

THE USE OF MULTISENSORY IN SCHOOLS TODAY

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This thesis study investigates how teachers use a multisensory learning approach in special education classes in three schools in Indiana. The purpose of this study is to examine the actual use of the multisensory method as well as teachers' understanding of this method. The research is qualitative in nature and employed thematic analysis. The data, which came from three teachers in three different schools, was collected via observation and interview. The findings show that teachers have different understanding of the meaning of multisensory approach to teaching and differing ways of applying it. In addition, all of the teachers agree that students with disabilities benefit from the multisensory approach of teaching. However, not all special education classes use a multisensory approach. I found from the observations that as much the teacher provides the information through multisensory approach as the students get more engage and progress with the lessons. The study suggests that additional research regarding the multisensory method and effective tools for teaching is necessary. That will help special education teachers to figure the benefits of this approach. Further, additional funding and training programs for the teachers would provide teachers with the support they need to properly apply multisensory approaches to their classrooms.

Introduction

Teaching students with disabilities necessitates that teachers design and implement instructional methods that support their goals of meeting students' special needs (Tomlinson, 2001). Thus the purpose of this study was to explore by observation and interview a multisensory intervention intended to understand how educators instruct students with disabilities by using multiple senses while learning.

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

Through this approach, teachers can present information in multiple ways and engage all students in the learning process. Because multisensory teaching allows teachers to present information to students using a number of different means of sensory input, this method adheres to the universal design of learning (UDL) (Metcalf, Evans, Flynn, and Williams, 2009) by providing a flexible learning environment that accommodates students' differences with regard to the ways in which they learn.

Some examples of how teachers might present information using such methods are as follows:

Visual Elements

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

Auditory Elements

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

Kinesthetic Elements

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

These elements and more can be incorporated to present information to and create activities for students with disabilities throughout the course of a routine school day.

Literature Review

Many studies have addressed the effectiveness of multisensory instruction as a method of intervention for students with disabilities (Ashbaugh, 2016). Kok Hwee and Houghton (2011) examined the impact of a multisensory approach on the reading achievement of 77 Singaporean primary-school-aged children with dyslexia. The educators used the Orton-

Gillingham (OG) technique that involves visual, auditory, and kinesthetic modalities. In this study, the students practiced reading using multisensory methods for eight weeks. The results of the study confirmed that combining the three modalities through the OG technique was effective in bringing about significant improvements in reading.

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

Al Sayyed (2013) investigated the impact of using an approach that focused on auditory, visual, and tactile senses in order to teach mathematics to students with learning disabilities. Study participants were separated into an experimental group and a control group. Both groups received eight weeks of mathematics instruction. Students in the experimental group were taught using a multisensory approach, while students in the control group were instructed with more traditional methods. At the end of the session, students who were taught using the multisensory approach achieved better outcomes on a post-test than students in the control group, suggesting that the multisensory approach helped students to have a better understanding of mathematics. This is an important finding given the challenges of teaching mathematics to students with disabilities.

Further, Martin, Gaffan and Williams (1998) and Niki and Lisa (2001) both conducted studies on the use of a multisensory room where one or more forms of sensory-based learning were presented. Sensory rooms, as Fowler (2008) describes them, are spaces that contain equipment designed to provide specific sensory stimulation to users. Ideally, these sensory experiences are tailored to the perceived needs of the users. Martin et al.'s (1998) study of 27 adults with severe/profound learning disabilities who exhibited challenging behaviors took place over the course of 16 weeks. Niki and Lisa's (2001) study which took place over the course of six weeks, focused on two participants diagnosed with autism: one female subject, age 17, and one male subject, age 16. Both studies found that multisensory rooms did not result in clear positive or negative effects on negative behaviors. However, the participants did become more relaxed while they were in them.

The literature has helped to define *multisensory*, which as the term implies refers to representations of material that address two or more of the five senses, and demonstrated ways it can motivate students, affect their abilities to learn, and positively affect their academic outcomes. The universal design of learning (UDL), conceptualized to improve learner engagement and learning outcomes, specifies three core means by which the learner can receive information: multiple means of representation, multiple means of engagement, and multiple means of assessment (Brand & Dalton, 2012).

Multisensory instruction is a classroom practice that may be well suited to the three principles of UDL (Metcalf, Evans, Flynn, and Williams 2009). Just as multisensory instruction makes use of different sensory channels for conveying information, UDL do with the three elements. According to Bernacchio and Mullen (2007), the idea behind UDL is to provide flexible curricula and instruction that matches all students' abilities. Students are usually

provided intervention in groups within the classroom, and each group may include students from different ability levels. The students can observe and learn from one another. It also uses technology to maximize success for all students. Thus, it gives all students a chance to socialize with one another and express their knowledge through engagement with and among learning communities that offer choices, incentives, and support.

By using the three channels of UDL, teachers can effectively integrate sensory-rich learning opportunities into children's daily learning. Further, UDL provides rich environments that offer learners numerous opportunities for social interaction, direct physical contact with the environment, and a changing set of objects for play and exploration (Brand & Dalton, 2012).

Furthermore, UDL is not only about teachers presenting information; it is also about students being able to deal with and assess the information. Students may have accurate ideas about what teachers are trying to present yet be unable to demonstrate their understanding. UDL or/and multisensory approaches can help students to demonstrate their understandings through the materials they have examined when they were learning. That is, by repeating the same activities with which have been taught, students can demonstrate their understanding to their teachers. By placing emphasis on presenting information in ways that make it available to every student regardless of his/her preferred learning style, both approaches can provide all students with equal opportunities to learn via their respective strengths.. These methods help both teachers and students to meet their educational goals.

As many studies have suggested, using a multisensory approach to intervention can help students to improve their levels of performance. This study aimed to observe real-world use of this method of intervention in the classroom as well as to explore the multisensory

modalities and activities U.S. teachers of students with disabilities employ and to examine their perspectives regarding a multisensory approach to teaching

Method

I completed this qualitative study using data collected in three elementary schools located in a state in the Midwest region of the US. I initially contacted teachers in these schools who were teaching elementary students with disabilities at different levels to identify teachers and classroom environments that had experience with multisensory approach. The data were collected via classroom observations and teachers' interviews. I observed each classroom for about an hour three times, and I interviewed each teacher for about 15 minutes twice, once before and once after I had observed her class. Each observation took about one hour for a total of nine hours of observation, and the interviews took around 30 minutes for a total of one and a half hour. I employed thematic analysis as a way for me to organize the data and find the answer to my research questions. I adopted Lochmiller's (2015) study format as it matched my plan for analysis.

Research Purpose and Questions

The broad purpose of this study was to explore the multisensory modalities and activities U.S. teachers of students with disabilities employ and to examine their perspectives regarding a multisensory approach to teaching. Specifically, the study attempted to answer the following questions: What are teachers' perspectives regarding multisensory intervention? And how do they use it in their classrooms?

Data Sources and Collection

Data sources included observations of three different classroom and interviews with three classroom teachers. Each observation took about one hour for a total of nine hours of

observation, and the interviews took around 30 minutes for a total of one and a half hours. While observing the teachers and students in their classroom environments I recorded my observations on a data collection sheet (see Appendix A). I focused on such items or actions as student engagement, types of sensory materials or methods being used, the classroom arrangement, the students' spaces, the students' movements, students understandings in relation to the intervention, and the teachers' explanations of the lesson's materials or topics.

Once observations were completed, I interviewed each teacher about her point of view regarding multisensory intervention (see Appendix B for interview questions).

Besides investigating teachers' actual use of and perspectives on multisensory methods, I sought to assess whether and how teachers had been trained to use these methods as well as to determine how the teachers hoped to improve their skills using this approach. Finally, I sought to understand whether the teachers thought that the multisensory method helped them to better deliver information to their students and in what ways.

Procedure

The data were collected via classroom observations and teacher interviews, which took place over the course of four weeks. To this end, the following steps were taken:

1. I interviewed the three teachers face to face prior to classroom observations for about 15 minutes to collect information about the teachers' backgrounds and points of view. (See Appendix B)
2. I observed each teacher's classroom for about one hour, during which she taught via multisensory methods intended for students with disability. As I observed I recorded notes regarding the teacher's use of multisensory methods. (See Appendix A).

3. After each observation I again interviewed the teacher face to face for about 15 minutes, during which I specifically inquired about their use of multisensory methods (See appendix B)

Qualitative Data Analysis

To carry out a thematic analysis of the data (Saldaña, 2009), I used ATLAS.ti 8 Windows / ATLAS.ti Mac, which is a software package for qualitative data analysis. It helped me with organizing the process on analyzing. My analysis followed the steps that Lochmiller (2015) described, beginning with families myself with the data., which was by reading the observation sheets and the interview transcripts several times. Then compered the information form each notes to focus on the comments that described the actual use of multisensory methods or that characterized the type of sensory stimulation they focused on, or that teachers described. In this step of analyzes, I started coding the data. I created generic codes to point out key detail.

Next, I applied a second round of coding to narrow and organize the data sit. I indicated to these cods as “activities,” “multisensory methods involved,” “teachers’ descriptions of multisensory methods,” “materials,”” funding,” and “training programs.” These codes were developed a priori and specifically highlighted the teachers’ use of multisensory methods, how they applied them, what resources they had for using multisensory methods, and what their perspectives on the practice were. After finishing with the codes, I created broad categories that grouped the codes to get to the final themes. For example, I grouped all the codes related to teachers’ activities into the “teacher use of multisensory methods” category that ultimately became part of a theme, “Teachers’ perceptions and skills,” that described how multisensory approaches were being applied in

the classrooms. The two themes emerging from my analysis are discussed in greater detail below.

Results

Site Description

The observational component of this took place in three elementary classrooms located in in the Midwest region of the US.in all of which multisensory intervention was employed, referred to here as School A, School B, and School C.

Classroom A. The first classroom (A) was a resource room with four first grade students. In this room music was playing in the background, lighting was dimmed to create a relaxing atmosphere, and students had balls to sit on, sand to write in, and Play-Doh to manipulate. Teacher Emily focused on visual, auditory, tactile, kinesthetic, and verbal experiences, both indirect and direct, while teaching academic skills. For instance, a number of measures were carried out in order to engage students' senses. Students sat on the balls instead of in traditional chairs, and they were able to move around, sit on the ground, and walk while learning.

The lesson I observed began with a review of the prior day's lesson; this involved the use of scented markers, paper, and pictures that described a given sentence. Then while the class was reading aloud a story that included new words they needed to learn, each student had a set of earphones that connected to another student's earphones, which enabled the students to hear themselves as well as their peers and the teacher, who was also using earphones. This arrangement enabled each student to help teach his or her peers as well as him- or herself. In addition, the story in the book was projected on a screen, which provided the students with the opportunity to see the story on the screen, read it from the book, hear the lesson being shared by

the teacher and their peers, understand the lesson through multi-modal channels, and focus on modes most compatible with their learning preferences.

The class then focused on the new words contained within the story. The students used SnapWords, which are cards that include written words, images that represent the words, motions that go with the words, and short sentences using the words. Thus, the students read the words, saw the related images, heard the teacher pronounce the words, learned the words in a sentence, and performed the motions that corresponded with the words. In short, these cards supported visual, verbal, kinesthetic, and auditory learners. Seeing the word and corresponding image on the card, completing the movements, and reading the sentence, the students practiced writing the sentence on paper using scented markers. Also the teacher traced the word on their backs with her finger, providing tactile stimulation from which the student figured out what letter she was writing.

Moreover, the class used a big board that featured points and two rubbers. The students use the rubbers between the points to add numbers, in this way both seeing and touching them while they thought about the numbers. Then they sat on the floor with sets of cards that had images of monsters on them. Each type of monster represented a given digit. The teacher asked the students to put the numbers in order from 1 to 100, in vertically arranged lines of ten so that each type of monster made a vertical line. Then, the students read the numbers, found numbers by jumping to them, and added numbers together. During this activity the students were sitting and moving, sorting and arranging cards, finding monsters.

Classroom B. The second classroom (B) was a community-based classroom that included 10 students from different elementary levels, all with different abilities. The teacher focused primarily on a one-to-one teaching style. Among the sensory materials and equipment

available in the classroom, the primary devices were a large augmentative and alternative communication (ACC) board, which provides images and voices that can help non-verbal students express thoughts, needs, wants, and ideas, and individual boards connected to the large screen. Also each student had a schedule card with his or her name and a picture of what the student is supposed to do at that time of day. The students were to pick up their cards before they moved from one station to another. This teacher focused primarily on visual, auditory, and tactile senses while teaching academic skills. For instance, they started the day sitting together in a circle while the primary teacher led them in the schedule of the day, the season, the weather, and their feelings at the time. Various representations of each of these concepts were represented on cards with descriptive words and images on it, and the students took turns picking the right card to see the image, read the word, and give the right answer. When the class talked about the weather, the teacher asked one of the students to look out the window and describe it that day. Then, the class discussed the previous day and what they did after school. Some of the students were using ACC devices, and the teacher used the big ACC board while she spoke. Then they sat in a circle again, and the teacher read a story from a picture book while showing the students the pictures in the book and referring to the ACC board. The teacher enacted the role of a character and then asked the students to pretend that they were characters as well. This role-playing allowed her to change the sound of her voice, and the students attempted to do that as well.

Classroom C. The third school (C) was a community-based classroom that served six students with autism, both verbal and non-verbal. This class had both circle time when the students sat together and individual time when the students were taught one-to-one. The teacher also used individual schedule cards featuring students' names and pictures and images of what they were supposed to do for the day. The students picked up their cards used them to move from

the station to another. The classroom had a separate sensory room with a swing, a trampoline, an airbag, a mattress, blocks, big cartons to sit on, and some other equipment. This teacher focused primarily on visual and auditory senses while teaching academic skills. For instance, when the students were in a story circle, they were sitting on the ground with that had pictures accompanied by sentences. She read the sentences and pointed to the pictures, and then asked the students to describe the pictures. For individual teaching, the teacher provided a student with some blocks to count, first counting with him and then having him count independently. The teacher then gave the student a worksheet and provided support as he worked on it. Then they moved on to the writing lesson, which involved two worksheets, one asking the student to circle the words, and the other to write the words.

Participants

Following is a brief description of each of the three participating teachers (all names are pseudonyms):

Teacher Emily, Classroom A. Emily was 35 years old at the time of the study. She received her bachelor's degree in special education and elementary education and was working on her master's degree in behavior analysis. She had been a teacher for six years, two years in a classroom for emotionally handicapped children and four years in a resource room. Now she was working with students with different types of disabilities such as autism, mild cognitive disability, ADHD, vision and hearing problems, and learning disability.

Teacher Jean, Classroom B. Jean was 45 years old at the time of the study. She held a master's degree in special education and had been teaching for nine years in a community-based classroom serving students with different disabilities such as autism, mild cognitive disability, ADHD, who were at different elementary grade levels.

Teacher Eva, Classroom C. Eva was 30 years old at the time of the study. She had a bachelor's degree in elementary education and special education, and she had been teaching for five years. She had started as para educator in a community-based classroom and then become a teacher. She stated that in one of her first education classes she learned about the multisensory approach, and she has used it throughout her teaching career.

Findings

Thematic Results

Theme 1: The differences in practice multisensory approaches. As noted, all the teacher-participants used multisensory approach when teaching students with disabilities in different ways. For example, in classroom A, teacher Emily carried out a number of activities to engage students' senses. Students sat on balls instead of in traditional chairs, and they were able to move around, sit on the floor, and walk while learning. These practices were consistent with the point of view she expressed when I asked her about her use of multi sensory methods in special education classrooms.

As a special educator, sort of, multisensory is where you start because you know the students' needs are different and they're not on any typical way [of learning]. They will need support on top of that, so the primary typical way of giving and receiving information is verbal communication, so just listening and speaking, and so students that I work with have trouble with both of those processes. So we supplement what we are saying with visuals and tactile items to help give the instruction and then we provide the same support, visuals, items for the student to be able to respond or demonstrate their understanding of what we are trying to learn.

Jean the teacher in classroom B offered a similar response:

For us then we are not just sitting here with a worksheet and a piece of paper saying, "Okay. Let's go to number two" like a robot. We are able to improvise and do a lot of different sets that then makes teaching fun.

Eva the teacher in classroom C agreed with the other two teachers, saying that, "The various methods help because it reaches different types of learners, whether they be visual, tactile, etc."

Jean showed versatility in her various uses of multisensory methods in one lesson. When students gathered for circle time, she read them a story while showing them the pictures in the book. While she was reading she also referred to the augmentative and alternative communication (AAC) board that students could use to express thoughts, needs, wants, and ideas. It provides images and voices that help non-verbal students to communicate. The students sat quietly to listen to the teacher, but when she played the role of a character from the book she was reading and invited the students to pretend that they were characters as well, they became active. In this role-playing, she changed the sound of her voice, and the students attempted to do that as well.

The three participants agreed on the effectiveness of this approach with their students. As teacher Emily from classroom A reported:

I think most kids overall benefit from multisensory teaching. However, I think that the special education kids are definitely the ones that need it, absolutely have to have it, need it to learn. so if we're working on adding for example, just having it on paper isn't enough. They may have to have manipulatives that help them to add. ...In here [her classroom], kind of our philosophy is we try to make everything real life or touchable. Which is very hard for different things. Action verbs for example, we act them out. Like, show me

running. Or if they are not sure about something, we ask them Can you touch it? Can you see it? You know, ask them, prompting things for language. Language is one that's harder to make multi-sensory because it, it is what it is and the rules aren't consistent in the English language.

As this explanation suggests, the use of a multisensory approach makes the learning mission easier for students with a disability. It helps them better receive and experience the information they learn. I found that the three participants although at different schools held a similar interest in a multisensory approach, especially for teaching in special education classrooms. However, they did not have a model of multisensory approach to guide their instructional decisions, so each was creating her own practices based on her particular understanding of this approach. For example, Eva considered showing pictures while reading a story as a multisensory activity, because students were listening to the story and seeing the pictures. On the other hand, the other two participants made story reading multisensory by enacting the characters. Teacher Emily was aware of variation in the extent to which and ways that multisensory approaches are used in teaching students with disabilities:

The classrooms that I have been in, I do see it in some. It's more prevalent than in others of course. It just depends on the teachers. So, yeah, I definitely think that there are other special education classrooms that have a lot of this going on, but I have also seen some where they do not. They bring the worksheet down. They use the worksheet from the class and they teach the same way that their teacher did but maybe say it in a different way.

However, when asked if special education teachers should apply this approach, Jean noted:

I think, I think they should and I think because they probably should, that they probably are. I mean, I don't know how a student would progress without it. The same is true there. Like, thinking of students individually, some students do great just talking about what they know and others are not so it needs to be in every teacher's pool of strategies. Pool of possible strategies. Because learners- all learners are different.

As the participants' comments highlight, some special education teachers tend to use multisensory approaches; however, they may not have the perspectives on the practice or use the same strategies, which makes it hard to form a unified picture of the actual practice of multisensory instruction. As Table 1 illustrates, the most common sensory items used in the classroom are visual, auditory, or tactile.

Table 1.

Data from Observation Sheets for Types of Multisensory Activities Used in Each Classroom

☞ Type of Multisensory Used	Classroom A	Classroom B	Classroom C
Visual	In the 3 lessons	In the 3 lessons	In the 3 lessons
Auditory	In the 3 lessons	In the 3 lessons	In the 3 lessons
Tactile	In the 3 lessons	In the 3 lessons	In 1 lesson
Kinesthetic	In the 3 lessons	In 1 lesson	Did not use
Verbal	In the 3 lessons	In the 3 lesson	In the 3 lessons
Rhythmic	Did not use	Did not use	Did not use
Smelling	In one lesson	Did not use	Did not use
Tasting	Did not use	Did not use	Did not use

In fact, when I observed the classrooms, I saw that the activities that each teacher was providing for her students with disabilities reflected her own opinions on and preferences for teaching via a multisensory approach. For instance, Emily assumed that all students should have access to these types of activities while Jean used this approach to assist only the students who need extra support. And Eva had the broadest conception in that she considered any activity that involved more than one sense to be multisensory.

Theme 2: Resources to support multisensory use. Theme 2 refers to the availability of materials and professional development to support multisensory teaching, which can affect how teachers understand and carry out the approach. When I asked them about material resources they had or needed and how they obtained them, I found that all three teachers created wish lists of the materials they needed for their classroom and then went through a long process in order to receive them. For example, Jean noted,

Typically and if there is something we need, we have a team of educators who I work with, an occupational therapist, a physical therapist, speech therapist, vision therapist and so, uh, as a team we can consider a student and figure out what will be their best way to receive and demonstrate knowledge of the skills, show growth, be able to show what they know and so, we make a suggestion, it goes through, ... why you need the materials, but because it has so many channels it takes a long time to get them. As long as it is justified and directly related to a student's needs, a student's goals, a student's IP, then yes, you can get the materials. But it can take a long time.

In order to obtain materials in a more timely manner or when they could not get them through the usual channels, all three teachers sometimes purchased the needed materials themselves. For example, Emily stated:

I buy it, or I may put it on a supply list for my room since they are in the general education classes and come here. So I send out a wish list at the beginning of the year of things that we need. And so things that I'll put on there are like the, um, the scented markers. ...So these they can get at the store . And you can smell they have different scents. And so things like this I'll put on a wish list and then some of the parents will bring them in or I purchase them. A lot of it I have bought. The math manipulatives are things that mostly came with our math curriculum.

Eva commented on the various ways teachers obtain materials:

Each school has a budget, teachers oftentimes have a classroom budget. It's almost impossible to estimate the cost; curriculum sets often come with manipulatives and other sensory items, teachers purchase their own items; thousands of dollars have been spent district-wide.

As the teachers' comments highlight, there is often no direct funding for the materials that are needed for teaching via multisensory, a situation which may especially affect schools in poor areas that have limited funds for needed materials and teachers cannot themselves purchase all the materials for their classrooms that the school budget does not allow. These observations show that teachers often had difficulty and incurred personal expense in order to obtain materials needed to teach using a multisensory approach or any other materials needed for teaching.

When asked about professional development as a resource for using a multisensory approach, the teachers perceived effective training programs as an important part of such instruction. However, two had not received any training that focused on or modeled the ways of using such an approach. Only Jean stated, “whenever new curriculum is adopted or new

equipment is provided, there is usually some form of training/professional development for teachers to learn how to use the equipment”.

The teachers tended to consider that their teacher education programs and the curricula they followed provided sufficient training to use the multisensory methods in their classrooms

Conclusions and Discussion

In this study, I aimed to investigate the use of multisensory methods for teaching students with disabilities.. Across the data, I noted that all the teachers I interviewed and classrooms I observed used visual, auditory, and/or tactile ways of presenting information to students with disabilities. In addition, two teachers focused only on visual, auditory, or tactile ways of involving the students’ senses while the third teacher were extending their practices to include direct and indirect kinesthetic and verbal, experiences. The teachers agreed in the benefits of multisensory approach for teaching students with disabilities, so they apply this approach with their students. They stated that students are more engaged with the lesson when presented via the multisensory method. Teachers do not have a model of multisensory approach to guide their instructional decisions, so each was creating her practices based on her particular understanding of this approach. That gave some flexibility when teaching the lesson via multisensory approach. Thus, I found that whether to use a multisensory approach was the teachers' decision, and if they chose to use it, they created their own models of instructions and activities. Therefore, there were differences among the teachers in how they practiced multisensory teaching approach in special education classroom. .On the other hand, There is often no direct funding for the materials that are needed for teaching via multisensory. Also the

teacher did not receive specific training program focusing on multisensory approach. As discussed in the literature review, the following points should be considered:

First, there was not a clear definition of the term *multisensory* in the studies reviewed. For example, Jubran (2011) and Al Sayyed, (2013) focused on visual, auditory and kinesthetic senses in their definition of this approach, which matched what only two participants considered multisensory. Also the participants' different ideas with regard to multisensory teaching led to different practices in the three classrooms. That gives kind of flexibility. That was clear from the teachers' practices and the students engage with the activities. It consider under UDL characteristic and practices. The main characteristic that makes UDL effective for students with disabilities in general classrooms is its flexibility, which helps teachers to present information in varied ways to meet students' diverse learning needs. The importance of flexibility also suggests the use of a multisensory approach to make sure students with different abilities and different preferences have equal access to the information being presented. Metcalf, Evans, Flynn, and Williams (2009) created a spelling lesson plan model that adheres to the principles of UDL through the implementation of a multisensory approach. The model was designed to teach high frequency spelling words to a special education resource class of diverse elementary students with learning, social, and attention problems. The researchers applied the principles of UDL to the framework of a traditional direct-instruction spelling lesson and added three multisensory learning centers to activate auditory, kinesthetic, and visual senses during independent practice, and increase opportunities for student access and participation. They found improvement in the students' engagement and outcomes. However, the study suggested that more research is needed to confirm the results of this combination of UDL and multisensory teaching.

Second, past studies have shown agreement on the benefits of a multisensory approach. For example, Gaffan and Williams (1998) and Niki and Lisa (2001) described how the approach helps students with disabilities to be more relaxed and improve their academic performance. Even though this study did not aim to investigate the benefits of the multisensory approach, the participants stated that it helped their students to be more engaged with the lessons and in this way benefitted their learning. Finally, there was no mention in previous studies of the importance of material resources and professional support for using multisensory methods. However, this study investigated the issue of resources and found that while the multisensory approach is a good teaching strategy for students with disabilities, teachers may not get the level of support they need for practicing it. However, I observed a need for courses or training programs that would increase teachers' understanding of the multisensory approach as well as help them to create activities and practice multisensory methods in ways that matched individual students' needs. In addition, as I described in the findings, the most common sensory items used in the classrooms were visual, auditory, or tactile in nature. Thus, in addition to professional development, it would help both teachers and students if the schools provided ample creative materials that teachers could use for visual, auditory, and tactile in nature communication. Providing such materials should alone motivate teachers to familiarize themselves with this method and better understand the definition of multisensory so that they can apply the method in their classrooms. I suggest that more research is needed on the use of multisensory instruction and its effects not only on students with disabilities, but also on students in general. And additional funding and training programs for the teachers would provide teachers with the support they need to properly apply multisensory approaches to their classrooms.

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Appendix A

Observation sheet

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

Lesson/Activity	Start time/end time	Type of MS Used	Description	Note and Comment
		Visual		
		Auditory		
		Tactile		
		Kinesthetic		
		Simultaneous		
		Verbal		
		Rhythmic		
		Indirect experience		
		Direct experience		
		Other		

- **Additional Information:**

Appendix B

Pre-Observation Interview Questions:

1. What is your degree?
2. How long have you been teaching?
3. How did your school first find out about multisensory?
4. Who first came up with the idea? How was the school persuaded to go ahead?
5. How long have you been using the multisensory method?
6. How did you go about getting funding for the multisensory equipment? Could you estimate roughly how much has been spent on the equipment?
7. Do you follow any model while using this method?
8. What is your philosophy regarding multisensory, and why do you think it is effective?
9. Do you think it is effective with a specific type of student? How? Why?
10. How does this method help you to teach your students?
11. What kinds of equipment have you installed? Projectors? Bubble tubes? Fiber Optics? Sound equipment? Vibratory or tactile equipment? Switches to activate equipment? Other?
12. How many classes/students use the multisensory equipment in a typical week?
13. Have you faced any problems or disadvantages in your experience with multisensory method? Examples?
14. What supports or professional learning activities does/has the school provided that are related to the multisensory method?

Post-Observation Interview Questions:

15. What do you see the benefits are of the multisensory method in general?

16. What do you see the benefits are of individual pieces of equipment (equipment observed in the room)?
 17. Did you receive any training before implementing the multisensory method in your class?
 18. What are the issues you would address regarding staff training? How would you address these issues?
 19. Do you have manuals, formal policies, or procedures in place related to your use of the multisensory method?
 20. What kind of support do you hope to have in your class to support your use of this method?
- What are your general thoughts? Do you have anything to add regarding MS?

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QUALIFICATIONS

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MEMBERSHIPS

- Member of the Board of Scientific Miracles in the Quran and Sunnah in AL Medina.
- Member of the World Assembly of Muslim Youth Commission

ACADEMIC EXPERIENCES

1. Participation in the success of the World Disabled Day primarily in Taibah University for a

day on 2008

2. Establish a guiding corner Illustration of Autism in Taibah University dated on 2008
3. Participation the success of the first and the second scientific conference of scientific miracles in the Quran and Sunnah in Medina.2008
4. Participation Club Excellence for Al medina's girl in 2008
5. Representation of the College of Education at Taibah University of the activity on2009
6. Participation Conference legitimacy for people with special needs "border protection and the implementation" date of the first 5 -6 \ May \ 2009
7. Participation the success of the World Disabled Day and place in a Taibah university for a week on 3-7\1\2011
8. Participation Second Scientific Conference for students in higher education for the year 2011
9. Participation campaign "guided me" Taibah University in 2011
10. Participation in the Reading Club of the World Assembly of Muslim Youth.2011
11. Participation as a candidate in the rehabilitation of leaders "future leaders" program.2012
12. Participation as a member in the third Scientific Conference of the body of scientific miracles titled: Miracles in good manners 2012
13. scientific supervision of the students practical education for the first semester of the year 2012-2013

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- A course In “hidden disability” on 4\21\2009
 - A course in “successful axes” 10\12-13\2010
 - A course in "working memory in learning" course on 12\1\2011
 - A course in "work with learning disabilities teacher mechanism" on 11\19\2012
 - A course in "building self-esteem," Association conscious dated 6\23\2012
 - A course in "the starting job for life" course at the Institute for Gulf 2012
 - A course in "How to be a successful employee" 10\20\2012
 - "Body Language" course 10\21\2012
 - A course in "culture of e-learning and distance education, why bridges?" Dated 9\15\2012
 - A course in "behavior modification techniques between theory and practice" on 11\18-19\2012
 - Course and a Workshop "strategies and methods of teaching mentally handicapped" 11\19\2012
 - Scientific Meeting "teaching people with special needs and field training methods" on 11\13-14\2012
 - Course and a Workshop "design means for people with special needs" 11\18\2013

- A course in “how to be successful in your scholarship” on 12\15-16\2013