they suggested that children without disabilities will also have sensory needs which have to be fulfilled during the classroom time. Therefore, to examine the effects of embedding the SDC within an existing kindergarten center time, they included students with and without disabilities. The authors examined the effectiveness of the program through a three-point

rubric that measured teacher implementation consistency, observations, and student perspectives through interviews. Results suggested that addressing sensory regulation with a whole-classroom approach can support the individual needs of students with sensory regulation difficulties as well as provide benefits to all students in inclusive settings and improve the time spent participating and concentrating on tasks (Mere-Cook, 2016).

Foran et al. (2017) examined the perceptions of seven elementary teachers on the effectiveness of physical activity in their classrooms. Since sensory integration theory recognizes the importance of moving and having physical breaks to meet children's sensory needs, this study is equally important with the studies examining sensory-based interventions (Ayres, 2005). During the interviews, teachers shared some common attributes such as active lifestyles and a pedagogical approach prioritizing physical activity throughout the day and valued physical activity because it enhanced their students' focus on classroom activities (Foran et al., 2017).

Similar findings were revealed from two other studies. The first study from Heidi et al. (2018) examined the use of physical breaks by employing a quasi-experimental study with 116 students in fifth grade from two elementary schools by using Fit-bits and testing children with the Test of Attention. The authors examined the effects of a daily 6-minute coordinated-bilateral physical activity (CBPA) breaks in classroom on attention and concentration and concluded that daily 6 minutes CBPA can improve processing speed, focused attention and concentration performance in fifth-grade students over the course of four weeks (Heidi et al., 2018).

The next study utilized a larger cluster randomized control trial in which student attention, or time on task (TOT), and accelerometer-based PA was assessed in conjunction with active learning for 2716 elementary children (Bartholomew et al., 2018). The findings showed that the intervention lead to significantly increased TOT, suggesting that this impact offers intriguing possibilities to better understand the relationship between physical activity and academic performance (Bartholomew et al., 2018).

Based on the literature described above, there is satisfying number of articles to use as the foundation to support the importance of sensory, play and moving breaks as an intervention for improving attention of children with sensory modulation and concentration difficulties in classroom. The theory developed by A. Jean Ayers in the 1970's, which focuses on the ability of the brain to organize sensory information, has been recognized by many researchers as a basic aspect to help individuals with sensory processing disorders to process sensory information and regulate that information so they are better able to focus (Foran et al., 2017; Mere-Cook, 2016; Mills & Chapparo, 2017; Zimmer, 2012). The importance of Ayres' sensory integration theory has been recognized as an intervention approach and it is used as a clinical frame of reference for the assessment and treatment of people who have sensory processing difficulties (Mills & Chapparo, 2017).

Implementing theories related to sensory processing and moving into interventions, through classroom strategies, is particularly important for children in the school system because sensory processing is thought to be vital for maintaining an

optimal state for performing occupations, such as the ability to attend, learn and adjust their behavior (Case-Smith et al, 2015). For example, structural organization routines such as schedule board, labeled slots and bins and activities such as jumping, obstacle courses, races, animal role playing, sensory bins, and clapping games can be included in a school program to help children improve their attention in the classroom. Moreover, based on the information from the above studies, the duration of these breaks could be between 6-10 minutes, three times per day in order to give the opportunity to children to self-organize and regulate throughout the day.

The analysis of the selected studies revealed valuable information, however it is equally important to recognize the limitations of this literature review. The strength of the evidence from the studies was sometimes lacking since single subject designs and qualitative studies were included. Moreover, since some studies were literature reviews, they can only confirm the benefits of classroom programs and not provide empirical evidence for answering the question. It is also important to report that some of the studies include children with attention difficulties and not sensory processing difficulties, which limits the evidence for the benefits of the classroom programs for children with sensory difficulties.

**What interventions exist for improving participation of children with sensory modulation and concentration difficulties in classroom and what is the evidence of their effectiveness?**

Similar search terms were used for searching the literature and answering this research question. Participation was added to the search terms to narrow down the results

and focus more on participation. The filters applied to the search were the same as in the first question (date published: 2008-2018, language: English language, peer-reviewed articles and online access) as well as the databases searched (PsycInfo, CINAHL and ERIC). The results of the literature search were 10 articles and from those only 6 were relevant to the research question. The findings are organized in chronological order, in order to achieve a better understanding on the progress of research conducted in this field.

It is noticeable that students are missing valuable learning content that will affect foundational core concept knowledge now and in the future due to their out-of-seat behaviors, lack of attention and therefore limited participation in classroom activities. Based on Sezer et al. (2017), there is a positive correlation between students' attention levels and class participation. Therefore, some of the studies discussed in the previous question will also be discussed for responding to this question. One of these research studies is the quantitative study from Helms (2010) that examined the effectiveness of sensory strategies on challenging behaviors, concentration and participation of children. The findings of this study show evidence for the effectiveness of SI strategies for both the concentration and participation during classroom time of children with ADHD or hyperactivity. Educating teachers in regards to how to assist students with difficulties in classroom before they become disruptive and providing them with coping strategies to assist them when their behavior is at its worst were among the most influential components of the program's achievements (Helms, 2010).

Recognizing the benefits of physical activity in the classroom like other

researchers, Harbin (2012) conducted a study to examine whether physical movement breaks during classroom time would increase the concentration and participation of 3 kindergarten students with an autism diagnosis. Using an ABAB study design, the author introduced two to three minutes of physical movement which was embedded in the students' typical circle routine and consisted of a "stand-up" song that incorporated dancing and other gross motor movements. The results showed an increase in engagement during a group circle time activity and independent seatwork task after participating in the physical break. This study provides support that physical activity contributes to positive outcomes for children with autism diagnosis in the areas of academic performance and engagement (Harbin, 2012).

In accordance to Powell (2013), participating in classroom activities is influenced by attention, and attention on task is influenced by the difficulty some students have in processing and integrating sensory information in order to stay focused and alert during the school day. Consequently, Powell hypothesized that the Alert Program, designed to promote self-regulation with a compilation of activities and strategies based on Ayres's sensory integration theory, would help children to recognize, maintain, and alter their alertness level to match either the environment they are in, or task they are completing. For examining her hypothesis, she conducted an exploratory research study with 60 first and second grade students who were assessed before and after the Alert Program intervention with the Sensory Processing Measure (SPM-C) and School Function Assessment: Part III Activity Performance - Cognitive/Behavioral Tasks (SFA). The implementation of the Alert Program over 4 weeks was shown to be beneficial for

students in terms of changing their level of alertness and subsequently increasing their effectiveness in fully participating in the school environment and increasing their academic success (Powell, 2013).

Acknowledging the benefits of sensory strategies and the importance of sensory integration theory applications in the classroom, Mere-Cook (2016), as discussed in the previous question, conducted a study that adopted a sensory perspective, and examined the benefits of a sensory diet curriculum (SDC) for children with and without disabilities. Aside from the benefits for children's concentration span, the authors highlight the positive effect of SDC on students' engagement in classroom activities. The results showed that the time to transition and time spent participating in tasks improved progressively for most participating **students**. **The authors concluded that addressing sensory regulation** with a whole-**classroom** approach can support the individual needs of **students** with **sensory regulation** difficulties as well as provide benefits to all **students** in inclusive settings (Mere-Cook, 2016).

Similar results were revealed from 2 qualitative studies that used other sensory based programs, the Sensory Activity Schedule (SAS; Mills and Chapparo, 2017) and sensory integration techniques (Harland et al., 2017), during classroom time. In a qualitative study, Mills and Chapparo (2017) captured teachers' perceptions of using the SAS and found out that the SAS intervention is effective in increasing participatory skills of children during classroom time. The study from Harland et al. (2017) confirms these findings and provides further evidence for the effectiveness of sensory-based intervention. Seven therapy and teaching staff of children and young adults with learning

disabilities were interviewed in order to share their perceptions of any effects on engagement or participation that they had observed following sensory integration groups. They reported that group sessions involving sensory integration techniques were perceived to have a positive effect on the abilities and participation of children and young adults with learning disabilities and other complex needs in educational settings (Harland et al., 2017).

Even if the literature is not adequate to lead to conclusions, a hypothesis can be formed from the presented literature on the importance of movement and sensory-based interventions for participation. It is noticeable that participation is always accompanied with attention and after searching the literature, it can be hypothesized that participation is viewed as an outcome of the increased attention. The fact that most of the studies included to answer this question (Helms, 2010; Mere-Cook, 2016; Mills & Chapparo, 2017) were part of the previous analysis to answer the question regarding attention of children, supports this hypothesis. Even if the number of studies was not as expected, the literature review helped answer the research question as it is perceptible that there is a positive influence of intervention on children's abilities including participation.

Some of the limitations of the above studies include the focus on children with disabilities, the data collection from teachers and not from children, the small number of participants, and the inadequate description of the programs, which can be a barrier for the transferability of the studies. Therefore, when designing the doctoral project, it is important to take into consideration the needs and gaps for further empirical evidence. For instance, the doctoral manual would include activities for children with and without



disabilities and teachers will be trained to choose them appropriately to fulfill all children's needs. Moreover, unlike the studies analyzed, the teachers' manual developed in this doctoral project will include descriptions and definitions of attention and sensory difficulties as well as signs and red flags for teachers to observe so that they are more informed about how and why to choose activities. The teachers will be also provided with a suggested timetable with activities and frequency of the breaks. Lastly, the manual will include a program evaluation that teachers can complete and send to the researcher for further assistance. A similar report for the children to complete will also be included in order for the researcher to make changes to the activity program content based on children's insights and needs.

**What are the difficulties for implementing programs to increase the participation and concentration of children with sensory modulation and concentration difficulties?**

The database searched (PsycInfo, CINAHL and ERIC) as well as the filters applied (English language, peer-reviewed articles, online access) for answering this question were the same as the previous two literature search questions. The search terms for this question were: classroom, inclusive intervention, children, teachers, contextual factors, barriers, and elementary schools. The search revealed 6 articles. This search was not limited by year of publication because so few articles were published on this topic.

Austin (2001) examined similarities and differences between secondary educators' insights of specific practices and their access to those practices. Findings indicate that educators have limited access to structural and procedural supports, such as

scheduled planning time and summer planning, administrative support, in-service training time, inadequate formal preparation for inclusive education including courses and pre-service field experiences. The teachers value the use of effective strategies for their preparation and knowledge on disability subjects and also the school-based supports and the shared classroom management. The barriers for implementing these valued practices include the limited collaboration with specialized staff, limited training and experience on disability and inclusive practices and also inadequate preparation, organization and support from school staff (Austin, 2001).

Fennick and Liddy (2001) created and implemented a survey instrument to elicit teacher perceptions about collaboration with special education teachers, their views regarding inclusion of children with disabilities and what is needed to ensure effective collaborative teaching with special education teaching staff. The authors suggested that barriers such as limited preparation and knowledge for teaching methods and approaches to use in the classroom as well as reduced time of mentoring by co-teacher and student teaching in a collaborative class, should be minimized in order for teachers to effectively implement teaching practices within school settings. The study concluded that for collaborative teachers to make classes inclusive, they need mutual planning time, as well as sufficient professional preparation prior to their collaborative teaching assignment (Fennick & Liddy, 2001).

Similar findings have been reported by other investigators who have asked teachers to identify barriers they come across in the classrooms and to share their thoughts about solutions to effective collaborative teaching practices. For example, one

of the aspects that Walther-Thomas et al. (2000) discussed in their book is the barriers teachers more commonly come across that inhibit effective implementation of programs and effective collaboration. Based on the literature review they conducted to write the book, some of these barriers are the student scheduling and high caseloads for educators, the limited team planning time, the limited resources they have available and the poor support and training of educators for professional development in inclusive practices, the limited instructional planning, inadequate ongoing classroom support and IEP development (Walther-Thomas et al., 2000). Those barriers are related to the limited development of the essential knowledge, skills, and attitudes needed to serve as leaders in the inclusive practice. The authors suggest that these barriers have to be taken into consideration in order for inclusive practices to be adapted in schools and these issues should be addressed at the district, school, and classroom levels (Walther-Thomas et al., 2000).

Some years later the same concerns were investigated from Damore and Murray (2009) in order to add to the evidence regarding the benefits of teachers' collaboration with special education teachers and other professionals and the importance of examining the barriers they experience every day in order to improve teaching methods. Effective collaboration with teaching staff was placed at the top of the barriers' list for teachers. Other common difficulties included limited pre-service and in-service training, reduced planning time, poor administrative support, limited basic resources, and a large number of inexperienced teachers. These findings agree with previous findings.

Correspondingly, other researchers acknowledged the importance of teacher

training for the effective implementation of inclusive practices (Pas et al., 2014). These researchers also highlight other equally important barriers that affect teaching practices. For instance, besides limited teacher training, the study from Pas et al. (2014) found that the effect of classroom setting and role of school principles on adopting new practices are very important for implementing an intervention. The authors, by using the Classroom-Based Implementation of Positive Behavior Support Strategies, School Organizational Health, Teacher Observation of Classroom Adaptation-Checklist, and External Assessment of School-Level SW-PBIS Fidelity showed that it is important to have the appropriate classroom setting to apply any intervention and is also important to have a supportive principal with positive beliefs towards disability who will encourage inclusive practices (Pas et al., 2014).

Parallel to the above studies, Condrey (2015) found that education level, personal experiences outside the classroom and previous experience with students inside the classroom have an impact on implementing inclusive practices. Through surveys and personal interviews among K-5 regular education teachers, the researcher also found that the negative attitudes and beliefs of teachers play a vital role in inclusive education. Based on teachers' responses, their attitudes toward students with disabilities had a strong correlation with the reduced application of interventions in classroom and therefore a strong impact on the implementation and overall success of an inclusive program in the classroom (Condrey, 2015).

The author also highlighted the importance of principals' beliefs; Condrey (2015) found that the school-based administrator is responsible for the development of the staff's

attitude toward inclusion and identified the principal's role as the person who is responsible to articulate the needs of inclusive practices and provide a link between teachers and students. Basically, Condrey (2015) is describing a leadership role for principals and is proposing that if the principals lead the effort in implementing classroom inclusion and inclusive programs, then the teachers will follow the principles in implementing inclusive practices.

The next study's results are analogous with the Damore and Murray (2009) findings as they both described the difficulties of teachers when implementing an intervention in relation to the limited pre-service and in-service training, timing, staffing, and administrative support (Mills & Chapparo, 2017). During the semi-structured interviews, teachers who teach in special schools also highlighted the importance of a trial period before commencing intervention and therapy support from specialized teaching staff to ensure they were implementing the intervention correctly (Mills & Chapparo, 2017).

Researchers have observed that structural and procedural challenges related to scheduled teacher planning time, student scheduling, high caseloads and poor administrative support are persistent problems that can negatively affect implementation of new approaches (Austin, 2001; Fennick & Liddy, 2001; Walther-Thomas et al., 2000). These factors could partially answer the research question. However, there is a limited number of research studies there examined the factors influencing the implementation of intervention in classroom. Therefore, the results from this literature review have to be used with caution.

Moreover, the limitations of the studies analyzed in this literature review have to be acknowledged. One of them is that most of the studies discuss the contextual factors as an outcome and not as the variable of the study. Also, the sample size of most of the studies was very small which can be a barrier to the generalization of the results. The fact that interview was the main method researchers used in their studies was advantageous because they could capture the interviewee's emotions and behaviors and get a 'deeper' understanding of the phenomenon they examined. However, at the same time, this methodology can be disadvantageous since the quality of data the researchers received depends on the ability of the interviewer and because interviewers may also have their own biases that could impact the way they input responses. Further investigation and search of the literature regarding teachers could provide further evidence for supporting the findings of this part of the synthesis paper.

### **Teachers' Literature Review**

Teachers are recognized as agents of change in schools especially when it comes to educating students with special learning needs (Watson, 2014). They have the greatest role in children's education and a big responsibility in supporting their development not only at the educational level but also for their psychological, social and sensory development. Therefore, it is important to consider the factors that are influencing their teaching, and consequently children's learning. Additionally, we must understand teachers' own educational needs and gaps that are restricting the implementation of inclusive practices in their classrooms. The leading topics for this literature review are the required skills and required knowledge that teachers should have in order to apply

inclusive practices in the classroom program. This information will assist in designing an effective manual for teachers.

A literature search was conducted using the search engines PsycInfo, CINAHL and ERIC and the filters applied to the search were the date published (2008- 2018), language (English language), peer-reviewed articles, and online access. For the teachers' question the search terms included elementary school, classroom, sensory practices, intervention, children, teachers, teaching methods and skills, teachers' knowledge, teacher education and inclusive practices. Twenty-five articles resulted from the literature search however only nine were relevant to answer the literature search question.

**What are the required skills and knowledge to apply inclusive practices effectively in the classroom program?**

There is an important gap in the literature regarding the required teaching skills for applying sensory and play activities: no studies were found that examine this topic. The search results were inadequate to address my question regarding skills directly because the majority of the studies came down to knowledge and teacher's personality. The studies are more concerned about the training and experience teachers have and how they can be trained better. Teachers are coming with different skills and that is maybe due to the knowledge and experience they earn at the university therefore it is difficult to give a generalized definition for the teaching skills they must have. Moreover, the limited sensory and play based programs created for schools were also an obstacle for searching the literature so the search was broadened by using the search term related to knowledge and not the skills and also using inclusive practices instead of sensory-based or play-

based programs.

Many researchers have examined the relation between preparation and knowledge of teachers to effectively apply strategies and meet the needs of children with different abilities in the regular classroom (Meng deng & Harris, 2008; Ohan et al., 2008; Wisdorf, 2008). As a result of increased academic rigor and limited movement opportunities during the school day, and the pressure of increased focus on academics for both teachers and students, less time is available for children to move which may result in limited focus and difficulty maintaining attention (Bateman, 2008). Teachers need strategies to help students maintain attention, such as movement breaks, classroom environmental modifications, and alternative seating suggestions that can be incorporated throughout the day and that do not impede on time spent on academic curriculum guidelines. However, in order to apply strategies in the classroom, teachers have to be trained and have the knowledge to do it.

Three studies conducted in 2008 examined the relationship between the knowledge about attention-deficit/hyperactivity disorder and teachers' behaviors, attitudes and perceptions they have toward students with ADHD (Meng deng & Harris, 2008; Ohan et al., 2008; Wisdorf, 2008). The 140 Australian elementary teachers (Melbourne) who participated in the experimental study from Ohan et al. (2008) had important misconceptions about ADHD, most notably with respect to the causes and treatments of ADHD. Vignette, demographic and background questions as well as the ADHD Knowledge Scale indicated that teachers' knowledge about ADHD had a significant impact on their reported behavior and perceptions. For example, teachers with



low ADHD knowledge were not able to perceive the need for or seek services for the child; teachers with high and average ADHD knowledge both perceived significantly more benefits of educational support and changes to the home environment and perceived significantly greater benefits of making changes within their classroom (Ohan et al., 2008). However, the experimental methodology of the presented study, which required teachers to imagine that children in vignettes were real and to report their reactions, may not fully reflect teachers' actual behaviors and perceptions in the classroom, and this has to be acknowledged when interpreting the results.

The quantitative study from Wisdorf (2008) used similar measures to examine the knowledge of teacher for ADHD (Knowledge of Attention Deficit Disorders Scale, KADDS) for sixty-eight Wyoming teachers. The authors, acknowledging the valuable role of teachers in referring children for screening and assisting them, conducted a study to test their knowledge of ADHD in three specific categories: associated features, symptoms, and treatment. This study suggests that specializations in special education do not make a significant difference in correctly answering questions related to the associated features, symptoms, and treatment of ADHD, but having teaching experience does. Moreover, the results showed that course work geared toward disabilities focus more on extreme and severe disabilities rather ones that do not seem as impairing, such as ADHD. Both findings raise important questions for the content of the manual, which have to be considered during the development of the manual. Would it be useful to include information for all levels of difficulty for concentration and sensory modulation difficulties instead of just including strategies for severe and extreme situations? Should

the manual provide practical opportunities for teachers to observe and discuss real life situations as well as application of the suggested manual's activities in order to be adequately prepare for the real world of teaching?

The study from McIntyre (2009) provided further explanation for these results by reviewing the UK and USA literature and resources. Similar to the teachers who participated in Wisdorf (2008) study, the author of the present review suggested that whatever is achieved in the university, the teaching practices and attitudes that student- teachers usually learn to adopt are those currently dominant in the schools. They concluded that beginning teachers are not sufficiently well prepared to deal with student diversity, disability, and other differences because teacher educators have not engaged sufficiently with the work of practicing teachers (McIntyre, 2009). The needs for increasing special educational knowledge and practicing experiences for teachers are identified as vital in this. This information can further support and guide the development of the doctoral project manual in terms of fulfilling teachers' educational needs, and can also provide evidence for the importance of developing the suggested manual for teachers.

The next literature review study discussed the implementation of "Learning in Regular Classrooms" (LRC) in China (Meng deng & Harris, 2008). The authors provide information about the history of the Development of Special Education in China, the emergence of the Current "Learning in Regular Classrooms" Model, the teacher Training Strategies, and suggestions on developing special education training for graduates and on-the-job training for educators at all school levels. The results from their review of the

literature indicated that most teachers who take on the responsibility of educating individuals with disabilities, did not receive any training regarding disabilities in their university nor any on-the-job training. As a result, this lack of education and expertise affected the quality of instruction in general classrooms. Meng deng and Harris' (2008) literature review also indicates that instructional quality for students with disabilities who are learning in the general education classrooms as well as adequate number of trained teachers and resources, has not yet been achieved in China. This seems to match with the two Cypriot teachers' concerns (personal communications, Maria Ioannou and Irene Christodoulou, 13 December, 2018). Even if the generalization of the results is not appropriate to be made for other countries, based on teachers' responses from Cyprus, it seems that the two countries share some commonalities in regards to the training available for teachers.

The next study from Romero-Contreras et al. (2013) examined Mexican teachers' training in relation with the beliefs and perceptions they hold. The 813 pre-service teachers completed the Sentiments, Attitudes and Concerns about Inclusive Education Revised Scale and the Teacher Efficacy for Inclusive Practices scale. These scales were used to determine the impact of the Mexican pre-service teachers' curriculum on teachers' sentiments, attitudes and concerns towards inclusion as well as their perceived self-efficacy to educate students with disabilities. The study results showed that those who were training in special education had the most positive sentiments towards meetings with people with disabilities. Interestingly other aspects of inclusion such as acceptance of special education teachers from the other teachers and increase of their

workload were of less concern to them. Most pre-service teachers' concerns were mostly related to their own ability to assure proper attention to all students in an inclusive classroom (Bandura, 1993 as cited in Romero-Contreras et al., 2013). The authors suggested that to change attitudes toward disability and inclusion, a combination of information-based instruction with structured fieldwork experiences is needed (Romero-Contreras et al., 2013).

The following study examined possible solutions for increasing teachers' knowledge in special education (Killoran et al., 2013). Twenty-four members of the teaching profession and university faculty in special/inclusive education participated in a two-day workshop at the Ontario College of Teachers. During the first day of the workshop the authors discussed with the participants of the study further revisions for the Three-Part Additional Qualification (AQ) courses in special education and the gaps in teacher knowledge and skills regarding special education. On the second day they discussed the possibility of a provincial virtual knowledge network that would support the AQ courses. The participants identified gaps in teacher's knowledge about special education such as specific knowledge of disabilities; knowledge of systemic trends in special education, a lack of a centralized repository of information, the need for educators to gain specific knowledge in understanding and contextualizing behavioral exceptionalities. They also expressed the importance of ensuring a balance between both theoretical information and practical knowledge of different diagnoses and they suggested that a virtual knowledge network could help assist teachers in understanding antecedents to behaviors and help them solve behavior incidents and support students

(Killoran et al., 2013). The study results revealed positive and embracing outcomes for the use of a virtual knowledge network however, since the network was not implemented, further research should be conducted to try out the network and examine whether the suggested network is effective for teachers to implement inclusive practices to meet the needs of all students (Killoran et al., 2013),

Killoran et al.'s (2013) results may help address the teachers' concerns revealed in the Sokal and Sharma (2017) study. Sokal and Sharma conducted a quantitative study to compare the attitudes, efficacy, and concerns about inclusive education from three groups of 191 teachers in Manitoba, Canada. These three groups were: pre-service teachers with coursework about inclusive education, but limited experience in inclusive settings; in-service teachers with experiences in inclusive settings, but no coursework about inclusion; and in-service teachers with inclusive teaching experiences as well as coursework about inclusion. Analysis of variance revealed significant differences between the groups and supported the importance of coursework, even for experienced teachers (Sokal & Sharma, 2017). The analysis also demonstrated that pre-service and in-service teachers benefited from both experience teaching in inclusive settings and teacher education about inclusion however the most well-prepared inclusive educators had both experience and knowledge about inclusive practices (Sokal & Sharma, 2017). The researchers concluded that it is important to identify and arrange for extended teaching placement opportunities that will allow to bridge the gap between theory and practice of inclusive education (Sokal and Sharma, 2017). The suggested that a virtual knowledge network for teachers from Killoran et al. (2013) could be a way to improve knowledge

and learning opportunities for teachers.

A study by Merritt (2017) showed that teachers with minimum knowledge of ADHD are often at a higher risk for stress and burnout and do not feel comfortable to recognize and refer students for treatment. This points to the importance of having knowledge of some diagnoses and how this knowledge can affect teachers' responses to related difficulties they come across in the classroom (Merritt, 2017).

Another study also focused on the importance of teacher's experience in adopting inclusive practices (Mngo and Mngo, 2018). 346 full-time state-licensed general education teachers from 7 secondary bilingual schools in the Northwest Region of Cameroon completed a survey to examine both training and experience influence on teachers' perceptions and inclusive teaching. The results showed that teachers with some training and experience of teaching students with disabilities were more supportive of inclusive education; less experienced teachers with no training in special education indicated less enthusiasm regarding the benefits of inclusion (Mngo & Mngo, 2018). In addition, the higher the level of education, the more likely the teachers were going to be supportive of inclusive education (Mngo and Mngo, 2018). Interestingly, the authors also found that older teachers tended to be more supportive of inclusive education than younger ones. This could be indicative of continuous exposure to the practice of special education, and ongoing professional learning opportunities that had given them more ability to accommodate students with a disability (Mngo & Mngo, 2018).

Research has shown that training for disability and inclusive education (Meng Deng & Harris, 2008; Ohan et al., 2008; Pas et al., 2014), experience and attitudes

(Condrey, 2015; Koenig et al., 2014), resources available and administrative support (Meng Deng & Harris, 2008; Mills and Chaparro, 2017), and developing programs to support the teaching skills required (Simonsen et al., 2010), are important factors that lead to successful inclusive teaching. Therefore, the required knowledge to apply inclusive activities, such as sensory breaks, effectively in the classroom program is for teachers to participate in special education training programs combined with hands-on training to build the bridge between theory and practice and also be part of networks or programs for ongoing communication and support between each other and with other professionals. This evidence will be incorporated into the teacher training design for this doctoral project.

### **Occupational Therapists Literature Review**

As the literature review for teachers' skills and knowledge showed, there is an urgent need for empowering teachers' knowledge for disability issues and strategies they can use in the classroom to improve attention and participation of children. The leading question for the development of the above research question is: If teachers are not familiar with disabilities, sensory integration and effective strategies for children and how it relates to their classroom practices, then who has knowledge and can train teachers to use them appropriately and thoughtfully in their classrooms? A possible answer is what the research question suggests: occupational therapists.

**What is the role of occupational therapists in school programs to increase the participation and concentration of children with sensory modulation and concentration difficulties?**

According to Dunn (2000), occupational therapists are trained to provide guidance and design interventions to help children be more successful with engagement and participation in tasks, especially when difficulties related to different diagnoses impede a satisfying and successful life. Clinical reasoning based on professional training, evidence, and expertise guides the occupational therapist's selection of the use of one or more frames of reference such as sensory integration theory (Roley et al., 2009). The role of occupational therapists in helping teachers find balance between (1) sensations and needs of the body and the student's environment and (2) expectations for optimal cognitive functioning and participation in learning tasks will be analyzed in this section of the synthesis paper.

In order to review the literature that examines the role of occupational therapy in school programs, search terms included: school, classroom, children, occupational therapy, sensory integration, intervention, and teachers. Similar to the other research questions, the databases searched were PsycInfo, CINAHL and ERIC and the filters applied to the search were the date published (2008- 2018), language (English language), peer-reviewed articles, and accessible online. The results of these searches revealed fifteen results; the ten most helpful in answering the research question were selected for review.

It is estimated that, within the general population, between *five and sixteen*



percent of children may have sensory integration (SI) dysfunction (Miller, 2017). In 2009, Roley et al. conducted a study to outline how sensory integration interventions can be applied in the school setting and the outcomes of sensory intervention application through the description of 3 case studies. The authors did not analyze the outcomes or the case studies and they did not include a result section in their report, however they concluded that occupational therapy practitioners, due to their experience in working within the occupational therapy practice framework, learn to work towards the desired outcome of health and participation through engagement in occupations (Roley et al., 2009). This encompasses the use of a sensory integrative approach when children demonstrate sensory-related deficits that interfere with their ability to access the general education curriculum.

Similar conclusions were made by Bazyk et al. (2009) who examined the effectiveness of occupational therapy in kindergarten classrooms for 37 children with and without disabilities. By using several outcomes measures to test their hypothesis about the effectiveness of occupational therapy services (Fine Motor (FM) scale of the Peabody Developmental Motor Scales–2, Visual– Motor Integration test, Observation Survey of Early Literacy Achievement), the authors concluded that there are statistically significant improvements in fine motor and emergent literacy outcomes in children with and without disabilities after 7 months of fully integrated occupational therapy services. The students also made gains in visual–motor and in-hand manipulation scores (Bazyk et al., 2009).

It is worth noting that the study from Bazyk et al. (2009) could be the foundation of Bateman's (2018) proposed program. In the particular proposed program, Bateman

recognized the importance of occupational therapy role in schools and the importance of including teacher consultation, preparation and planning, and parent consultation in school interventions, all of which Bazyk et al. (2009) included in their study. Both studies supported the benefits of occupational therapy interventions, however it would be difficult to determine what intervention may have had the greatest influence due to the combination of strategies used in the Bazyk et al. (2009) program. Bateman was more specific as she focused on sensory integration strategies as part of a school intervention program because she found through the literature review that sensory strategies can improve children's focus during classroom activities. Bateman's work focused on developing and suggesting a school program, *Moving to Learn*, in which the author included strategies and suggestions to teachers and staff through trainings on alternative seating, environmental modification, and movement interventions to help students to better focus and attend in the classroom setting (Bateman, 2018).

The same year that the Bazyk et al. study (2009) was conducted, Myers et al. (2009) conducted a study for examining the occupational therapy role, but this time the independent variable of the study was the early childhood transitions. As the focus of occupational therapy profession is on supporting engagement in occupations within a variety of contexts, the author aimed to examine whether there is a potential to ease the transition process for children and families. This study is not directly answering the research question, however it examines the underlying role of occupational therapy in the school setting from a different perspective. The study employed a questionnaire to contract occupational therapists' role in the transition to preschool by collecting

information about respondents' (103 occupational therapists) participation in transition planning, barriers to participating, and transition-specific training. Although the sample size was small, the results showed that occupational therapists are participating in the transition process through strategies such as conferring with the receiving therapist to provide information about the child, attending transition meetings and individualized education program (IEP) meetings, and helping to develop IEPs in both early intervention and preschool (Mayers et al., 2009).

One of the most important findings related to the research question is the importance to communicate with the teachers in order to achieve any goal related to the child (Myers, 2009). Further evidence on the importance of teacher and occupational therapists' collaboration was provided from Noddings' (2012) study. Noddings conducted a study to examine the top techniques occupational therapists felt that educators can use in their classrooms to promote sensory integration in all of their students, the role classroom teachers in identifying students with special sensory challenges, what information related to sensory processing should be included in teacher preparation or training programs, and whether occupational therapists are the most appropriate to share that information with educators. This qualitative study addressed these topics by employing a one-time, individual semi-structured interview of thirteen occupational therapists across a variety of settings: public school districts / private schools, private / home practice, clinical practice, hospital-based practice, and universities. Noddings (2012) showed (1) that teachers have a great role in helping children with sensory challenges improve their academic performance and overall life

experiences and (2) it is important that classroom teachers are educated and knowledgeable about sensory integration. The author further explained that occupational therapists provide support and education for teachers by “spreading the word” about sensory integration practices as the authors suggest that the more teachers knew about SI, the more they felt comfortable adjusting their classroom practices to promote sensory health for all children (Noddings, 2012). Noddings (2012) showed that occupational therapists have an important role as educators for classroom teachers who utilize sensory-based and blended sensory / traditional techniques to help their children focus. The use of this approaches are showing promising results in a significant majority of cases with the techniques recommended by occupational therapists (Noddings, 2012).

The responsibility occupational therapists have for educating classroom teachers about sensory integration was also acknowledged by Powell (2013), who found that the collaboration of teachers and occupational therapists working in the school system is vital for implementing interventions to meet students’ goals and needs. The study from Powell (2013) employed a different research method and included student populations; 60 first and second grade students at The Oakwood School, North Carolina and a control group of second grade students at Williamston Primary School. All students were assessed using The Sensory Processing Measure and School Function Assessment to examine the benefits of a sensory classroom program. The sensory classroom program was the Alert Program (AP) and was intended for students with weak self-regulation to increase their success in school, and also enhance the learning of all students in the classroom. The results showed an increase in functioning during the period of time that the AP was

implemented, and an increase in participating in the school environment, level of alertness and therefore their academic success when sensory processing and sensory integration activities and programs were implemented (Powell, 2013).

Further research studies were conducted since 2015 to provide evidence on the effectiveness of sensory-based interventions for children in the school setting (Bodison & Parham, 2018; Selanikyo et al., 2017; Wan-Yununs et al., 2015). A systematic review of 14 studies included 7 tactile-based interventions studies, 4 proprioceptive-based intervention studies, and 3 vestibular-based intervention studies (Wan-Yununs et al., 2015). The results of this review showed that applying proprioceptive stimulation is beneficial for in-classroom behaviors, difficulties staying on seat, off-task behaviors and inattention issues in the classroom (Fertel-Daly et al., 2001; Hodgetts et al., 2011b as cited in Wan-Yununs et al., 2015). The authors also found that the use of therapy balls for 16 minutes of classroom seating for 19 consecutive days showed effective results for children with behavioral problems including increased 'in-seat' behaviors and engagement in classroom activities (Bagatell et al., 2010). Two other studies have suggested that vestibular stimulation activities have a positive effect on children's level of alertness in the classroom and thus could reduce behaviors such as crying, engaging in self-injury, and stereotyped pattern of behaviors (Ottenbacher, 1993; White-Traut et al., 1993 as cited in Wan-Yununs et al., 2015). Two other studies showed that compared to proprioceptive and vestibular stimulations, tactile stimulation through brushing and tactile games shows the best clinical evidence for reduction of behavioral problems in children including improving inattention and participation in the classroom and

increasing the ability to socialize (Davis et al., 2011; Field et al., 1997 as cited in Wan-Yununs et al., 2015).

A recent study in 2017 examined a different aspect of occupational therapy services, the effectiveness of a collaborative consultation intervention model for enhancing classroom participation of students with intellectual and developmental disabilities (IDD) who have been found to participate less in school-based activities (Selanikyo et al., 2017). In order to examine the benefits of a collaborative program, the authors compared a multidisciplinary team (an occupational therapist, 17 teachers and 35 students) with an in-service program (20 teachers and 34 students). The results of the study revealed very promising findings for the benefits of collaborative approach for school intervention. In the collaborative program, students' participation in all areas significantly improved, whereas the participation of the students in the in-service group decreased. Those findings indicate that multidisciplinary intervention program and specifically the role of occupational therapists in multidisciplinary teams is very valuable for enhancing classroom participation and concentration (Selanikyo et al., 2017).

Nine studies included in a systematic review by Bodison and Parham (2018) examined the effectiveness of specific sensory techniques and sensory environmental modifications to improve classroom participation of children with sensory integration (SI) difficulties. This article was chosen as it provides data from articles in the last 11 years which included a variety of approaches such as qigong massage, weighted vests, slow swinging, and incorporation of multisensory activities into preschool routines (Bodison & Parham, 2018). The current study indicated that there are positive gains for

performance and satisfaction regarding the use of self-regulation strategies and equipment such as weighted vests, blankets and deep-touch pressure for children with ADHD and autism spectrum disorder and slow linear swinging for children who have unusually high arousal levels. Bodison and Parham (2018) also discuss the importance of having dedicated times to meet with teachers and building a relationship with them for developing collaborative relationships and the important role that occupational therapists have in educating teachers about sensory applications in classroom.

Based on the review of the literature, the use of sensory processing strategies to keep students' engagement at the best level would provide an advantage for these children while learning and engaging in school activities. Students' self-regulation skills during their early education have long-term effects on their academic success in all subjects (Duckworth & Carlson, 2013). Not only children with identified disabilities can benefit from these strategies; typically developing children can also benefit as they can become overactive or lethargic many times throughout the day.

Occupational therapists are key contributors within the education team as they support a student's ability to participate in desired daily school activities, help children to fulfill their role as students by supporting their academic achievement and positive behaviors towards learning such as social skills, behavior management, recess, participation, attention, self-regulation and more. They focus on students' strengths and by using their expertise in activity and environmental analysis, as well as their knowledge in sensory integration theory and application, they can design and implement sensory based programs for improving inclusion for children with sensory processing and

attention difficulties (Frolek & Chandler, 2014). Acknowledging the possible barriers to implementing such approaches, like teachers' limited knowledge, it is important for occupational therapists to take time to work collaboratively with teachers and explain the purpose and benefits for using alternative approaches to improve concentration and participation of children (Bodison & Parhama, 2018; Selanikyo et al., 2017).

Based on the literature review conducted, occupational therapy is considered to be one of the services which assists a child with a disability to benefit from educational services; its roles include teacher consultation, parents' consultation in school interventions, helping children in the transition process through strategies, transition meetings, and individualized programs (Bazyk et al., 2009). The role of occupational therapists in multidisciplinary teams has been recognized as valuable and helpful also in terms of enhancing classroom participation and attention and designing and implementing interventions to improve inclusion (Frolek & Chandler, 2014; Selanikyo et al., 2017). According to the American Occupational Therapy Association, school based occupational therapists help identify the presence of a disability, provide direct intervention to the child, design program modifications or supports for teachers such as adapting the environment, modifying curriculum, ensuring access and participation in school activities, and supporting teachers in order to help students achieve their academic and behavior outcomes which in turn improve their ability to meet classroom goals (AOTA, 2017). Therefore, occupational therapists can be seen as evaluators, as program planners or contributors to the planning process, as the certified person who performs the intervention including the treatment activities, and also a manager who assesses, plans,



and implements the occupational therapy program. Occupational therapy practitioners provide a continuum of service and support to students and personnel and they certainly have an important role in school setting.

### **Summary**

The literature review has shown that an important number of children are challenged by the difficulties they come across in the classroom. This paper synthesizes peer-reviewed literature about the ways educators and occupational therapists can assist the growing number of children who are struggling to integrate and organize the sensory stimuli in a classroom and maintain on-task attention behaviors in the classroom, and summarized the challenges that teachers may come across. There is an adequate number of existing intervention programs, such as sensory-based interventions, for improving attention and participation of children in the classroom however there are difficulties for implementing these programs. Some of the difficulties arise from the inadequate experience and knowledge of teachers to implement theories and strategies related to sensory processing which are particularly important for children to maintain an optimal state for performing occupations and adjusting their behavior (Case-Smith et al, 2015).

Teachers are recognized as agents of change in schools especially when it comes to educating students with special learning needs. Therefore, if limited knowledge and experience is an obstacle for educating children with attention and sensory difficulties, a combination of training for disability and inclusive education (Meng Deng & Harris, 2008; Ohan et al., 2008; Pas et al., 2014), support from other professionals and staff (Meng Deng & Harris, 2008; Mills and Chaparro, 2017), and hands-on training to build

the bridge between theory and practice, is vital for meeting children's needs.

Occupational therapists are key contributors within the education team as they are experienced professionals who can work in the school system and support, educate and train teachers to help students with difficulties to participate in desired daily school activities and fulfill their role as students by improving their academic achievement.

## **CHAPTER THREE**

### **Promoting participation in the classroom: Teachers' training program**

#### **Description of the Program – Introduction to the Problem**

The Ministry of Education in Cyprus has voiced the intention of moving towards an inclusive and more equitable educational system. They have highlighted the need for equal participation of all children in education and are working towards the basic principle, which is to ensure and safeguard the rights of children with difficulties through relevant legislation. However, the reality is that there are many barriers to overcome and a long way ahead for that to be achieved in order to create adequate learning opportunities for both teachers and children to develop their potential to the fullest extent possible.

Focusing on the problem at the meso level in Cyprus, the situation at schools is impacted by these gaps in the Ministry of Education. As discussed in previous chapters, research evidence supports the involvement of occupational therapy services in schools for children experiencing occupational performance challenges (Michaels & Orentlicher, 2004; Prigg, 2002). However, since Cyprus mainstream schools are not providing these occupational therapy services, the participation and inclusion of students with attention and sensory difficulties in mainstream classroom remain unsettled.

Similar gaps can be seen at the micro level as well. Teachers are often constrained by time frames and curriculum as well as limited educational methods regarding disability issues. They also report that, based on their experiences in Cyprus's

mainstream elementary classrooms, they have seen an increase in the number of children with disabilities. The combination of these situations is raising the need for embracing the shift towards a reconceptualization of schooling that supports inclusive learning environments for all children.

The aftermath of all these factors starting from the macro to micro level, is the absence of new teaching approaches and adaptation strategies in classrooms, which are required to meet the needs of children with disabilities. There is a need for teachers to enhance their knowledge and experience on disability issues. Although occupational therapists cannot at this time provide services in the schools in Cyprus, they should work with school systems and consult and train teachers, until the government introduces disability training programs for teachers, legislation mandates for inclusive practices, and universities change curriculum to include more disability courses.

### **Introduction to the training program**

A way to do that is to support teachers in accomplishing inclusive practices within the current structure of their classroom, by training them about disability issues including how to identify possible difficulties and adapt their teaching to address a child's needs. This chapter will describe the teachers' training program developed in order to work with teachers towards inclusion. This project will attempt to address this gap in practice by developing a school-based occupational therapy program for supporting teachers to deal with the challenges they experience in their classroom and hence help elementary age students by facilitating participation and attention in school activities. It is acknowledged that teachers are the first line of defense and they have an

important role in identifying early signs and symptoms of a disability.

The training program includes a teachers' manual, a short training program and a follow-up consultation plan. The manual has some basic sections, which will be explained further below. Due to the fact that identifying and understanding a difficulty or a need is the beginning of an intervention, the first two sections of the teachers' manual include definitions and red flags. The manual then provides information regarding strategies and classroom activities including sensory-based suggestions and activity breaks. Lastly, the program includes a two-day training program and consultation plan, which will also be explained later in this chapter. Information is based on sensory integration theory and research on physical activity during classroom time and is supported by research studies conducted in elementary classrooms and also informal discussions with teachers and principals in Nicosia, Cyprus (see Chapters 1 and 2).

### **Intended Recipients of the Program**

This program will enhance teachers' knowledge on methods they can use to minimize attention and self-regulation difficulties, which are common classroom challenges in Cyprus. Regrettably, courses regarding disability issues and specifically concentration and sensory integration difficulties, are not taught during a teacher's bachelor degree studies in Cyprus. Even during their classroom training placements, they do not have the opportunity to understand the role of occupational therapists or work with these professionals since there are not school-based occupational therapists in schools. In addition, the training opportunities they are provided with from the Ministry of Education after the completion of their degree do not address working with children with

disabilities. Additionally, many teachers choose not to attend non-governmental seminars on these topics as they are not affordable.

The limited experience for teachers to translate their knowledge gained at university into real practice situations, in combination with the limited opportunities for professional development, highlight the importance of collaboration with occupational therapists (Majasic et al., 2015). It is very common for teachers to ask occupational therapists for help when they have a child with difficulties in their classroom who attends occupational therapy sessions. However, there are other teachers who have students with difficulties that do not participate in a therapeutic plan and do not know where to turn for assistance. Since early identification of sensory integration difficulties can make a huge positive difference in a child's life and can significantly minimize future learning risks, social or behavioral difficulties they may come across, one of the intended recipients of the program will be the teachers (Rief, 2018).

The second intended recipients of the program are the children with sensory and concentration difficulties. The teachers who apply the suggestions of the manual and the training in their classrooms will be offering new strategies to their elementary students. If teachers read their students' needs, understand them, and apply the training suggestions and activities accordingly, the children will benefit from the training program content. Therefore, children, will be also receivers of the program through implementation of strategies and activities by their teachers.

### ***Therapist and teachers' collaboration towards inclusive practices***

The role of occupational therapy as a profession has been supported from a number of research papers throughout the years, and teachers' insights have supported the necessity of collaborating with therapists (Hargreaves et al., 2012; Mejasic et al., 2015; Powell, 2013). It is recognized that school based occupational therapists need to have a voice as they provide support for classroom participation, they positively impact the classroom context, they are student-focused and have knowledge and experience on disability issues (Hargreaves et al., 2012; Mejasic et al., 2015). As Powell (2013) found and reported, the collaboration of teachers and occupational therapists working in the school system is vital for implementing interventions to meet students' goals and needs.

Nevertheless, apart from the support and the knowledge of the occupational therapists, the role of a teacher as an observer is equally important and interconnected with the occupational therapist's intervention plan to address a child's difficulties. Moreover, it has to be acknowledged that teachers' observations are extremely valuable for a child's future since they spend a great deal of time with their students, they have contact with many children over time, and they are able to recognize differences between children (Kutscher, 2014). Nonetheless, without their observations and their ability to identify difficulties in their classroom, children would not be referred to occupational therapists.

As teachers play such an important role in translating children's actions and behaviors to words, an occupational therapist should take the role of consultant and work with teachers to ensure that they have the knowledge to identify children who are

struggling in the learning environment of school (Kutscher, 2014). Acknowledging the important role of each profession, this project will incorporate collaboration of occupational therapists with teachers in the training, consultation, and evaluation phase of the project.

### **Context of Program - Important Features**

#### **Content of the Teachers' Training Program**

Based on personal and informal discussions with a number of teachers and principals, it has been acknowledged that there is a vital gap in schools in Cyprus: inclusion of children with disabilities in the classroom. Therefore, this doctoral project has focused on producing a training program for teachers that will concentrate on building knowledge and new approaches in teaching students with disability issues. Consequently, it is critical to first provide some definitions for the teachers, followed by some red flags for attention and sensory difficulties that teachers can apply to their observations of students' difficulties in the classroom. The next two parts of the manual describe the activities teachers can incorporate in their classroom to support children with attention and sensory difficulties. The teachers' manual includes sensory strategies and approaches and also activity break ideas teachers can employ to minimize possible difficulties and challenges that children experience during classroom time and improve their attention span, their participation, and therefore their academic performance. This project synthesized the existing literature on the effectiveness of these activities, and the importance of activity breaks has been recognized and discussed (see Chapter 2).



**Red flags.** The red flags are for identifying sensory integration and attention difficulties. For instance, non-experienced individuals may see sensory integration difficulties as naughty behaviors. With these red flags and training, teachers may be able to recognize that some children seek movement in an attempt to receive proprioceptive input, are disinterested to play with tactile games as in reality they are over-sensitive to tactile system, and do not play on equipment at the playground if they have an over-sensitivity of the vestibular system. Additionally, these red flags may help teachers to distinguish behaviors related to sensory and attention difficulties from those related to other diagnoses or difficulties.

**Definitions.** The definitions will also be a vital part of the manual as they will provide explanation of all the terms used in the manual. Based on Bickenbach and Davies (1996), a definition is a statement of the meaning of a term, which may include just the word or phrase, and the explanation of the term, which gives the sense of a term or the conveys the meaning of a term by pointing out examples. In the teacher's manual both types of definitions will be used in order to set out the essential attributes of the terms defined.

**Activity breaks.** The benefits of activity breaks and sensory breaks and strategies have been discussed in many child, parent and teacher sites, and elementary teachers have recognized their usefulness. In a series of studies, teachers reported that sensory and activity breaks enhance students' focus on classroom activities and increase the time that students spend participating and concentrating on tasks (Foran et al., 2017; Goh, 2014; Mere-Cook, 2016; Mills & Chapparo, 2017).

Similar findings were found when studies employed observation methods and physical exercise tracking equipment (pedometer/accelerators/fit bits) to examine the effectiveness of breaks by observing children after an activity break (Bartholomew et al., 2018; Bershwinge & Brusseau, 2013; Buchele Harris et al., 2018; Holmes et al., 2006; Ma et al., 2014; Mere-Cook, 2016;). These studies acknowledged the role of these breaks for improving the cognitive performance of the children and found significant increase in concentration and participation of children in the classroom. Because of the research supporting the importance of activity breaks in the school day, these activities have been included in the teachers' manual.

The activity breaks included in the manual will provide suggestions that teachers will be able to adapt for enhancing their lessons, and can be used at any time during the school day. The breaks would be suggested to take place at least 2-3 times per day for 1-5 minutes each time. For example, some of the activities that will be included are animal role play around the room where they will be asked to write the name of the animal on the board, to jump on numbers to make an equation, to lay down like snakes to listen to a story, use beanbags to throw at a target and so on.

**Sensory activities.** Likewise, the sensory-based approaches included in the manual have been recognized for their effectiveness from researchers, teachers and occupational therapy associations. The American Occupational Therapy Association (AOTA) has recognized sensory integration (SI) as one of the methods used by occupational therapists working in pediatric settings to improve a child's ability to access and participate in school-based activities and curriculum (Rolley et al., 2008). It is

estimated that, within the general population, approximately 5–10 percent of children may experience sensory integration difficulties, which is a significant number (Ahn et al., 2004). Sensory activities will target the sensory-related issues that might affect a child's ability to concentrate, participate in activities at school, and behave appropriately in the classroom.

Over the years, an important number of research studies have focused on the effectiveness of sensory integration approaches in classroom setting (Mills & Chapparo, 2017). As presented in previous chapters, the research on sensory integration therapy effectiveness began with the recognition of the hidden difficulties and the introduction of sensory integration theory from Jean Ayres in 1960. The latest research studies and review studies have proven that the lessons at school which are incorporating sensory integration techniques, as well as the teachers who are applying sensory strategies for the children with sensory integration and concentration difficulties, were perceived to have a positive effect on students' abilities to remain on task, to minimize certain behaviors, and improve their participatory skills during classroom time (Harland et al., 2017; Mills and Chapparo, 2017; Mitts, 2018; Schaaf et al, 2018).

The proposed manual includes sensory activities such as forming letters with playdough, writing on foam, findings letters and numbers in a rice pit, transferring beanbags with numbers on them to form an equation and using cushions or therapy balls to sit on while in circle time. Sensory based strategies are organized based on the difficulty the child has such as concentration difficulty, hyper-sensitive or hypo-sensitive to sensory input such as chewing toys on their pencil, stress balls to hold during lesson,

stretch bands on their chair, frequent breaks during lesson (i.e., clean the board, throw something in the bin, have some water) and using air cushions to sit. The teachers would be advised to use these breaks 3 times per day for approximately 5 minutes each, every day for three months. During the last day of the training, teachers will be encouraged to use the activity breaks and sensory activity suggestions and create a daily plan for a case scenario.

### **Training program**

To begin with, after granting permission from the Ministry of Education, the six public elementary schools in Engomi district in Nicosia will be informed about the training program and will be given a letter with information about the frequency of the training program and a brochure with details of the timetable (Table 1) and content of the program. They will be kindly asked to hand out these documents to teachers every beginning of the month to inform them about the updated date and applying procedure. The training is critical so that the teacher can understand what the manual contains and how to use the manual. The brochure will also clearly state that the manual will be only available to the teachers attending the training program.

The training will take place at my clinic and will last for two days. The maximum number of teachers to attend the training will be 10, to allow for more discussion and time to answer questions. The training will begin after school time in order to be convenient for teachers to attend and they will not be charged for the training as I will personally be training them and have chosen to do so free of charge so as to minimize the project's costs. Furthermore, the training will be provided once per month — the last

Friday and Saturday of each month — and the teachers will be informed about the dates, timetable and information about the training program every beginning of the month through a brochure that will be given to the principal of each school. The teachers will have to book a place by phone or email in order to be able to attend the training. They can attend the training a maximum of three times, however teachers who will attend the training for first time, will be prioritized.

**Table 1: Training timetable**

	Day 1	Day 2
14:00-15:30	Presentation of the manual (red flags and definitions)	Presentation of the manual (activity breaks and sensory integration approaches and techniques)
15:30-15:45	Break	Break
15:45-17:00	Questions regarding red flags and definitions	Questions regarding activity breaks and sensory approaches and techniques
17:00-18:00	Open discussion about the challenges they experience in identifying children's difficulties.	Implementation of the activities and approaches (practical training-time to apply what we have learned!). This part will last for two hours.

### **Presentation of Red Flags and Definitions**

The presentation of these two sections of the manual will be firstly presented in a lecture format in order to explain the terms. All terms in the definition section will be accompanied with one example and upon request, more examples will be provided. The teachers will also be encouraged to use the list of resources that they will be given at the beginning of the training and read about the terms that are not clear to them during the

break. Further questions about the terms will be discussed after the break during the discussion period. Terms such as occupational therapy, sensory integration, sensory integration dysfunction and the 3 basic senses of sensory integration therapy (proprioceptive, vestibular, tactile systems), will also be described through small videos and pictures.

The Red flags presentation will also take the form of a lecture at the beginning. For each section of this presentation, teachers will be asked to give an example of a student they have (use of names and personal information of the examples will not be allowed) in their classroom. If they do not have any examples to share, I will provide some examples from my professional experience. At the end of the presentation of the red flags, teachers will be given small written case studies, and will be asked to work in small teams (3-4 people each team) and critically think whether and why the case scenario child should be referred to an occupational therapist. The case study examples of children who need referrals will be used the next day during the intervention discussion about the strategies and approaches they can use in the classroom.

Based on the social constructivist theory, learners can benefit more when life examples and peoples' experiences, knowledge and observations are shared within a group (Palincsar, 1998). Therefore, during the group work, at the last part of the first day, teachers will be encouraged to share their thoughts and considerations about the terms learned. The seating arrangement will change from the lecture setup to a big circle in order to bring the feeling of group discussion. The teachers will be asked to bring their own experiences and challenges they experience every day, in order to analyze them and

identify possible scenarios for referral. If teachers do not have any experiences to share or their experiences are insufficient, videos with children in the classroom and also personal experiences will be prepared to share for discussion.

In order to structure the discussion about challenges so that it is related to the content of the teachers' manual and the presentation of the day, teachers will be asked at the beginning to relate the verbal and visual examples to the red flags and definitions in the manual. Any further questions related to strategies and approaches will be advised to be written down in order to discuss them the next day. Other unrelated questions to the presentation could be asked after the training time, in person with me.

### **Presentation of Activity Breaks and Sensory Integration Approaches and Techniques**

The first two parts of the second day will be structured similar to the first day's presentation. The teachers will have the opportunity to learn about the approaches and strategies through life examples and will also have the time to share their thoughts and ask questions about the implementation of them. Videos will also be used for some of the strategies such as heavy work activities and obstacle course. Then, case scenarios will be given to be analyzed and make use of the suggestions in the manual.

The last part of the training will also incorporate implementation of the strategies based on the case scenarios we will discuss. Each team will have the role of the teacher and the rest of us will have the role of students. Teachers will be asked to implement the strategies they think are beneficial for the student in the case scenario. At the end, we will go back to the group circle, evaluate the choices of the strategies and make suggestions

for any other possible plan they could employ. The same structure will follow for the other teams.

### **Theoretical Grounding of Training**

By ensuring that teachers will have experimental opportunities, I will encourage their experimental learning, which is an important component for teachers' learning (Heidi et al., 2018; Ohan et al., 2008). The two theories that have influenced the structure of the training are the learning theory developed by Jean Piaget and Vygotsky's social constructivist theory. One of the main similarities of these theories is that Piaget and Vygotsky believed that social interaction plays an irreplaceable role in learning and cognitive development (Pea, 2004). They believed that learning actively and through hands-on experiences is more beneficial and they suggested that social interaction was instrumental in development and acquisition of new knowledge (Lourenço, 2012).

Interventions in the Vygotskian method, which are also supported by Piaget's belief of the importance of social transmission, incorporate group learning, which is what has guided this training structure (Woolfolk, A., 2004). For example, by having teachers discuss with each other, work in groups, analyze case scenarios and develop and implement a classroom plan, they can begin to internalize the new information and come to a better understanding of the activities.

### **Consultation with Teachers**

Following the two-day training, teachers will have the opportunity to ask further questions regarding the implementation of the manual through consultation. The consultation will take place in the researcher's clinic for two-hours on the following



Friday after the training, once a month. Teachers will be advised and encouraged to contact the researcher if they have additional questions, via telephone. The consultation will be using *focus groups* within the *social constructivist approach* to provide the opportunity for the teachers to share any concerns, thoughts and suggestions (Krueger & Casey, 2014).

Noteworthy is the influence of cultural components on teachers' practice, as discussed in Chapter 2. The focus groups will be guided from the framework of culturally responsive practice, and will create opportunities for teachers to share related concerns (Rodriquez et al., 2011). The culturally related questions will include open questions associated to the cultural influence on their understanding and implementation of the program, cultural barriers they experience at schools and possible ways to overcome these challenges. The progress of the conversation will be adapted based on the needs for discussion and the amount of questions teachers have prepared to ask. The time of the focus group could also be adjusted based on the flow of the discussion (up to 3 hours).

### **Intended Outcome of Program**

As children develop, the expectations grow. For a child with sensory needs and concentration difficulties, school becomes a threat. If teachers, who spend an important amount of time with their students, cannot read the signs of their difficulties, this could end up in empowering this threat. Therefore, a significant outcome for teachers is to be educated about how to identify and understand signs of attention and sensory difficulties. This will lead to the next intended outcome which is for teachers to utilize the manual

information and implement strategies and approaches for the classroom to assist the children with sensory and attention difficulties.

These breaks could make a world difference to the students. Learning is not just defined from the traditional ways of teaching - discipline and handling students. As it has been analyzed in the previous chapter, children with sensory processing and concentration difficulties are challenged by the school requirements, curriculum, and participation and most importantly by their own body. They may respond with failure to evaluate and respond appropriately to sensory stimuli and social cues from peers. They may exhibit challenging behaviors due to difficulty to self-regulate. In addition, they may have difficulty following classroom lessons, listening, and learning new information (Cosbey et al., 2012). The intention of this training program is also to support children in the classroom environment and provide the necessities to design an inclusive environment. Consequently, this will confidently improve the learning environment for students, enhance sensory regulation, promote social participation, and increase concentration time and academic performance (Carbone, 2001; Dunn & Bennett, 2002).

**Table 2: Goals and evaluating features**

<b>Goals of the Teachers Training Program (also features for future evaluation purposes)</b>	
Teachers	<ol style="list-style-type: none"> <li>1. Teacher education (understanding of the terms)</li> <li>2. Teacher utilization of manual (red flags)</li> <li>3. Teacher utilization of movement and sensory breaks.</li> <li>4. Discuss any cultural considerations regarding the program implementation (collect cultural data).</li> </ol>
Students	<ol style="list-style-type: none"> <li>1. Improve sensory regulation within classroom.</li> <li>2. Increase concentration time during lessons.</li> <li>3. Promote social skills acquisition through participation in group activities (breaks suggested in the manual).</li> <li>4. Improve academic performance of children.</li> </ol>

### **Potential Barriers and Challenges**

Introducing new approaches and educating teachers about a subject with which they are not familiar, could result in a number of challenges regarding the implementation of the manual. Firstly, some of the teachers may not be able to make sense of the information provided and therefore have difficulty understanding how to apply the new knowledge learnt. Sensory integration theory is not something that can be taught in two days. Needless to say, it requires time, experience and training for individuals to be able to fully appreciate the terms, approaches and benefits. Therefore, even with the two-day training it is highly likely to have a number of teachers who will not be able to comprehend concepts and activities and identify their importance. That is why after-training consultation has such a vital role in the program. In order to minimize this possible barrier, the teachers, as described above, will have the opportunity to attend the consultation groups and talk about any further concerns and queries they have after they have begun applying the manual's information. They will also be informed at the beginning of the training that they can call me or email me for any questions they have, and I will respond to them in the shortest possible time.

Moreover, a teacher's willingness to change, adapt and reorganize their sessions will have an important role for the program's successful implementation. Incorporating new approaches in a fully loaded curriculum will require personal time. After they realize the required effort they have to place in the implementation, this could change their enthusiasm and eagerness they had before participating in the training. Teachers' motivation will play an important role for the successful implementation of the program

and thus motivational theory will guide the enhancement of both intrinsic and extrinsic motivation of teachers (Firestone, 2014). Since teachers are also professionals, the language during the training will be positive and respectful and should make them feel that they are valued and heard throughout the discussions we will have (Firestone, 2014). In order to entitle their intrinsic motivation, teachers will be also challenged to prove that these strategies will work and that they can become agents of change in their school's setting.

In order to minimize the gaps in implementing the program, the resources made available to teachers will include sensory boxes, beanbags with letters and numbers, and cards with animals and poses for role playing. Recognition is also an important component of motivation (Cave, & Mulloy, 2010). Thus, teachers who implement the program for 6 months will be given a questionnaire with open-ended questions, where they will evaluate their performance and the program, and report any changes in the eight evaluating features for both students and themselves (see table 2). With their permission, I will present this report to their principal in order to acknowledge the teacher's effort and contribution to the program.

Last but not least, the school facilities, resources and equipment such as seating options (i.e., therapy balls, beanbags, air cushions), tactile bins, noise and light blocking equipment (i.e., handsfree, sunglasses) and fidgeting toys, could be a barrier. In personal informal communications, teachers report access to these resources is limited or non-existent at schools. This may affect the program implementation progress. With the purpose of minimizing this issue, I will develop a letter to send to the stakeholder of

the Ministry of Education in Cyprus explaining the need for equipment in the classroom. Suppliers of therapeutic tools and sensory equipment will also be approached for funding through a small presentation of the needs for equipment at schools and the benefits they will have by advertising their products. However, since I recognize that this could take time or may even not be approved, I will provide some tools for teachers to use through a personal fund.

### **Summary**

To be effective in today's educational environment, and to teach students with any form of disability, continuous professional development is necessary. Meeting students' needs and incorporating new approaches is vital for improving student's participation and academic performance and this is one of the overarching goals of pediatric occupational therapy (Rolley et al., 2008). The proposed training program for teachers is aimed at educating teachers about definitions, red flags and also ways to include more inclusive and active approaches to their teaching. Along with that, the main goal of this program is to assist students with attention and sensory modulation difficulties to adapt to the classroom setting and lesson requirements and improve their participation, concentration and academic performance.

Since the desired changes for students and teachers in the classroom include both identification and implementation of activities, this program is providing disability information for the teachers along with sensory and activity-based techniques. Certainly, **learning** resources are no substitute for experience and it is recognized that a

combination of techniques has to be used for acquiring new knowledge. Thus, the teachers' training program combines education through the written information in the manual with experience, time to discuss with peers and reflect with an expert, during the 2-day training and consultation.

Occupational therapy practitioners have expertise in evaluating and treating children with sensory integration and attention difficulties and therefore occupational therapists play a vital role in school settings for promoting inclusive practices and working towards the creation of an inclusive general education classroom environment. Based on this assumption, this training program has been created as part of an effort that has been paused in Cyprus schools due to a number of current political problems, in order to emphasize the need for changes in the school setting and indicate the importance of new approaches for teaching.

## **CHAPTER FOUR - Evaluation Plan**

### **Evaluating the Outcomes of a Teachers' Training Program in Elementary Classrooms**

#### **Introduction**

Following the discussions with several teachers working in elementary school and also a literature review I have conducted, I realize that teachers face multiple challenges with children in their classrooms in regards to their attention. As a result, I developed a manual for teachers to provide them with information regarding sensory modulation and concentration definitions and red flags, and also sensory and activity break suggestions for increasing children's concentration and participation during lessons. After developing the program and introducing it to the teachers through a two-day training and consultation plan, it was important to develop an evaluation program to analyze the limitations and the benefits of the program for both teachers and children.

#### **Overall Vision**

The purpose of program evaluation is to assess the usefulness of the information provided in the manual and whether its use increases teachers' awareness for sensory modulation and attention difficulties. It will also aim to evaluate the process, usefulness, and effectiveness of the training program and consultation with the teachers. Additionally, it will examine the effectiveness of implementation of movement and sensory activities and their impact on the participation, attention, and academic performance of children in the classroom. The evaluation of the process as well as the outcomes of the program are equally valuable in order to make the appropriate

adaptations to the training program and improve it as much as possible.

### **Intended users of the evaluation plan outcomes**

The intended users for the collected information will be teachers, occupational therapists and the Ministry of Education. Teachers will be the protagonists of this endeavor since they will be both the users of the manual and the evaluators of the project. They have an important role in delivering new skills and information to the children and they spend an important amount of time with children every day. Helping teachers to gain an in-depth understanding of children's difficulties and new teaching approaches to use in the classroom, will hopefully improve children's participation and concentration.

Occupational therapists are the second main intended users of this manual. Considering that in Cyprus occupational therapists do not have a role in mainstream schools and they are only included in some special schools, it is important to demonstrate the importance of occupational therapy practice in the school setting and highlight their role in school setting. Moreover, the project will aim to raise therapists' awareness of intervention programs and they can use the information in the manual as their base for thinking about further suggestions for classroom interventions.

The evaluation of this manual would also be valuable for fine-tuning and establishing confirmatory data. This will enhance the role of the program as an asset that, when presented to the Ministry of Education in Cyprus, will help convince organizational members about the benefits of inclusive programs and occupational therapy. By raising awareness of the need for inclusive practices and the involvement of occupational therapists in schools, the role of the occupational therapy profession will be



acknowledged by the Ministry of Education and foundations for creating inclusive education legislation will be created.

### **Core Purposes of the Evaluation**

The evaluation's core purpose is to assess the usefulness of the training program in all three phases, the information provided in the manual, during the training and the support during the consultation. Additionally, the evaluation will be used to gather information regarding the changes in teachers' awareness of disability and the efficiency the activities in relation to the time teachers have available and based on the curriculum goals they have to meet. Moreover, it is important to receive feedback in the effectiveness of the activities for increasing children's participation and concentration during classroom time, in order to measure the outcomes of the program. The core purpose is primarily descriptive, however, because I am aiming to demonstrate change in terms of increased knowledge and awareness of teachers after applying the program, the core purpose is to establish preliminary causation.

### **Evaluation**

This evaluation plan includes the teachers who will participate in the project and also the children in their classrooms who will receive the application of the program. In order to assess teachers' satisfaction of the program process, teachers will be given a questionnaire to complete after the completion of the training and consultation. They will also be asked to complete another questionnaire and participate in a focus group session after the implementation of the program for 3 months to measure their satisfaction about the outcomes of the program. A sample of the questions is outlined in Table 3.

Moreover, in order to maintain quality assurance of the results, observers will be employed for three days to report on observations in the classroom for children's performance in the classroom. The number of the observers will be twelve, two for each of the 6 mainstream schools in Engomi district, Nicosia. These observers will have been chosen and agreed to participate in the program. The evaluation will take place during school time in the classrooms. The teachers would be using the strategies suggested 3 times per day for approximately 5 minutes each, every day for three months. After the implementation of the program, observers will be employed for three school days to make observations and answer the questions in the evaluation assessment regarding implementation of the program for teachers and effectiveness of the program for children's performance (Table 1).

A 2 full-day training will be provided to observers before the observations. The twelve observers will be trained about the manual content the first day, through written information, videos, examples and case studies and will have the opportunity to ask questions at the end of the day. The second day will include reading and understanding the evaluation assessment and each of the questions in the evaluation assessment will be analyzed in terms of what they are expected to observe and how to describe it in written information. The observers will not receive consultation after the training however they will be informed that they can communicate with me for any questions they have.

The exclusion criteria include observers who ask to be paid for participation in the program. Also, the exclusion criterion specifies that observers should not be the parents of the children they observe and demonstrate an appropriate level of interest and

commitment. Observers include people who have Greek as their first language, aged 25-55 years, with no professional experience in therapy professions and are willing to volunteer for the project. The inclusion criterion will be teachers to be observed if they have implemented the manual's suggestion for at least three months.

### **Evaluation Questions**

Different evaluation questions are generated for teachers in written form to complete before and after the implementation of the program and also for the focus groups they will be invited to attend after the implementation (Table 3). The close-ended questions are 5-point Likert-scale questions where the respondent is required to complete and to indicate the extent to which they agree or disagree. One equals with strongly disagree, two with disagree, three with neutral, four with agree and five with strongly agree. Table 4 provides example of the questionnaire with open and close-ended questions for observers to complete during their observations in the classroom. For the observers they are 3-point scale questions where one equals not at all, two is neutral, and three is very much.

**Table 3: A sample of the research questions generated for the program participants.**

	<b>Program Evaluation Questions – Teachers</b>
Teachers	<p><b>Questionnaire for the survey - process of the program (manual, training and consultation):</b></p> <ul style="list-style-type: none"> <li>• Likert-scale questions           <p>Is the information provided in the manual clear enough?</p> <p>Is the information provided during the training clear enough?</p> <p>Was the consultation helpful?</p> <p>Does the manual provide enough information in the definition section to help you understand some terms?</p> <p>Are the red flags sections helpful to understand the difficulties of a child?</p> <p>Is the practical training useful for applying the information and recommendations for activities?</p> </li> <li>• Open-ended questions:           <p>Was the program effective for increasing your knowledge in sensory modulation and concentration difficulties?</p> <p>Do you have a better understanding on the role of occupational therapy after the training program implementation?</p> <p>What are your suggestions for improving the manual content?</p> </li> </ul> <p><b>Questionnaire for the survey – program outcomes:</b></p> <ul style="list-style-type: none"> <li>• Yes/no questions:           <p>Have you used strategies for sensory modulation listed in the manual?</p> <p>Have you included sensory breaks in your lessons?</p> <p>Have you included activity breaks in your lessons?</p> <p>Did you observe any changes in children’s behavior after the implementation of the sensory breaks?</p> <p>Did you observe any changes in children’s behavior after the implementation of the activity breaks?</p> </li> </ul>

- Open ended questions:

How many times per day have you used the sensory and activity breaks?

What strategies for sensory modulation have you used with the children?

What strategy you think was the most effective?

What changes in the behavior of the children with difficulties have you observed?

What changes in the participation of the children with difficulties have you observed?

What changes in the concentration of the children with difficulties have you observed?

Have you observed any academic improvements for the children you have applied the strategies and approaches?

**Focus group questions:**

Are the recommendations applicable for the classroom setting?

What do you think are the limitations of the program?

What do you feel could be changed/ adapted to improve the quality and effectiveness of the program?

What external limitations do you think have limited your ability to adapt the program suggestions?

<b>Table 4: A sample of the research questions generated for the program observers.</b>	
	<b>Program Evaluation Questions - Observers</b>
Observers Evaluation questionnaire for the classroom observations	<ul style="list-style-type: none"> <li>• <b>Yes/no questions</b></li> <li>Do teachers incorporate activities in their session 3 times per day?</li> <li>Do teachers use the suggestions for self-regulation for children with sensory difficulties?</li> <li>Do the children show interest in sensory and activity breaks?</li> <li>Is the classroom environment appropriate for the implementation of the breaks?</li> <li>• <b>Open ended questions:</b></li> <li>Have you observed changes in children's attention span?</li> <li>Have you observed changes in children's participation in classroom activities?</li> <li>Are the suggestions for self-modulation effective for regulating during lessons?</li> <li>Have you observed changes in children's academic performance?</li> <li>Are teachers correctly applying the strategies in the manual?</li> <li>Are there any environmental limitations for applying the program?</li> </ul>

### **Research Design**

A combination of quantitative and qualitative approaches will be employed for evaluating the program. The combination of approaches will provide data from different points of view, will provide clues as to why the program may or may not seem to be "working" and lead to guidelines for making necessary improvements to transform the program, and will help identify and understand the characteristics of the intended users, including their interest in the activities, the behavior changes during the activities and the

further needs they have (Stetle et al., 2006). Due to the fact that the evaluation program will also be measuring change in knowledge, skills and confidence as well as children's behaviors from before to after reading the manual by using trained observers, a quantitative outcomes aspect will be added to the research design which is the quasi-experimental single group pretest and posttest design.

### **Planned Approach to Data Gathering**

For measuring the process of the manual, a survey approach will be employed. Teachers will be asked to complete a questionnaire after the training and consultation and indicate the level of effectiveness. The type of qualitative approach will be used is focus groups. The focus groups will give the opportunity to participants to share their thoughts and opinions through verbal responses and dive deeper into the problem, which is vital for evaluating the effectiveness of the manual's content (Strolla, 2005). Moreover, the focus groups are chosen in order to gather feedback and allow for discussion among the teachers using the manual, regarding positive and negative aspects of the implementation of the strategies suggested in the manual and answering evaluation questions. Teachers will also be asked to report changes in children's participation, attention and academic performance after the implementation of the program through a questionnaire (table 1).

Field observation by trained observers is a type of quantitative approach, which can be used to gather information regarding teacher's change in their behavior and skills for implementing the manual and also the responses of children and changes in their concentration and participation in lessons. The field observation would be needed to be conducted from a number of trained observers who meet the exclusion and inclusion

criteria mentioned before, over 3 school days in order to track changes throughout the implementation of the manual's suggestions. Videorecording is an effective way that can be added during the field observations to evaluate the program and provide evidence about the results of the evaluation assessment. Since observers are not experienced individuals and they only received a two-day training, videorecording is valuable to verify their responses. Moreover, gathering practice videos is an excellent way to train future teachers to use the manual and it can also serve as an outcome measurement. Before any observations or video recording, permission should be taken from the school, teachers, and parents.

### **Data Analysis and Reporting**

During data analysis the authors' goal is to bring order to the data and reduce it to manageable components by identifying recurring themes and **categories**. The data analysis program for the qualitative data gathered will be the newest version of the software is NVivo 11 for Windows which will help organize, store the data gathered, work more efficiently, save time and rigorously back up findings. For the quantitative data, Chi-square test and the t-test (pre and post data will be analysed) will be used to analyze the descriptive data collected, as they will help the author assess whether the hypothesis regarding the effectiveness of the manual is true and examines the changes before and after the application of the activities.

To report the outcomes of the analysis, a summary report and an extended version will be developed. The summary report will include a two-sentence summary of the manual evaluation, a "killer" concrete and concise paragraph, as it was described from



Grob (2015, p. 596) providing introductory information and pointing at the main outcomes of the extended report. A longer report which will include the benefits of evaluating the manual, the methodology, participants demographics, data gathering approaches, data analysis methods, examples of teachers' responses and observations, tables summarizing their interpretations and reflections, the outcomes of the evaluation organized in tables and also suggestions and the actions to be taken to minimize the limitations of the manual. This evaluation can be sent to stakeholders and researchers, academicians and therapists. However, based on the audience, the extended report could be tailored to meet the audience's interest and specialty. For example, if the report will be sent to researchers, the need for further research on inclusive education, teachers' knowledge and the cultural impact, should be emphasized at the end.

### **Data Management Plan**

Before beginning data collection, the software to be used will be chosen (Mack et al., 2005). For this project the Statistical Analysis System (SAS) which produces SAS® Analytics, will be used for cleaning, transforming, and modeling data in order to discover useful information, and for suggesting conclusions. The author as well as a group of two occupational therapists also working in data gathering, will be trained in order to use the software. Only one computer will be purchased for the data collection and analyses and one person will be employed for the statistical consultation.

All information sheets, the rating scales, the training materials, the typed text of any handwritten notes taken by the focus group and the recordings from the videotaping of the field observations, audio and video recordings will be transcribed into computer

text files as soon as possible after each participant observation and focus group, from the occupational therapists' group and will be stored. At great importance is to create a backup plan. To ensure that all data and data analysis outcomes are safe and prevent loss, apart from NVivo 11 for Windows software, an external drive will be purchased where all copies of the original recordings and data analysis will be stored in a separate location. Moreover, in order to comply with confidentiality protocol, all files will be stored in a locked place, and will have passwords (for the electronic files) and lockers (for the handwritten files) to which only the author and the two occupational therapists will have access.

### **Summary**

The program I am proposing is a pioneering project for Cyprus. Teachers, apart from the trainings they have about some disability issues, do not have the opportunity to participate in training programs, which contain interactive training and consultation in combination with a written manual to guide them. Therefore, the evaluation of this program is of great importance. This evaluation plan is created in an attempt to measure the process and outcomes of the training program in order to improve it and adjust it based on children's and teachers' needs.

## **CHAPTER 5 - Funding Plan**

### **The proposed program**

In Cyprus, there are more children with attention and sensory challenges in the classroom, and teachers are not trained in inclusive practices to accommodate for these challenges. This training program aims to address these challenges and help both teachers and children with concentration and sensory difficulties in the classroom setting. The training program consists of three parts. The first part is a manual which includes definitions and red flags related to sensory and concentration difficulties and provides suggestions for strategies and activities that teachers can use during the lessons to improve children's ability to concentrate and participate in classroom tasks. The second part of the training program is a two-day training, which is required in order for the teacher to receive and use the manual. The last part is the consultation, which will take place once a month after the two-day training and last for one year.

This funding plan chapter considers local resources, the costs associated with the training program's creation and implementation, as well as potential funding sources to help offset these expenses. This chapter will highlight and analyze the above factors, so as to create this training program and successfully implement it in the classroom setting of the six schools in Cyprus.

### **Available local resources**

As a co-owner of a pediatric therapeutic center in Nicosia, I have access to a number of resources to assist in the creation and implementation of the program. I have access to resources like internet, computer, telephone and a conference room for the

teacher training sessions or any other meetings will be required during the program process.

Being part of a multidisciplinary team affords me the opportunity to work closely with other professions. All professionals in the center, including speech and language pathologists, psychologists, drama therapists, music therapists and special education teachers, can be very valuable throughout the process of the creation, implementation and evaluation of the program. For planning the program, the drama and music therapists can provide me with ideas about classroom breaks which will incorporate music and role-playing games. For implementing the program, the school-based speech and language therapist can assist with contacting the schools' principals about the teachers' training program. For evaluating the program, the special education teachers can advise me from a teacher perspective how to form the evaluation questionnaires.

As an active occupational therapist working in the private sector for nine years, I have worked closely with many teachers and principals in the schools in Cyprus. They would be willing to be part of this project and help me with the training or the evaluation process. Additionally, I am part of the Cyprus Association of Occupational Therapists and committee chair of the Cyprus Registration Board of Occupational Therapists. During the year of my professional practice and due to the position I had in the Committees, I have met many people who have companies with sensory and therapeutic equipment and also educational games. They are the local experts in this field in Cyprus and they could become possible funders for my project preparation (e.g., sensory boxes for the classrooms, equipment for self-regulation, educational games/cards). By

participating in the teachers' training program, they also benefit as this participation is a way to advertise their companies and services. Finally, I am privileged to have friends who work in elementary schools as teachers; and I had the opportunity to talk with them and support my decisions for developing the training program.

### **Costs associated with delivering the program**

The costs associated with the program creation, implementation and evaluation (see Table 5) include the supplies to print the training materials, the manuals, and the evaluation questionnaires as well as classroom equipment (i.e., sensory boxes, cushions, sitting adjustments). I will apply for funding for the classroom equipment. Nevertheless, their cost is listed in Table 5 in case the funding is not approved.

For this program, there are no rental costs since the training and focus groups will take place at my office. In addition, there are no communication costs since I will use the telephone and internet from my office. I also plan to donate my time for the trainings and consultation in order to minimize the costs of personnel and the overall project. For the same reason, one of the inclusive criteria for any of the supportive members, such as observers and teachers, is to voluntarily participate in this project.

**Table 5: One - year budget plan**

<b>One - Year budget plan</b>		
		<b>Approximate cost based on the suppliers' prices in Cyprus</b>
<b>Personnel (salary and benefits)</b>	No salary for the researcher and the participants (therapists, observers and teachers); all will be volunteering	€ 0
<b>Equipment</b>	<p><b>Classroom equipment</b></p> <p>-12 <u>sensory bins</u>: 24 therapy putty, 24 sensory/stress balls, 36 chewing toys, 24 fidgeting toys, 12 foams, 12 boxes with sand, 12 boxes with colored rice, 12 set of 3D letters, 12 set of 3D numbers, 12 sensory brushes, 12 tangle toys, 12 bin with water balls.</p> <p>-12 air pillows</p> <p>-12 head set with music player and 12 CDs with calm down music.</p> <p>-12 set of cards with animals for role playing</p> <p>-12 tapes for creating obstacle courses</p>	<p>Funding will be applied for the equipment. In case the funding is not received from all suppliers, the costs are:</p> <p>Therapy putties: €144</p> <p>Sensory balls: €144</p> <p>Chewing toys: €180</p> <p>Fidgeting toys: €120</p> <p>Foams: €96</p> <p>Boxes with sand: €180</p> <p>Boxes with rice: €70</p> <p>3D letters and numbers: €360</p> <p>Sensory brushes: €100</p> <p>Tangle toys: €60</p> <p>Bin with water ball: €100</p> <p>Air pillows: €120</p> <p>Headsets and CDs: €360</p> <p>Animal cards: €36</p> <p>Tapes: €15</p>

<b>Supplies</b>	-12 sets of the manual (more will need to be printed if more than two teachers from each school are interested)  -Printing materials (paper and copy machine expenses) for printing notes for the training and evaluation documents for both observers and teachers.	Manuals: €120  Printing materials: €100
<b>Communication (telephone/postage)</b>	The telephone and internet from my office will be used for the project.	€ 0
<b>Rental of facilities</b>	No rental will be needed as the center I own will be used for meetings and preparation of the project's documents and materials.	€ 0
<b>Evaluation</b>	Evaluation assessment expenses are included in the supply's expenses.	
<b>Other expenses</b>	Other expenses include transportation, projector equipment for the presentation during the training as well as snacks and drinks, which will be offered during training and consultation.	Transportation €100  Projector equipment: € 50  Snacks: €1000
<b>Total</b>		€ 655

### **Funding opportunities**

Most federal funding opportunities are linked with the European funding programs. I selected sources (Table 6) that I know are related to my subject and have supported other new initiatives. Moreover, the companies in Cyprus that provide disability and educational equipment would also be a central funding source for this project. Finally, I plan to use personal funds to develop, implement, and evaluate this training program.

**Table 6: Funding opportunities**

<b>Funding source</b>	<b>Description</b>
European fund: The European Social Fund (ESF)	This is one of the four Structural Funds of the European Union that aims at promoting economic growth and social cohesion (Cyprus Ministry of Education and Culture, 2019). The ESF funds projects that contribute to social cohesion and meeting the needs of EU citizens for training throughout Europe.
Sensory and therapeutic suppliers in Cyprus	They will be approached to fund this project through the provision of sensory equipment for classroom use.
Investigator Initiated Research	This is a global company with global interests, accepting applications from all countries. The areas of focus for the research grant applications are therapeutic areas (Baxter, 2019).
Research promotion foundation (RPF) programs: RESTART 2016-2020 programs	The RESTART 2016-2020 Programs are the current multiannual development framework of Programs for Research and Innovation Support in Cyprus, co-funded by national and European funds and implemented in conjunction with other national initiatives and programs. It is the supporting mechanism that succeeds the RPF 2009-2010 R & D Programs (The Institute for Research and Innovation (ISEK), 2019)
Personal fund	Transportation, rental for meeting rooms, communication, salary and copy machine costs will be covered by a personal fund.

## **Conclusion**

In this chapter, the costs and funding options for the teachers' training program have been analyzed. The implementation of this program has many expenses and this is the reason I have decided to provide personal funding. I plan to have volunteers to participate in each phase of the program. Funders would have an important role in the



implementation and development of this program; however, it is acknowledged that there is always the possibility of not being successful. The analysis of the approximate costs, based on the Cyprus market prices, would help me to create an analytic list for the funders or in case of rejection, to plan further steps to gather the required amount.

## **CHAPTER SIX - Dissemination Plan**

### **Description of the Program**

The proposed program was implemented in Cyprus and specifically in Nicosia's elementary schools. The reason for the creation of this program was the increase of children with attention and sensory challenges in the classroom, and the fact that teachers are not trained in inclusive practices to accommodate these challenges. The training program addressed these challenges and helped both teachers and the children with concentration and sensory difficulties in the classroom setting through different approaches. The first part of the training program was the introduction of a manual which includes definitions and red flags related to sensory and concentration difficulties and provides suggestions for strategies and activities that teachers can use during the lessons to improve children's ability to concentrate and participate in classroom tasks. The second part was a two-day training, which was required in order for the teacher to receive and use the manual. The last part was the consultation, which took place once a month after the two-day training and lasted for one year.

This chapter will consider the plan for disseminating the research findings to those who will use the information in practice. The audience of the results will be the Ministry of Education, the Teachers Association, and the Occupational Therapy Association in Cyprus. The reason for choosing these audiences is because they are people who can help me get the message out and can adopt this program to help children with difficulties.

**Dissemination goals**

The program evaluation (see Chapter Four) examined the effectiveness of the teachers' training program including the manual, the training, and the consultation, for increasing teachers' knowledge about disability issues and approaches they can use in the classroom. Additionally, this project targets children with attention and sensory integration challenges; the second dissemination goal is to share with the teachers' association and occupational therapy association in Cyprus the benefits of this training program for improving students' attention span, ability to participate, and academic performance in the classroom. Furthermore, the transferability of the findings to other schools is also a goal in order to achieve continuation of the program. The final dissemination goal is to raise the awareness of the stakeholders in the Ministry of Education about the importance of training for teachers and the involvement of occupational therapy in the mainstream schools. The next two tables further explain the long term and short-term goals that are set for this project (Table 7, Table 8, Table 9).

**Table 7: Goals for teachers**

<i>Goals of the teachers training program - teachers</i>	
Long-term	<ol style="list-style-type: none"> <li>1. Increase teachers' awareness about disability issues.</li> <li>2. Increase teachers' awareness about approaches and strategies they can use in the classroom.</li> </ol>
Short-term	<ol style="list-style-type: none"> <li>1. Teacher education (understanding of the terms).</li> <li>2. Teacher utilization of manual (red flags).</li> <li>3. Teacher utilization of movement and sensory breaks.</li> <li>4. Continuing education through consultation.</li> <li>5. Discuss any cultural considerations regarding the program implementation (collect cultural data).</li> <li>6. Propose adding occupational therapy services at schools.</li> <li>7. Increase the number of training programs.</li> <li>8. Achieve transferability of the training program in other schools in Cyprus.</li> </ol>

**Table 8: Goals for students**

<i>Goals of the Teachers Training Program - Students</i>	
Long-term	<ol style="list-style-type: none"> <li>1. Increase students' ability to concentrate and participate in the classroom activities.</li> <li>2. Increase students' academic performance.</li> </ol>
Short-term	<ol style="list-style-type: none"> <li>1. Improve sensory regulation within classroom.</li> <li>2. Increase attention time during lessons.</li> <li>3. Promote social skills acquisition through participation in group activities (breaks suggested in the manual).</li> <li>4. Improve academic performance of children including attention and understanding of new knowledge, through the strategies and approaches suggested.</li> </ol>

**Table 9: Goals for Ministry of Education**

<i>Goals of the Teachers Training Program - Ministry of Education</i>	
Long-term	<ol style="list-style-type: none"> <li>1. Increase the Ministry's awareness of teacher training for helping children with disabilities.</li> <li>2. Increase the Ministry's awareness of the role of occupational therapy in mainstream schools.</li> </ol>
Short-term	<ol style="list-style-type: none"> <li>1. Inform them about the program and the process.</li> <li>2. Present the results of the program implementation.</li> <li>3. Request for funding for the continuation of the project.</li> </ol>

**Targeted Audiences****Primary audience:**

- Ministry of Education
- Mainstream elementary teachers – through the Teachers' association and peer-to-peer communication.
- Occupational Therapists – through the OT association and peer-to-peer communication.

As Ministry of Education is one of the primary stakeholder audiences, it is important to engage with them early and keep in touch throughout the project. Ideally, they would be informed from the beginning about the development of the training program. Even if they will not be involved in the process, their role for implementing the program is very important. They will be asked to take the role of the supporter though finding in order for the program to be implemented, continued and expanded.

**Key message:** Teachers' education about sensory and concentration difficulties and also approaches easy to implement in the classroom can make an important change in

children's educational life and academic development and make the class run more smoothly.

**Influential spokesperson to spread the key message:** The principals of the schools that participated in the program.

Teachers are another primary audience for dissemination of the program findings. They are also key audience because they will be the protagonists of this training program together with the children. They will receive detailed information about the manual and participate in the training and consultation phases as well as the implementation of the program in the classrooms. The results will provide evidence about the effectiveness of the program and will encourage them to continue implementing it in the classrooms. It is important to be informed about the results of the study in order to continue practicing the suggested activities and approaches and also share the information with their colleagues.

**Key message:** Learning to read the signs and be prepared to help children with sensory and concentration difficulties, are vital for ensuring inclusive practices and becoming an agent of change in the classroom.

**Influential spokesperson to spread the key message:** The leading committee of teachers in Cyprus, the Pancyprian Greek Teachers Organization (P.O.E.D).

The third audience for program dissemination is occupational therapists. Although occupational therapists would not be involved in the teacher training program, aside from the occupational therapists that help me in the training and consultation process, they will be informed about the whole program when it is completed. It is important to add evidence for the effectiveness of sensory and play based

approaches in the classroom. This will advance the evidence-based practice across the occupational therapy profession in Cyprus.

**Key message:** It is part of our role as occupational therapists to support teachers and encourage inclusive teaching. Educating teachers on effective approaches they can use with students with sensory and attention challenges, can make a big difference to the teachers' thinking and to the children's development.

**Influential spokesperson to spread the key message:** As a member of the Cyprus Association of Occupational Therapists and leading member of the Cyprus Registration Board of Occupational Therapists, I feel that I am an appropriate spokesperson for spreading the importance of this project to occupational therapists working in pediatric settings.

**Secondary Audience:**

- Special education teachers
- Other grade teachers
- Parents of children with sensory and concentration difficulties

The secondary audiences are being selected as they are possible users of the program. All three may not implement the full program; however, they can adapt some activities and strategies to their classrooms or homes, to help children engage and participate in challenging activities. All three audiences will not be involved during the process since the program is not designed for higher grade students or parents, however they will be informed about the program effectiveness and implementation at the end of the project as they may benefit from the new knowledge and strategies to use with their

children.

**Key message:** Educational and professional development is necessary to effectively act towards minimizing the challenges for children with sensory and concentration difficulties. The challenges they experience everyday are becoming barriers in their social and academic development. Therefore, evidence about approaches and strategies to minimize these challenges are of great importance and we should be informed and educated about implementing them.

**Influential spokesperson to spread the key message:** As the creator of this program, I will outline and explain the key messages of this project to the parents. For the higher-grade teachers and special education teachers, the leading committee of teachers in Cyprus, the Pancyprian Greek Teachers Organization (P.O.E.D), would take the role of spokesperson.

### **Dissemination Activities**

The dissemination activities to share the program results include written information, electronic media, and person-to-person contact; all will be my responsibility.



**Table 10: Dissemination Plan**

<b>Electronic media</b>	<b>Written information</b>	<b>Person-to-person contact</b>
<p><i>Phase 1:</i> A journal article with the training program information and the results will be written and published in the teachers' and occupational therapists' organizations. This activity will be completed first in order to be able to include it as reference in my brochure.</p> <p><i>Phase 2:</i> The results of the project will be also published on educational pages on Facebook and Instagram and educational websites (after their obtaining their permission) as brief articles, which will provide a link to the main article.</p>	<p><i>Phase 2:</i> The third action will be the formation of a brochure. It will be developed and given to schools to share with parents and teachers, and to teachers' and occupational therapists' associations.</p>	<p><i>Phase 3:</i> The last action to be taken is to apply to present the program and program results to teacher and occupational therapy associations in Cyprus. Since we do not have annual conferences for occupational therapists and teachers in Cyprus, the presentations will take place during the annual meetings of the teachers' and occupational therapists' associations.</p>

**Timing and Budget**

The following table outlines the dissemination plan activities and also the preliminary budget for the dissemination activities. The budget expenses include travel, designing, and printing. The total budget required for the activities is calculated at the end of the table.

**Table 11: Timing and budget**

<b>Phase 1: Journal article</b>			<b>Budget</b>
TASK 1.1 Write the journal article	Estimated Start Date: 09/01/2019	Estimated Completion: 09/29/2019	€ 0
TASK 1.2 Publish the article in occupational therapy and teachers' association websites including getting approval from the associations	Estimated Start Date: 10/01/2019	Estimated Completion: 10/15/2019	€ 0
<b>Phase 2: Social media</b>			
TASK 2.1 Write a brief summary of the scope, the process and the results of the program.	Estimated Start Date: 10/01/19	Estimated Completion: 10/15/19	€ 0
TASK 2.2 Submission of summary report to educational websites.	Estimated Start Date: 10/01/19	Estimated Completion: 10/20/19	€ 0
TASK 2.3 Upload the summary together with the link for accessing the journal article	Estimated Start Date: 10/21/2019	Estimated Completion: 10/21/2019	€ 0
<b>Phase 3: Brochure</b>			
TASK 3.1 Design a brochure for schools, teachers' association, and occupational therapy association	Estimated Start Date: 10/22/2019	Estimated Completion: 10/30/2019	€ 300 (Design)
TASK 3.2 Hand out the brochure to schools and associations	Estimated Start Date: 11/01/2019	Estimated Completion: 11/10/19	€ 700 (print 1000 brochures)

<b>Phase 4: Presentation</b>			
TASK 4.1 Create presentation	Estimated Start Date: 11/10/2019	Estimated Completion: 11/20/2019	€ 0
TASK 4.2 Apply for presenting at teachers and occupational therapy associations' meeting at the beginning of 2020.	Estimated Start Date: 11/10/2019	Estimated Completion: 12/10/2019	€ 0
TASK 4.3 Present the project. The time of the presentation will be based on the date of each association's meetings.			€ 0
			<b>Total budget:</b> €1000

## **Evaluation**

In order to evaluate the success of my dissemination efforts through social media and websites, a comment section will be created at the end of the paper. Every user who reads the paper will have the opportunity to anonymously write comments about the article including thoughts and suggestions. The readers will receive a response to their comments or questions once per week when I read the comments.

Similarly, teachers and occupational therapists who receive the brochure also will be given a small questionnaire. The questionnaire will include 3 scale close-ended questions (1 not much, 2 good, and 3 very good) and two open-ended questions to share their comments (see Table 12). The principal of each school and the head of teachers' and

occupational therapy associations will collect the questionnaires and submit to me when ready.

**Table 12: Evaluation Questionnaire**

Questionnaire: 1. Was the brochure clear to you? 1 2 3 2. Was the brochure information useful to you? 1 2 3 3. Would you like more details on the brochure? 1 2 3 4. Is the information interesting for you? 1 2 3 5. Would you like to learn more about this project? 1 2 3 Do you have any comments for the brochure information and design? Do you have any suggestions to make?
--

## **Conclusion**

In this chapter the dissemination plan has been outlined including the goals, the targeted audiences, the dissemination activities, the budget, and the evaluation plan. Dissemination is an important part of a project and all the factors analyzed in this chapter play an important role for successful dissemination of program results to the audiences selected. Since the dissemination purpose is to influence people's behavior so that they will become aware of and adopt this new idea, the dissemination chapter has equally important role as previous chapters in this project.

## **CHAPTER SEVEN - Conclusion**

### **Problem Statement**

Over the past decades, there has been considerable change in the educational laws regarding inclusive practices in Cyprus. A number of children with attention and sensory difficulties attend mainstream classrooms. However, do they learn alongside with their peers or just attend the lessons? Promoting the intentions and practices of inclusive education is a major challenge facing educational systems around the world (Ainscow & Sandill, 2010). Teachers' inadequate training about disability issues and inclusive approaches for use in the classroom as well as the absence of occupational therapy services are among the main gaps in Cyprus' educational system. This doctoral project proposes a teachers' training program to both educate and support elementary teachers but also to promote the profession of occupational therapy and indicate the necessity of this profession in the mainstream school system.

### **Proposed Solution**

Drawing on research evidence from a range of international literature and discussions with teachers and principals in Cyprus, this project emphasizes the crucial role of inclusive practices, specifically for elementary students with sensory and attention difficulties. It is an innovative program developed from an occupational therapist's perspective so that more students can be served in the elementary schools in Cyprus.

This teacher training program is an evidence-based and theoretically-grounded program of sensory and attention strategies and activities. The program

focuses on the fact that students, with the right mindset and meeting their sensory needs, are going to be much better learners. Acknowledging students' challenges in the classroom and the need for working towards inclusive practices, this teachers' training program was developed to train and educate teachers about sensory and attention difficulties and to introduce strategies to address these student challenges during classroom time.

In order to form the structure and content of this doctoral project, the current classroom condition in Cyprus' schools, through teachers' and principals' points of view and the disability related training programs in Cyprus have been examined. Moreover, conscientious use of current evidence best practices, activities and programs implemented for minimizing the challenges of children with sensory and concentration difficulties in the classroom in other countries has guided the development of the manual's content.

### **Teacher Training Program to Address Sensory and Attention Needs of Students in Elementary Classrooms in Cyprus**

#### **Contributors**

In order to develop this training program, the concentration and sensory difficulties of elementary children have been explained through a review (see Chapter Two) of research papers (Ahn, Miller, & Milberger, 2004; Chang et al., 2014; Mahone 2005; Mulrine, Prater, & Jenkins, 2008). The contributors to the limited inclusive practices in Cyprus schools also have been discussed in order to have a better understanding of the problem. Factors such as cultural limitations and limited training were among the most important contributors. As such, the literature review focused on

teachers' training, the change in school curriculum, and time children spend in recess. The personal communications I had with teachers and principals working in Cyprus' elementary schools suggest the absence of training programs for concentration and sensory integration difficulties, the cultural misconceptions of some teachers regarding disability in general, and also teachers' limited experience incorporating inclusive approaches in their sessions.

Along with these, other topics have been discussed as part of the literature review. The first is Cyprus' historic events, which have been examined in an attempt to better understand the environmental, political and social factors affecting the problem as well as its implementation. Based on the informal discussion with some elementary teachers and principals, the political events and culture have affected and continue to affect the development of Cyprus at the educational level. Overall, the teachers and principals have urged the need to minimize any existing cultural misconceptions and move beyond any other political issues. They highlighted the existing gap in schools regarding inclusive practices and they showed willingness to try new approaches and apply inclusive practices to help children manage with school challenges.

The next factor that contributed to the structure of this training program is the existing interventions to minimize the sensory and attention difficulties of children. In order to gather more information about current programs, an investigation of evidence in the general education literature was conducted. A number of programs have been found in the literature providing ideas about approaches, activities and evidence of their effectiveness. Most of the studies had a common element in their results and this is what

had been driven my program's structure: giving children more space and time to play during the day can be a vital factor for their academic and social development (Foran et al., 2017; Goh, 2014; Hildreth, 2013; Kibbe et al., 2011; Mere-Cook, 2016; Mills & Chapparo, 2017; Nixon et al., 2008).

### **Occupational Therapy Profession's Role in this Project**

Since the occupational therapy profession is at the center of this doctoral project, the contribution of the profession to the problem and intervention could not be overlooked. At first, evidence from the occupational therapy literature was reviewed to explain the role of occupational therapists in schools (AOTA, 2017; AOTA, 2014). Evidence on the effectiveness of occupational therapy approaches at schools was then examined to assist building the program's structure and content. (Bazyk et al., 2009; Mayers et al., 2009). In general, evidence showed that the occupational therapy profession has an important role in school systems. Research studies' results agreed that occupational therapists play a significant role in planning intervention for students and educating teachers by preparing them to manage situations in the classroom and introducing them to new approaches (Hargreaves et al., 2012; Majasic et al., 2015; Mayers, 2008; Noddings, 2012).

### **Theoretical Grounding**

After analyzing all the evidence, it was important to select the theories that would help form the structure of this teachers' training program. These theories are the learning theory developed by Jean Piaget and Vygotsky's social constructivist theory. One of the main similarities of these theories is that Piaget and Vygotsky believed that social



interaction and hands-on experiences play an irreplaceable role in learning and cognitive development (Lourenço, 2012; Pea, 2004). Both theories highlight the need for active learning as beneficial for the development and acquisition of new knowledge (Lourenço, 2012). These theories also emphasize group learning as an important element in learning; group learning is included in this training program so that teachers will have the opportunity to discuss with others, analyze a subject from different points of view, and internalize the new information (Woolfolk, 2004).

### **Training Program Content**

The training program was then developed based on the research-based evidence, theories and discussions. The structure of the program includes both written and verbal information. Since inclusive practices begin with teachers' education regarding disability issues, the core of this program is the teachers' training. During the training program, teachers will be provided with written information (in a manual) regarding sensory modulation and attention definitions and red flags, and also sensory and activity break suggestions for increasing children's attention and participation during lessons. The manual will be given to the teachers only after a two-day training in order to promote implementation of these newly-learned teaching strategies into their classrooms. Finally, teachers will be encouraged to participate in a consultation plan following the teacher training. This is an integral part of the training, in order to ensure teachers' implementation of strategies in the classroom, to address any questions or challenges with implementation, and to determine the overall effectiveness of their practice.

### **Program Evaluation Plan**

The evaluation process will include two phases. The first phase takes place during the implementation of the program in the classroom and includes observations from an external observer in the classroom over three school days to track implementation challenges and benefits. Along with the observers, in order to cross-check the results from the observer's evaluation assessment, videotaping will be added during the field observations.

The second phase occurs after the completion of the 2-day teachers' training and during the consultation phase of the training. It includes a questionnaire for teachers in order to examine the effectiveness and practicality of the program's content. The questionnaires will include both Likert-scale and open-ended questions, where teachers will have the opportunity to expand on any further thoughts about and suggestions for the teachers' training program. The evaluation will be completed during focus groups (consultation), which is the last part of the training program.

### **Summary and Conclusion**

This doctoral project synthesizes evidence-based research on sensory and attention difficulties and best current practices to minimize challenges for students in the classroom. Theories and occupational therapy literature have been examined to find the most effective way to educate teachers and increase their disability awareness and knowledge. This is an innovative and powerful project, the first of its kind in Cyprus: it is developed by an occupational therapist and focuses on promoting inclusive classrooms for children with sensory and attention challenges. The implementation of this teacher's

training program could be the foundation of a new era in Cyprus, which will include more training programs for teachers and the inclusion of the occupational therapy profession in the school system.

### **Recommendations**

This doctoral project addresses a major limitation of Cyprus' educational system. Teachers' training and support from health professionals in the pediatric field is an important component for raising disability awareness and supporting the inclusion of new teaching approaches in elementary classrooms. Thus, the main recommendation of this doctoral project is to ensure the implementation of this training program implementation, not only for schools in Nicosia but also in other cities in Cyprus. Limited knowledge and experience do not have to be an obstacle for educating children with attention and sensory difficulties. Combining training, support from other professionals, and hands-on experience to build the bridge between theory and practice, should be part of teachers' professional development. Therefore, a step forward should be to expand on this particular program and create more training programs in Cyprus in order to achieve better professional development for teachers and increase their disability awareness.

Lastly, supporting inclusive education through including the occupational therapy profession in mainstream schools should be another step towards improving children's learning environment. Occupational therapists are key contributors within the education team as they are experienced professionals who can work in the school system and support, educate, and train teachers to help students with difficulties to participate in desired daily school activities. This should be acknowledged and appreciated by the

educational stakeholders so that occupational therapy is included in all schools in Cyprus.

## APPENDIX A – Definitions

**Arousal level:** A stage of a nervous system describing how one feels. To be able to regulate the nervous system to attend, concentrate, and perform tasks in an appropriate manner for the demands of the situation (Ayres & Robbins, 2005).

**Attention:** The concentration of awareness on some phenomenon to the exclusion of other stimuli.

**Attention Deficit Hyperactivity Disorder (ADHD):** It is a condition characterized by a persistent and recurrent pattern of developmentally inappropriate level of attention, concentration, and impulsivity, with or without hyperactivity (Brem et al., 2014).

**Hyperactivity:** Regularly fidgets with hands or feet, inability to sit still while in the classroom or in other situations, difficulty playing quietly and engaging in leisure activities, and frequently talking excessively (Case-Smith et al., 2014).

**Impulsivity:** Has difficulty waiting one's turn, constantly interrupts others when engaging in conversation, and blurts out responses before questions have been completed (Case-Smith et al., 2014).

**Inattention:** This is evident when one has difficulty sustaining attention during tasks or play activities, fails to attend to details, is unable to listen when spoken to, often fails to complete school assignments, chores, or duties due to difficulty with organization and following instructions (Case-Smith et al., 2014).

**Occupational therapists (OTs):** Defined by the American Occupational Therapy Association as practitioners who assist individuals in more successfully participating in

everyday life activities and occupations, including helping those individuals to acquire skills which promote typical physical, intellectual, and social functioning. Occupational therapy includes not only promotion of physical skills, but also addresses behavioral and social components which may be delayed or impaired due to developmental or environmental concerns, particularly within the context of sensory processing. OTs work to remediate sensory processing deficits in order to allow individuals with sensory integration challenges to function more effectively in their daily lives (American Occupational Therapy Association, 2008).

**Over Responsive - Hypersensitivity:** Occurs when the brain of an individual registers sensory input too intensely. Children with over responsivity are among the most likely to cry, have meltdowns or hit back. These children are more sensitive to sensory stimulation than most people. A child with over responsivity may: feel typical rooms are too bright, too noisy, too hot, too cluttered, etc. have dramatic responses to sensory input, have aversions to anything messy, have extreme difficulty falling asleep, dislike being held or rocked, respond aggressively, or severely withdraw depending on coping strategy for experiencing too much sensory input (Ayres & Robbins, 2005).

**Proprioceptive:** This sense is related to body positioning, processed through expansion and contraction of joints, tendons, ligaments, and muscles (Williamson & Anzalone, 2001).

**Sensory integration (also called SI):** Sensory integration, according to founding researcher Jean Ayres, is a neurobiological process which organizes input from one's body and the surrounding environment in order for the body to be able to effectively

utilize that information. Input must be detected, taken in, assimilated, and organized during this process to allow an individual to interact effectively with his environment on a daily basis, whether at home, school, or in other settings (Ayres, 1979).

**Sensory integration dysfunction (also called sensory integrative dysfunction or SID):**

SID occurs when one's body is unable to deal successfully with the information that it receives through its senses. This inability can manifest in many different ways, but in order for the dysfunction label to apply, it must occur with frequency, intensity, and / or duration. Dysfunction often manifests either through a child's 1) inability to read cues from his / her environment, 2) inability to adjust his / her own behavior based on the cues coming in from the surrounding environment, or 3) inability to consistently absorb sensory input, organize input, and react appropriately to that input (Kranowitz, 1998).

**Sensory Processing Disorder:** Sensory Processing Disorder (SPD) is a condition in which the brain has trouble receiving and responding appropriately to information that comes in through the senses. SPD can affect people in only one sense—for example, just touch or just sight or just movement—or in multiple senses. One person with SPD may over-respond to sensation and find clothing, physical contact, light, sound, food, or other sensory input to be unbearable. Another might under-respond and show little or no reaction to stimulation, even pain or extreme hot and cold. In children whose sensory processing of messages from the muscles and joints is impaired, posture and motor skills can be affected (Kranowitz, 1998).

**Sensory modulation:** A person's ability to manage reaction to sensory sensation. It can be further described as the ability to appropriately and proportionally generate responses

to sensory input (Williamson & Anzalone, 2001).

**Sensory Seeking:** Children with sensory seeking behaviors have an insatiable need for sensory experiences and actively search for sensation often in ways that are socially unacceptable. What may be perceived as bad behavior is sensory related. A child with sensory seeking behaviors may: appear fidgety, be hyperactive, be restless at school, constantly seek sensory stimulation, be frequently dysregulated by sensory stimulation, appear dysfunctional, seem extremely disorganized, become demanding when search for input is stopped, climb on a person or seem to be to invade personal space (Ayres & Robbins, 2005).

**Sensory diet:** A planned daily activity program, developed and overseen by an occupational therapist, which is structured to improve the integration and performance of a person's (typically a child's) nervous system (Dunstan & Griffiths, 2008). The program includes a variety of activities designed to stimulate or alert, organize, and calm different components of the child's nervous system and is focused on treating sensory defensiveness (Rolley et al, 2007).

**Self-regulation:** the fact of something such as an individual is regulating itself without intervention from external assistance in an attempt to respond to the ongoing demands with socially tolerable and spontaneous reactions (Bell, 2016).

**Tactile:** Not limited to the sense of touch through the fingers, the tactile sense utilizes information gained about the environment through all skin (Williamson & Anzalone, 2001).



**Under Responsive - Hyposensitivity:** Occurs when the brain of an individual registers sensory input less intensely than is normal or typical. Children with under responsivity are often quiet and self-contained, which may go undetected in infancy, but is more noticeable at toddler age and beyond when children's job is to play with others. A child with Under Responsivity may: enjoy solitary activities, choose no play at all, not complain of being bored, react with indifference, not notice other people trying to get their attention, have limited social interactions, be exceptionally unmotivated to play, not feel a cut or pain (Dunn, 1997; Ayres & Robbins, 2005).

**Vestibular:** This sense is related to balance, including motion, and is processed primarily through the inner ear (Williamson & Anzalone, 2001).

## **APPENDIX B - Red Flags**

Based on the knowledge and experience we have, we form the way we identify, perceive and understand difficulties related to sensory integration. Due to this difference, sometimes children behaviors in the classroom may be misinterpreted. Therefore, a guide for teachers is required, such as the red flags, in order to be able to recognize that something is not right. The red flags are the cues that will trigger teachers' attention and will support them to interpret a child's difficulties and then refer him to a therapist or a doctor for further assessments.

The following document will provide some basic red flags for sensory over-responsive and under-responsive children (including the responsivity for all 5 senses) and children who have attention difficulties. The term Attention Deficit Hyperactivity Disorder (ADHD), even if has many common symptoms with attention difficulties, won't be used; it is a complex neurodevelopmental disorder that can be only be diagnosed from experienced and licensed psychologists or doctors who can provide the diagnostic test.

Since there is not an official document for the red flags of these problems, the information provided below is based on sensory (The inspired tree house, STAR institute for sensory integration disorder) and attention (Centre for ADHD awareness, Canada, Mind well Psychology testing and therapy, Child Mind Institute) sites and also books (Sensational Kids: Miller et al., 2014). The red flags from each of the resources were combined to form this document.

When using this list, you do not have to observe all of the red flags for each section to refer a child for further assistance. If you observe 30% and more of the red flags for each section, then seek assistance.

### **Sensory Over Responsivity**

- Avoids messy play (i.e., finger painting, water, play dough, sand).
- Upset at transition times (i.e., moving from playground time to the classroom/ from one activity to other/quiet activity to louder activity).
- Meltdown/fearful of unexpected loud sounds (i.e., loud alarms, motorcycles from the street, toilet flush, crowds) as he shows difficulty with tolerating sudden noises.
- Covering ears even at the anticipation of a sound or in unfamiliar environments.
- Excessively cautious and afraid to try new things (i.e., avoids playing with new equipment in the playground).
- Avoids moving equipment on the playground (i.e., swings, slides, games with angular movement).
- Appears tired or lethargic very often without a reason.
- Coloring or writing with not enough pressure.
- He is crashing or falling on the floor constantly throughout the day.
- He runs into objects or people (e.g., inadequate body awareness).
- Complains of clothing tags or wears limited clothing items.
- Reacts aggressively or withdraws when receiving an unexpected touch.

- Extreme resistance to **oral sensory** experiences like brushing teeth or trying new foods (picky eater).
- Easily distracted by surrounding visual stimuli (e.g., art posters on the walls, other activities in the room, lighting).

### **Sensory Under Responsivity**

- Does not cry when seriously hurt (e.g., not bothered by scrapes and cuts).
- Does not notice when touched and must be touched when his/her name is called to get attention.
- Needing to touch everything and everyone (e.g., craving hugs and closeness with others, fidgeting with objects, seeking out textures and touch experiences).
- Seems uncaring when he has messy hands, face, or clothing.
- May be unaware when wet from toilet accident.
- Seeks vibration, watches spinning objects.
- Constantly enjoys crashing, bumping, jumping.
- Excessively spinning, swinging, rolling during playground time.
- Cannot be still for a short time – ending up in aggressive behaviors.
- Pushing or hitting others and playing aggressively.
- Smells toys or objects.
- Mouthing or biting objects or others.
- Trouble turn taking in conversation; constantly talks.

- Not noticing surroundings or visual input unless things are pointed out.
- Coloring or writing with not enough pressure.

**Attention Difficulties:**

- Daydreaming during session.
- Frequently looking around.
- Inattention - Trouble staying focused on work.
- Easily distracted from noises or things going on around him.
- Difficulty with self-control, switching and prioritizing attention, including over-focusing on stimulating activities.
- Incomplete work - Difficulty completing work without being reminded
- Disorganized including time management, losing his things, forgetting normal routines.
- Difficulty with remembering and learning new knowledge.
- Difficult remembering verbal instructions due to reduced focus on speaker when spoken to; needs instructions repeated.
- Careless errors and does not pay attention to details.
- Academic difficulties with including handwriting, spelling, math, and sequencing.
- Difficulty starting and organizing an essay or project.
- Excessive talking and interrupting of others.
- Interactive behaviors when playing with others.

- Impulsive behaviors such as grabbing, touching or pushing others or objects very spontaneously.
- Difficulty with starting and completing an activity – changes might produce agitation or frustration.

## **APPENDIX C - Sensory Strategies in the Classroom**

Activities chosen include “heavy work” or tasks emphasizing physical exertion and proprioception and oral motor and respiratory tasks. These activities were selected as they benefit children with sensory difficulties to engage in classroom tasks but also help typically developing children to take a break and reorganize to be more focused on classroom tasks. The activities are organized based on the responsivity of the child to sensory stimuli: activities for sensory over and under responsive child. The information was gained from online sites (The Inspired tree house), books (Biel & Peske, 2005; Kranowitz, 2005; Miller et al., 2014; Yack et al., 2003) as well as my experience as occupational therapist.

### **Sensory Over Responsivity**

- Stay on a regular routine so the kids know what to expect and always prepare the student several minutes before the activity:
  - Using a visual schedule or pictures can help make the student feel more secure about what is going to happen next and what they have to expect.
  - Let him know 10 minutes before the change and remind him again 2 minutes before.
- To help a child to self-regulate when upset, use beanbags to sit, a weighted blanket on this lap, ball chair, or bean chair.
- Encourage the child to ask to have a time out when he is feeling overwhelmed by:

- Going into a small space to self-regulate, or going out of the classroom for 5 minutes (i.e., to get some water, to bring something to the principal).
  - Wearing noise canceling headphones to play soft music.
- Increase organization in classroom to provide a calm context (organize the toys/objects in boxes and put a picture on each box).
- For visual sensitivities:
- Switch off the lights if there is natural light from the windows
  - Have a 5-minute break between the sessions where the teacher will switch off lights and all the students will close their eyes.
  - Have sunglasses available if a child becomes overwhelmed from the lighting and he cannot calm down with the 5-minute break.
- For olfactory sensitivities:
- Encourage children not to eat in the classroom during breaks.
  - Open windows at every break.
  - For the sensitive child to have a cloth or aroma bracelet with lavender or vanilla aroma to smell when needed.



### **Sensory Under Responsivity**

Kids just need a short (3-5 minutes) movement or heavy work break to be ready to learn again.

- Encourage movement activities during playground time and after sitting activities:
  - Jumping like a frog (animal role plays to jump around)
  - Jump to the number/letter, pick all the letters until you form the word (use jumping for your lesson as well and not only as a break)
  - “Let’s see which team is going to form the word ..... first” (separate the classroom in team and provide an opportunity to run in order to reach the goal you set).
  - “Come back like a snake” (pulling your body on the floor and pretending snake is an opportunity for heavy work).
  - “Walk like a lion to reach the board and then become a giraffe to write your name on the board” (use animal walking to get them to move around the classroom).
  - Incorporate push/pull/ carrying activities (i.e., re-arrange the classroom, pull the basket to see the letters inside, push on the wall to stick the picture, carry the books to the end of the classroom to put them on the shelf).
  - “Let’s become tall trees and reach the sky” (provide them opportunities to stretch their body).

- Give students extra opportunities for movement during class i.e., get out books, clean the board, bring something to another classroom teacher or to the principal.
- Obstacle course: Build activities that help the whole class and incorporate learning.
- Walk on tiptoes.
- Crawl around the classroom on hands and knees.
- Use adapted seating to help them self-regulate in the classroom, i.e., therapy ball, adapted stool, coated chair, bean chair, air cushion. Caution: use it upon students need and response. For example, if it helps a child, use it for all the classroom time. If he doesn't need it for the whole school time, use it only when he starts having difficulty to self-regulate and concentrate. If a student's arousal level increases every time that he uses any of the adapted equipment, do not use the equipment at all.
- Let them change body position for academic work, for example lying on the floor or standing up to write on the chalkboard.
- Play music or have students play music (in a specific rhythm, counting the letters of a word, doing math exercises – adding numbers, or arrhythmic music-free to play whatever they want for 3 minutes).
- Include bright and contrasting colors in activities and worksheets to increase interest and provide more visual input.
- Highlight important information on words on the worksheets or on the board to be easier to catch their attention.

- To increase interest in fine motor activities: use tools such as glitter pens, smelly markers, crayons, gel pencils, markers.
- Provide and let the child use fidget objects, such as stress balls, playdough, fidget cubes, to keep hands and feet controlled.
- Tactile bins: fill in a plastic container with sand, dry rice, beans, or pom-poms and let the child run his hands through it when needed or use it as a treasure game for all the children in the classroom (i.e., find hidden letters and form sentences, find the solution of a math equation).
- Have available weighted blankets or weighted stuffed animals for kids to use to help them concentrate and calm down.
- Provide or encourage parents to bring things with strong oral input and flavors (gum with strong flavors, flavored water, crunchy or chewy snacks, drink smoothies from the straw, chewing equipment – chewing bracelet/necklace, pencil chewing toy).
- Games for providing oral input such as blowing a feather or pompom across a table.

**Remember:**

- ★ Don't take away a child's playtime because their work isn't done. This will make the behaviors worse.
- ★ Provide movement activities with "thinking activities."
- ★ Small changes to the environment can significantly contribute to improving sensory regulation and attention of children in the classroom.
- ★ Listen to your students' body voice!

## **APPENDIX D - Executive Summary**

### **Promoting Classroom Participation: A Teachers' Training Program**

Promoting the intentions and practices of inclusive education is a major challenge facing educational systems around the world (Ainscow & Sandill, 2010). The Ministry of Education in Cyprus has changed considerably to address the inclusive education practices in Cyprus the past decades. Appreciating the efforts towards inclusion in Cyprus, this teachers' training program will try to add to the Ministry's efforts to provide continuing education opportunities for teachers. Ultimately, encouraging development in this area will facilitate elementary schools' ability to make classrooms more inclusive.

#### **Problem statement**

This teachers' training program investigates a current and significant student problem in Cyprus, which is the increased number of students with attention and sensory challenges in the classroom. This problem makes it more difficult for teachers to manage all students in the class during lessons. The program will help teachers learn about these challenges and develop strategies to address them with their students in developmentally-appropriate ways. Based on research evidence and personal communication with teachers and principals working in elementary schools in Nicosia, the number of available training programs regarding disability issues available during and after their studies is inadequate. This situation is leading to teachers' inefficiency in understanding children's behaviors and needs and ability to act to minimize students'

challenges in the classroom.

This teachers' training program also addresses a second problem, which is the absence of occupational therapy services in mainstream schools. Evidence from the occupational therapy literature shows that the occupational therapy profession has an important role in school systems for guiding both the students and the teachers. Research studies' results agree that occupational therapists have a significant role in assessing the difficulties and needs of each child, planning a school-based intervention, and educating and preparing teachers to manage situations in the classroom by introducing them to new strategies and approaches (AOTA, 2017; AOTA, 2014; Bazyk et al., 2009; Hargreaves et al., 2012; Majasic et al., 2015; Noddings, 2012).

### **Proposed solution**

This teacher training program is an evidence-based and theoretically-grounded program of sensory and attention strategies and activities (Foran et al., 2017; Hildreth, 2013; Mere-Cook, 2016; Mills & Chapparo, 2017). It is an innovative program, designed from an occupational therapist's perspective, to educate elementary teachers about sensory and attention difficulties and ways to minimize challenges of children in the classroom.

Teachers will be invited to a two-day training that will focus on the presentation of case studies of students with concentration and sensory challenges, practice training and open discussion. During the two-day training, participating teachers review the content of a manual that teachers can take with them to use in the classroom. Therefore, the training is a requirement for having and implementing the manual.

The manual will concentrate on building knowledge and new approaches in teaching students with disability issues. The manual includes written information about attention and sensory difficulties definitions, followed by behavioral red flags that may indicate specific concentration and sensory challenges. The next two parts of the manual describe the activities teachers can incorporate in their classroom to support children with attention and sensory difficulties. The teachers' manual includes sensory strategies and approaches and activity break ideas. Teachers can employ these strategies and ideas to minimize challenges that children experience in the classroom and improve the students' attention span, their participation, and therefore their academic performance.

The last phase of the training program is the consultation. In order to ensure the effective continuation of the program implementation, the teachers who participated in the training and have implemented the manual will be invited to consultation focus groups. The teachers will have the opportunity to participate in a twelve-month consultation plan, once a month in order to ensure the effectiveness of their practice and discuss any concerns and thoughts they have.

### **Theoretical grounding**

The theories forming the structure of this training program are Jean Piaget's learning theory and Vygotsky's social constructivist theory.

Jean Piaget: learning theory	Vygotsky's social constructivist theory
<p><b><i>Commonalities:</i></b></p> <ul style="list-style-type: none"> <li>• Piaget and Vygotsky believed that social interaction and hands-on experiences plays an irreplaceable role in learning and cognitive development (Lourenço, 2012).</li> <li>• Both theories highlight the need for active learning as beneficial for the development and acquisition of new knowledge (Lourenço, 2012).</li> <li>• They emphasize group learning as an important element in learning; group learning is included in this training program so that teachers will have the opportunity to discuss with others, analyze a subject from different points of view, and internalize the new information (Woolfolk, 2004).</li> </ul>	

### **Why this program is important?**

This teachers' training program synthesizes evidence-based research on sensory and attention difficulties and best current practices to minimize challenges for students in the classroom. Theories and occupational therapy literature have been examined to find the most effective way to educate teachers and increase their disability awareness and knowledge. There is a lack of training programs for teachers in Cyprus. This teachers' training program is developed by an occupational therapist. It is an innovative and powerful approach to addressing students' attention and sensory challenges. It allows teachers to transform their classrooms into inclusive settings to support the learning of all their students. The implementation of this teachers' training program could be the



foundation of a new era in Cyprus, which will include more training programs for teachers and the inclusion of occupational therapy profession in school system.

### **Recommendations**

The main recommendation of this teachers' training program is to ensure the implementation of this training program, not only for schools in Nicosia but also in other cities in Cyprus. Combining training by an occupational therapist, support from other professionals, and hands-on experience to build the bridge between theory and practice, should be part of teachers' professional development.

Moreover, supporting inclusive education through including the occupational therapy profession in mainstream schools should be another step towards improving children's learning environment. Occupational therapists are key contributors within the education team as they are experienced professionals who can work in the school system and support, educate, and train teachers to help students with difficulties to participate in desired daily school activities. It is my intent that this program will inspire educational stakeholders to acknowledge, appreciate, and act to achieve occupational therapy inclusion in schools.

### **Program Evaluation Plan**

The goal of the program is to provide written and verbal information as well as consultation for the teachers so that they will be able to effectively assist children with sensory and concentration difficulties to participate in classroom activities. The way to measure the program content as well as the program's implementation outcomes is through an evaluation process, which will include two phases. The first will take place

during the implementation of the program in the classroom and the second will consist of subjective questionnaires asking teacher about their experiences and their concerns (consultation phase).

<i><b>First phase</b></i>	<i><b>Second phase</b></i>
Includes observations from an external observer in the classroom, over three school days to track implementation challenges and benefits. Along with the observers, in order to cross-check the results from the observer's evaluation assessment, videotaping will be added during the field observations.	Includes the questionnaire for teachers in order to examine the effectiveness and practicality of the program's content. The questionnaires will include both Likert-scale and open-ended questions to give them the opportunity to expand on any further thoughts and suggestions they have. The evaluation will be completed during focus groups (consultation), which is the last part of the training program.

### ***Budget plan***

<b>One - Year budget plan</b>		
		<b>Approximate cost based on the suppliers' prices in Cyprus</b>
<b>Personnel (salary and benefits)</b>	Volunteering	€ 0
<b>Equipment</b>	Classroom equipment	Total cost: € 1941 (Funding will be applied for the equipment for further implementation of the program).
<b>Supplies</b>	--Printing materials	Total cost: € 220
<b>Communication (telephone/postage)</b>	Funded from researcher	€ 0
<b>Rental of facilities</b>	Funded from researcher	€ 0
<b>Other expenses</b>	Transportation, projector equipment, snacks and drinks	Total cost: € 1350
		<b>Total: € 3655</b>

**Conclusion**

Acknowledging students' challenges in the classroom and the need to work towards inclusive practices, this teachers' training program was developed by an occupational therapist to train and educate teachers about sensory and attention difficulties and to introduce them strategies to address these challenges of students during classroom time. The program focuses on the fact that students, with the right mindset of educators who can meet their sensory needs, are going to be much better learners. The crucial role of inclusive practices has been discussed and the need for taking steps forward has been indicated throughout the program. For Cyprus, the development and the implementation of this teachers' training program will be the beginning of a new era of training teachers which, as described in this program, it is vital for including children with difficulties in education.

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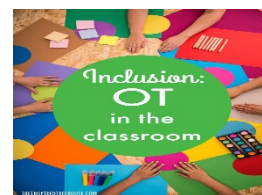
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## APPENDIX E - Fact sheet



### Promoting Classroom Participation:

A Teachers' Training Program  
 Evanthia Theodoulou MA  
 OTD Candidate




#### Problem statements:

- Increased number of students with attention and sensory challenges in the classroom.
- The number of training programs regarding disability issues available during and after teachers' studies is inadequate, based on research evidence and personal communication with teachers and principals working in elementary schools in Nicosia.
- Absence of occupational therapy services in mainstream schools in Cyprus.

#### Proposed solution:

A teacher training program, which is an evidence-based and theoretically-grounded program, of sensory and attention strategies and activities (Hildreth, 2013; Mere-Cook, 2016; Mills & Chapparo, 2017).



<b>Teachers Training Program (TTP)</b>		
<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>
<p>A <b>two-day training</b> that will focus on:</p> <ol style="list-style-type: none"> <li>1. Presentation of case studies of students with concentration and sensory challenges, practice training.</li> <li>2. Review the content of a manual.</li> <li>3. Open discussion.</li> </ol> <p>(Attending the training will be requirement for receiving the manual.)</p>	<p><b>Manual</b> includes:</p> <ol style="list-style-type: none"> <li>1. Written information about concentration and sensory difficulties definitions</li> <li>2. Behavioral red flags that may indicate specific concentration and sensory challenges.</li> <li>3. Activities teachers can incorporate in their classroom to support children with attention and sensory difficulties.</li> <li>4. Sensory strategies and approaches</li> <li>5. Activity break ideas.</li> </ol>	<p><b>Consultation:</b></p> <ul style="list-style-type: none"> <li>- Teachers who participated in the training and have implemented the manual will be invited to consultation focus groups.</li> <li>- The teachers will have the opportunity to participate in a twelve-month consultation plan, once a month to discuss any concerns and thoughts they have.</li> </ul> 

**Funding:**

- Researcher will donate her time for the trainings and consultation in order to minimize the costs of personnel and the overall project, as well as her office for the training and consultation purposes, and use the telephone and internet from her office to minimize the rental and communication expenses.
- One of the inclusive criteria for any of the supportive members, such as observers and teachers, is to voluntarily participate in this project.
- For further implementation of this program after the year of the project, funders will be approached to support the program.

### Significance for occupational therapy profession

To demonstrate the significant role of occupational therapists for intervention planning and educating teachers, for preparing them to manage situations in the classroom and for introducing them to new approaches (Hargreaves et al., 2012; Majasic et al., 2015).

Confidently, this program will be a motive for stakeholders to consider occupational therapy as part of the elementary school environment in Cyprus.



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**Curriculum Vitae**

