STRATEGIES THAT TEACHERS USE TO SUPPORT THE INCLUSION OF STUDENTS WHO ARE DEAF AND HARD OF HEARING

Esra Erbas

Submitted to the faculty of the School of Education
in partial fulfillment of the requirements for the degree
Master of Science in Education
in the Department of Curriculum and instruction- Special Education
Indiana University
December 2017

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Master of Education

Esra Erbas

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Master's Thesis Committee

Sarah Hurwitz, Assistant Professor

Jessica Nina Lester, Associate Professor

Lawrence Ruich, Visiting Assistant Professor

Date of Thesis Examination November 9, 2017

ABSTRACT

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This qualitative study was designed to gather information about the teaching practices of general education teachers in a small sample of K-6 inclusive elementary classrooms in a small town in the Midwest. The purpose of the study was to examine whether general education teachers used strategies that promote the inclusion of students who are deaf or hard of hearing (DHH) and to identify the ways in which these strategies were applied. The data was gathered through observations and interviews with the participation of three general education teachers. Per the research that has been carried out, it is possible to conclude that the general education teachers attempted to support the inclusion of students who are DHH by employing various strategies. Additionally, this study's findings contribute important information to the literature regarding teachers' educational backgrounds and the support of other staff such as interpreters and special education teachers associated with the education of students who are DHH.

Keywords: *Inclusion, Deaf or Hard of Hearing, Strategies for Inclusive Education*

Sarah Hurwitz, Assistant Professor

Jessica Nina Lester, Associate Professor

Lawrence Ruich, Visiting Assistant Professor

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Introduction

There has been an increase in scholarly interest in the idea of inclusion of students who are deaf or hard of hearing (DHH) in general education classrooms (Forlin, 2010). Current data shows that 75.3% of students who are DHH across the U.S. receive their education alongside students with hearing in general education classrooms in Fall 2003 (National Center for Education Statistics [NCES], 2016).

The inclusion of students who are DHH in general classrooms has increased awareness with regard to the enrichment of the learning environment to meet the unique academic and social needs of these students. To facilitate their academic and social development in inclusive settings, specific factors need to be considered. The instruction and the physical settings of classrooms, for instance, need to be supported in multiple ways such as through visual support, interpreters, assistive technology, manipulatives, and students' simultaneous exposure to sign and written language (Ayantoye & Luckner, 2016; Schultz, Lieberman, Ellis, & Hilgenbrinck, 2013). In addition, teachers' attitudes toward the inclusion, such as attempts to include the students who are DHH by offering individual help, encouraging these students to engage in classroom activities, and increasing opportunities for them to interact with hearing peers, play important roles in the adaptation of students who are DHH to inclusive learning environments (Ayantoye & Luckner, 2016; Kelman & Branco, 2004; Skinner & Belmont, 1993).

The aforementioned factors assume important roles in the inclusion of students who are DHH and improve the quality of inclusion. Moreover, incorporating these strategies into the learning environment results in an increase in the occurrence of engagement and involvement both academically and socially. The following literature review more specifically focuses on

strategies that are used by general education teachers to promote the inclusion of students who are DHH in general education classrooms.

Significance of the Study

This qualitative study was designed to gather information of strategies that teachers use in their classrooms to promote inclusion of students who are DHH through classroom observations and interviews in a small sample of K-6 inclusive elementary classrooms in a small town in the Midwest. The data regarding the strategies that were used to support the inclusion of students who are DHH obtained from this study shed light on the nature of inclusive practices in general education classrooms in which students who are deaf or hard of hearing (DHH) receive their education. This study might be useful to develop a better understanding regarding the effective inclusive environment for students who are DHH.

Purpose of the Study

This study focused on strategies that are used by general education teachers with students who are DHH in the inclusive classroom environment. The purpose of the study was to examine whether teachers in three classroom settings use strategies that promote the inclusion of students who are DHH and to identify the ways in which these strategies were applied. Additionally, teacher responses to follow-up questions contributed some important information regarding educational background and the support of other staff associated with the education of students who are DHH.

Research Question

This study sought to answer the following question:

What strategies do general education teachers employ to promote the inclusion of students who are DHH in general education classrooms?

Literature Review

According to the Laurent Clerc National Deaf Education Center (2016), approximately 2.5 million students who are DHH receive their education alongside students with hearing in general education classrooms. Inclusion refers to classrooms in which students with and without disabilities are educated together. In this system, necessary support is provided to students with special needs to maximize their learning (Antia & Stinson, 1999). The main goal of inclusive education is to provide equal educational opportunities to students with special needs such that they are able to access general education curriculum in the least restrictive environment (Blecker & Boakes, 2010; Heiman, 2004; Mastropieri & Scruggs, 2000).

Historically, "[s]ince 1975, federal law has required that children with disabilities have access to a free appropriate education (FAPE) in the least restrictive environment (LRE)" (Cross, Salazar, Campuzano, & Batchelder, 2009). Inclusion for students with special needs was attempted via the Education for All Handicaped Children Act (EAHCA) in 1975; however, these efforts yielded only slight success. The first year after which the Act was implemented saw increased debate regarding inclusive education (Lang, 2011; Schirmer, 2001). Some opponents even perceived the inclusion of students who were DHH was perceived as a violation. It was believed that these educational environments would not meet the needs of these children whose degrees of hearing loss varied (Antia & Stinson, 1999).

Nevertheless, the reauthorizations of EAHCA (e.g., IDEA 2004) have had an impact on the inclusion of students who are DHH. As students' educational rights have improved, the education of students with special needs has shifted from more restrictive to less restrictive (Luckner & Muir, 2001). Additionally, with the advantages of newborn screening, technological support (e.g., cochlear implants, hearing aids, speakers, and frequency modulation systems

[FM]), early intervention services, and growing public awareness, the number of students who are DHH who attend regular classrooms has grown in recent years (Berndsen & Luckner, 2012; Luckner & Muir, 2001).

In the inclusive environment, the educational system is designed based on students' individual needs, as this facilitates the academic and social improvement of each learner. Therefore, the adaptation of curriculum, including appropriate instructional strategies, additional academic support, and prevention of social isolation, is central to the creation of a more inclusive educational environment (Eriks-Brophy & Wliittingham, 2013; Fishers et al., 2003; Thomazet, 2009). Research regarding possible inclusion-based benefits suggests that educating students who are DHH in general education classrooms enables them to practice their language skills with hearing peers and develop rich vocabulary knowledge. Being placed in a hearing environment helps to facilitate their lives as it permits them to more easily communicate with hearing people and allows students who are DHH greater opportunities to be a part of the hearing communities where they live (Berndsen & Luckner, 2012; Eriks-Brophy et al., 2006).

Nevertheless, other studies indicate that placing students who are DHH in general education classrooms does not automatically ensure that they will further develop their social and academic skills. An environment in which students who are DHH do not receive additional academic support or find opportunities to interact with their peers with hearing, does not serve as an inclusive setting that effectively facilitates students' development. Moreover, a lack of opportunities results in withdrawn and poor academic achievement for these students (Antia & Gausted, 2002; Bobzien et al., 2013; Luckner & Muir, 2002). In order to maximize the effectiveness of the inclusive environment for academic and social development of students who are DHH, the environment should be enriched with opportunities that include effective teaching

strategies and materials, effective classroom settings, and effective activities for students who are DHH to interact with students with hearing and teachers (Eriks-Brophy et al., 2006; Schultz et al., 2013).

Instructional Strategies

Even though there has been an increase in the number of students who are DHH in inclusive settings, not all educational environments are properly equipped to meet these students' special needs (Berndsen & Luckner, 2012). A classroom may include different types of learners; therefore, teachers should consider students' diverse needs when developing their means of instruction. This is significant to ensure that all students' learning needs are met via instruction, and it can be achieved when educators employ instructional methods that permit them to teach content in a number of different ways (Cross, Salazar, Dopson-Campuzano, & Batcheldar, 2009). In a study on successful students who are DHH, the students who are DHH and their teachers who were interviewed reported that both vocabulary support and additional teaching have a great impact on students' achievements (Ayantoye & Luckner, 2016). In addition, teachers in the aforementioned study most frequently stressed differentiated assignments, repetition of information, and visual support as the most significant facilitators.

The length of instruction is important since shorter or brief instruction and discussions are more meaningful for students who are DHH (Cawthon, 2001; Reich & Lavay, 2009). According to Berndsen and Luckner (2010), general education teachers have to be aware of that the pace of the instruction and discussions, and quick changes in topics especially challenge students who are hard of hearing to access information sufficiently. In addition, they also found that allowing multiple speakers to talk at the same time prevents students who are hard of hearing from being able to follow classroom discussions effectively.

The results of a number of studies (e.g.,Berndsen & Luckner, 2012; Cannon, Frederick, & Easterbrooks, 2010; Schultz et al., 2013; Reich & Lavay 2009) support the importance of providing information with visuals. Since visual supports have a big impact and have the ability to enhance students' understanding of instruction, supporting the instruction with visual aids, such as videos, smart boards, iPads, posters, facial expressions, gestures, body language, and demonstrations, is necessary for students who are DHH (Schultz et al., 2013). In their study, Trezek, Wang, Woods, Gampp, and Paul (2000) found that after implementing a reading curriculum that was enhanced via visual support, there were statistically considerable differences observed between DHH students' pretests and posttest pertinent to the reading curriculum.

In another study, Angelides and Aravi (2007) found that the academic and social environment affects students' engagement and thus affects their academic success. In order to facilitate understanding among students who are DHH, teachers may attempt to instruct their students in different ways, set goals based on students' abilities, and clarify lessons by providing text; and all of these play an important role in student achievement. In the authors' research, the students who are DHH were initially struggling to understand the content of a history lesson because of the complexity of the lesson and because the students' vocabularies were relatively limited. After recognizing the students' difficulties, the teacher simplified the text by making the new vocabulary words clearer and simpler to understand. Furthermore, the teacher provided the vocabulary words in written format via the overhead projector. As a result of the teacher's actions, both students with hearing and students who are DHH demonstrated greater understanding of the course content and achieved greater success in the history class.

Seating Arrangement and Noise Management

An effective seating arrangement can enable students who are DHH to see other students

and the teacher easily, to participate in both individual work and group activities, and to follow classroom discussions easily (Guardino & Antia, 2012; Trussell, 2008). Trussell (2008) also found that the physical environment of the classroom has the ability to increase students' engagement and involvement. The teachers in Trussell's study could easily rotate between desks and thus had better control of their classrooms. Enabling the students to see the teachers easily increased the DHH students' involvement in the lessons and activities and decreased the unexpected behaviors of these students. The results obtained by Eriks-Brophy et al. (2006) underscore the importance of classroom arrangement and the seating of students who are DHH that can enable some students who are DHH to see facial expressions and hand gestures. This also better facilitates the lip-reading abilities of some students who are DHH (Eriks-Brophy et al., 2006; Schultz et al., 2013).

Moreover, Eriks-Brophy et al. (2006) found that including facilitative strategies in the learning environment was crucial to teachers' and students' abilities to make the most of instruction. For example, in addition to students' seating arrangements, the rate at which teachers speak, whether teachers provide lesson content and assignments in written format, and teachers' stances while speaking are significant factors that can serve to increase their understanding of the information. Schultz et al. (2013) also state that students who are DHH can especially benefit from the positions in which teachers stand while talking; more facilitative positions or stances allow students to more effectively and more explicitly receive information.

Similarly, noise management is necessary for students who are DHH to be able to receive a spoken language clearly (Bradlow, Kraus & Hayes, 2003). The previous study concluded that although noisy environments affected both typical and special needs students, noisy environments affected special needs students more severely. As seen in Crandell and Smaldino's

study (2000), the quality of speech perception of students who are hard of hearing decreased when they were in noisy environments. In their study, noises that may affect students who are hard of hearing are identified under two categories as noises that come from outside of classrooms and noises that occur in classrooms. The noises from outside of classrooms may originate from constructions, traffic, and playgrounds. Inside noises are described as individual talking, heating and air-conditioning systems, etc. Students who are hard of hearing experienced more difficulties than students with normal hearing when attempting to listen and learn in noisy environments that easily distract them and may cause a decrease in their academic engagement (Nelson & Soli, 2000).

Assistive Listening Devices

In order to amplify and intensify speakers' (referring to teachers) voices for students who are hard of hearing, sound-filed amplification systems such as FM systems and desktop speakers can be used effectively in classrooms. In the FM systems, signals from teachers' microphones go directly to students' hearing aids (Larsen & Blair, 2008; Crandell, Smaldino, & Flexer, 1996). A study conducted with 13 students who are hard of hearing investigates the benefits of FM systems, and the findings indicate that FM systems have positive impacts on the speech perception of students who are hard of hearing who use hearing aids. The results of this study show that the students who are hard of hearing demonstrate better understanding in the classroom environment, especially in a noisy environment, after the implementation of FM systems (de Souza Jacob et al., 2012).

Interpreters' Roles in General Education Classrooms

According to Cawthon (2001), the role of interpreters in the general education classroom is not only to provide a translation between teachers' speech and sign language. An interpreter

can also assist students who are DHH while they communicate with hearing peers. Moreover, interpreters can support the instruction by repeating the given information, clarifying material, and sometimes giving voice to students who are DHH in classroom discussions. Further, as indicated in a study conducted by Zawolkow and DeFiore (1986), in addition to promoting communication between these students and their teachers and their hearing peers, interpreters sometimes provide tutoring for students who are DHH.

Luckner and Muir (2001) also documented the role of interpreters in the inclusive classrooms. The authors' study included semi-structured interviews with students who are DHH, their parents, teachers, and interpreters, and the findings supported those of Cawthon's work with regard to the role of interpreters in the inclusive classrooms. The study results show that all of the interviewees recognized the interpreters as the primary human sources for the success of the students who are DHH in general education classrooms. Therefore, the collaboration between interpreters and classroom teachers is underscored in those studies as a means of facilitating the inclusion of students who are DHH.

General Education Teachers' Knowledge and Backgrounds Regarding Inclusion

General education teachers who teach students with special needs in inclusive classrooms can find themselves under increased stress because of these students' additional needs (Luckner, Slike, & Johnson, 2012). This may happen because insufficient knowledge and a lack of experience prevent general education teachers from meeting their special needs and from providing the additional support that is needed (Marschark et al., 2011; Chorost, 1988). A lack of experience, limited knowledge, and decreased support undermine the abilities of students who are DHH to achieve success in inclusion classrooms (Eriks-Brophy & Whittingham, 2013; Eriks-Brophy et al., 2006).

In their study, Angelides and Aravia (2007) interviewed a teacher who reported that she became stressed because she did not know how to meet the needs of students who are DHH via her instruction at the beginning of the year. Her inability to adjust her instruction to meet these students' needs caused her to develop negative feelings toward the inclusion of students who are DHH. Over time, however, her collaboration with her colleagues, which enabled her to learn strategies and methods to differentiate the instruction based on individual students' needs, allowed her to become more confident and calmer, which was helpful to the students (Angelides & Aravi, 2007).

Additionally, Ayantoye and Luckner (2016) provide convergent evidence regarding teachers' roles in students' success. The findings obtained from the interviewee teachers, all of whom taught successful students who are DHH, illustrate the effectiveness of teachers' roles in the inclusion of students who are DHH. All of the teachers in the study agreed that they were aware of what these students' specific needs in terms of education and socialization. The teachers noted that providing students with additional support, identifying the needs of the students who are DHH, and encouraging the students were the most significant factors that led to the students' achievements.

As the literature has suggested, to ensure successful inclusion, appropriate classroom strategies should be employed within the learning environment to support the inclusion of students who are DHH. This study aimed to observe these strategies in the nature of general education classrooms and identify how general education teachers use them in their teaching practices. This study examined strategies that emerged from the relevant literature under four main categories: (a) instructional strategies, (b) visual and technological support, (c) seating arrangement and noise management, (d) assistive listening devices.

Method and Procedures

To investigate the strategies that are used by general education classroom teachers for promoting the inclusion of students who are DHH, the data was collected from three K-6 inclusive elementary classrooms in a small town in the Midwest. The classroom observations and teachers' interview methods were employed to collect data. An observation chart that includes strategies was used to guide these observations. In addition, detailed information of the usage of these strategies was obtained by taking field notes. The interviews with the teachers were conducted to examine teachers' educational backgrounds and obtain more information of the usage of these strategies.

Participants

Three elementary general education teachers participated in this study; all of these teachers worked at the same school. The participants were general education teachers serving elementary classrooms that include both students with hearing and students with special needs at *Cardinal Elementary School* (pseudonym) during the 2016-2017 academic year.

Criteria for selection of the participants. The participants were chosen on the basis of the following criteria: being a teacher in an elementary general education classroom that includes students who are DHH and agreement to participate in this study. Teachers in this school were selected based on the recommendation from the special education teacher of the students who are DHH and their willingness to participate this study. All the teachers provided the all necessary consent forms (see Appendix A and B).

Teacher 1.The teacher works with kindergarten students. Her classroom also includes two students who are DHH. One of the two students has one cochlear implant and one hearing aid supported with a frequency modulation (FM) system. The other student communicates with

American Sign Language (ASL). The teacher has been teaching for five years as a kindergarten classroom teacher. She had not previously worked with students who are DHH.

Teacher 2. She is a general education classroom teacher teaching third-grade students. Currently, there is one student who is DHH in her classroom. The student's hearing has been supported via a desktop speaker system. The teacher has a Master's degree and 14 years' teaching experience at the elementary level. She had not previously worked with students who are DHH.

Teacher 3. She is currently working with fourth-grade students. Her classroom includes one student who is hard of hearing with a hearing aid that is supported via an FM System. This teacher has a BS degree in elementary education and has two years of working experience. Prior to this, she worked with two different students who were DHH.

Table 1

Demographic information summaries of participants

Participants	Teacher 1	Teacher 2	Teacher 3
Age	26-year old	46-year old	32-year old
Gender	Female	Female	Female
Grade level	Kindergarten	3rd	4th
Experience in the field	5-year	14-year	2-year
Working experience with students who are DHH before	No	No	Yes (2 students with cochlear implant)
Highest degree	Master's Degree	Master's Degree	Bachelors of Science
Number of students who are DHH with level of hearing loss in the classroom	2-student; • Severe to profound • Severe to profound	1-student; • Mild to moderate	1-student; • Moderate

The Setting

Cardinal Elementary School is located in a small city in the Midwest. It includes a special education classroom for students who are DHH. Because of the location of the school, this special education classroom is included in this school's program. There are currently 343 students in grades Pre-Kindergarten to 6, and there are 32 general education teachers. Of the students, 61% are female and 39% are male. Approximately 83% of students at Cardinal Elementary School receive free lunch because of their families' income levels.

Data Collection Procedures

Before starting my observations, based on the literature, I designed a chart (see Appendix C), which includes strategies that are used in inclusive classrooms for students who are DHH. This chart consists of four main parts: Instructional Strategies, Visual and Technological Support, Seating Arrangement and Noise Management, and Assistive Listening and Communication Devices. Each part contains strategies that have been chosen from the related literature. This chart was used as an observation guide for each classroom visit.

Upon the receipt of IRB approval, I began classroom observations. Each general education teacher was observed three times. Each observation period was approximately 45 minutes in length, and occurred when the students who are DHH were present in the classrooms. In total, each classroom was observed approximately 2 hours 15 minutes. Throughout the observations, I marked observed strategies on the aforementioned chart and took descriptive notes about how the teachers applied these strategies in their classroom environments.

After the observations were complete, follow-up questions (see Appendix D) were directed to the teachers. Each classroom teacher was interviewed individually one time after the school hours. The interviews were 15-20 minutes long. A copy of the follow-up questions was

given to the teachers before the meeting to allow them to review. In the first section, the questions had to do with the teachers' educational backgrounds. The questions in the second section focused on how teachers decided on what instructional strategies to apply and what activities they employed in effort to increase the interaction between students who are DHH and their peers with hearing. With the teachers' permission, all answers were audio recorded in order to maximize the reliability of the interviews.

Data Analysis

After the completion of all observations and interviews, the following steps were taken: 1) the interviews were transcribed, 2) observation notes and interview transcripts were re-read many times in order for me to become more familiar with my data, and 3) the data collected from each classroom's observations and individual interviews were analyzed as follows.

The observation notes and the interview transcript for each teacher were analyzed and reported individually. The previously created chart was re-formed based on whether each teacher used strategies in the classroom. A new chart showing the use of strategies for each class had been created. Next, detailed explanations were made by using in-class observation notes on how each teacher applied these strategies depending on the nature of the instructions and classroom activities.

With the guidance of the data collection chart, I sorted the data collected from each classroom into categories. For instance, for the kindergarten classroom, the observation notes and the interview transcript were categorized under four main themes: instructional strategies, visual and technological support, seating arrangement and noise management, and assistive listening devices. The transcription of each interview was split up into two parts. The first part, the teachers' background information, was used to identify the participants. The second part,

which contained questions about strategies, was used to clarify the points that were not understood during observation or that needed more explanation.

To provide validity, each classroom was observed three times. In addition to that, in order to not to cause any misapprehension emerged from observations some follow-up questions were directed to the teachers via interviews. The special education teacher of students who are DHH also helped for some points that need more explanation via e-mails and face-to-face communications when needed.

Findings

Kindergarten Classroom

Description of classroom. In the observed kindergarten classroom, instructional activities were designed to foster all students' interactions with each other. The classroom seemed very warm, playful, and child-friendly. It was quite big and had different types of areas such as a circle time activity table, the student desk area, and a story-time area. There were also a number of open areas that allowed students to play and learn. The divided areas made it seem as though there were little rooms inside the classroom.

All resources and materials were open to all students. The classroom was full of manipulatives for mathematics, reading, and science; books; clipboards; toys; and activity materials such as play-dough, tools, puzzles, and blocks. The walls were decorated with letter and number charts, classroom rules and procedures, conceptual maps, students' handcrafts, colorful pictures, a sign language alphabet chart, spelling and sentence sheets, etc.

The teacher. Her classroom includes two students who are DHH. She has been working with them for seven months. She has a master's degree in curriculum and instruction and has

been working as a kindergarten classroom teacher for five years. She described her background regarding the students who are DHH as follows:

> I had a special education class at the master's level. It touched on students who are deaf and heard of hearing, but did not go into much detail because we had so many different types of special education students to learn about. I have attended many professional development events, but none of them have every touched on students who are deaf/ hard of hearing. (Teacher 1, 2017)

Strategies Used by Teacher 1

Instructional strategies. The classroom activities included both individual and group studies in this classroom. When it was time for group activities, all of the students sat on the floor and faced the teacher and the white board that allowed students who are DHH to see the teacher and interpreter easily. However, because the classroom teacher did not use sign language very often, both students usually looked at the interpreter sitting near the classroom teacher. Even though one of the students had hearing aids, both students preferred sign language rather than spoken language. The classroom teacher was very careful to use spoken language. She always kept her talking very short and brief. Before the teacher began talking, she gave all the directions and instructions briefly to take all students' attention. Throughout the observations, the classroom teacher usually provided class-related information in writing on a large sheet of a paper. After group activities, she hung the papers on the classroom walls so that all students could easily read them.

Table 2

Instructional strategies in classroom 1

Instructional strategies
Short and brief directions and verbal instruction
Repetition of the information
Repeating the questions and answers from other students
Written notes on the board
Varying instructional activities to engage all type of learners
Interaction opportunities between students who are DHH and students with hearing

Encouraging students who are DHH to be active
Determining preferred communication
- Interpreter
- Spoken language
- Sign Language

Speaking fluently/clearly and audibly
Asking brief and clear questions

In the whole class instruction, when the students had to come to the board to answer directed questions, the classroom teacher repeated their responses for the student who is hard of hearing. Even though the students who came to the board and spoke were not far away from other students, the classroom teacher repeated their responses in order to make sure that the student who is hard of hearing could hear everything well. On the other side of the room, the interpreter was always translating what both the students and the teacher said.

Classroom discussions; workstations, which refer to brief content-related group or individual activities; individual and group instructions; independent studies; and technology-integration were made available to all students. After activity instructions were given, all students were directed to complete a task assigned on their daily schedule chart. For instance, the teacher used language-art stations for the reading class. Each station took approximately 10 minutes and was scheduled on students' individual schedules. These activities, which are referred to by the teachers as "stations or workstations" increased the interaction between students who are DHH and students with hearing. While the teacher worked with students in a one-on-one capacity, other students were generally working with their peers. The following activities were observed in the language art stations: individual teaching, practicing reading with the interpreter, reading books alone or with a student with hearing, practicing spelling with a student with hearing, practicing writing-spelling on the small white boards with a student with hearing, practicing reading using iPads that the school assigned to each student. All of the

students rotated between the activities, which meant that they were able to engage in different types of activities and easily interact with each other.

When the students who are DHH were studying with the students with hearing, the students with hearing attempted to use sign language to communicate with their peers. Among the three classrooms I observed, this was the class wherein students who are DHH were fully interacting with the students with hearing in a very playful environment. The classroom teacher replied with the following comment:

> My students who are DHH sit, play and interact with the other students the entire time they are in my room. They play with their peers during stations. Students with hearing have learned basic sign language to be able to interact with my two students who are DHH as well. (Teacher 1, 2017)

The interpreter was always in the classroom to help the teacher and students who are DHH. She was not just helping to translate; she was also helping the teacher in a special education teacher capacity. For instance, in one of the activities, the interpreter practiced reading in both spoken and sign language with one of the students who were hard of hearing. The classroom teacher said that the interpreter and the special education teacher have provided help regarding the pre-teaching and repetition of the instruction to increase the students' understandings. The classroom teacher stated:

> I think it's important to have lots of support from professionals. The interpreters and the special education teacher who works with the students who are deaf and hard of hearing are great supporters. They help when I have questions. They help me adapt my regular education classroom strategies to fit my students who are DHH. The interpreter is in my classroom for the majority of the day. It is good to have her in my class for the majority of the day. (Teacher 1, 2017)

The classroom teacher always prioritized repetition of the information for all of the students. In my observations, she repeated the subjects discussed the previous day before going to lunch. This was the part of the students' daily routine that was included in their daily schedule.

Visual and technological support. The teacher included the visuals in all subjects for all students. However, she provided extra visuals such as illustrated storybooks for students who are DHH. Their books contained fewer sentences but more illustrations, which is how they differed from other students' books. When the students were working one-on-one with the teacher, using these books, the classroom teacher made an effort to use the sign language to communicate with the students who are DHH. During times when she did not explain herself clearly, the interpreter helped the students to understand her. Further, the teacher's facial expressions and gestures were very clear and understandable, but both students who are DHH were usually following the interpreter while the teacher spoke to the class.

Table 3

Visual and technological support in classroom 1

Visual Aids
• Classroom rule charts
• Task organizer
• Daily schedule
• Classroom routines
• Conceptual maps
• Subject matter information boards and pictures
Technological support
• iPads with educational application
• The internet
• Videos in sign language
Providing vocabulary in written format
• Flashcards
• Notes on the board
Using facial expressions and gestures clearly

The walls were covered with posters that the students made together in the classroom. While verbally presenting instructions to the class, the teacher wrote the ideas and definitions of some terms or ideas on these posters. As previously stated, prepared posters hung on the classroom walls so that the students could practice later on. In addition, some spelling cards, task

organizers, alphabet letters, procedures and rules, and students' works were hung on the walls and boards. I also noticed that the new words that the students would learn were written on a corner of the whiteboard before class instruction began. The classroom teachers later stated that Mrs. Hanna, the special education teacher, also teaches new words during the special education class times. The workstation procedures and instructions were visualized via task organizers. Students performed their assigned tasks depending on their individual schedules that were located on these organizers. The students who are DHH followed the same activity procedures, rules, and instructions as the students with hearing.

Even though there was an overhead projector, the teacher did not use it during my observations. However, she provided technological support through her inclusion of iPads with educational applications as well as the Internet. All of the teachers stated that the school administration bought educational computers and iPad applications for all of the students so that they could practice their reading, mathematics, and other subjects. They have an access to these applications anywhere on the Internet, using their own usernames and passwords. As noted previously, during workstation times, the students practiced their reading and math using these iPad applications. Moreover, in one part of the lesson, one of the students who were DHH watched a cartoon in sign language with English closed caption in company with her teacher on the iPad.

Seating arrangement and noise management. The layout of the classroom was as follows. There were different areas and each had a different seating arrangement depending on the types of activities that occurred in it. For instance, there was a semi-circle table, which allowed all students to easily see each other as well as the teacher and the interpreter. This table was used for whole class instructions, which were referred to as circle time activities. Another

area was comprised of rows of students' desks and was designed in a U shape. The desks were positioned such that all students could see the white board and the projector screen. In these two areas, deaf students could see their teacher, the interpreter, and other students easily. This enabled them to follow their facial expressions and hand gestures. The third area, also intended for whole class instruction, was arranged such that all students sat on the floor. During the floor-time instructions, the students who are DHH faced the teacher, the interpreter, and the white board; nevertheless, their placement did not allow them to see other students or follow classroom discussions.

Table 4

Seating arrangement and noise management in classroom 1

Sitting and standing closer to the students who are DHH
Students who are DHH face the board and overhead projector
Facing to the students who are DHH
Eliminating background noise

In the classroom, there were no high-noise areas (e.g., noisy air conditioners, heaters, or overhead projector) that might negatively affect the student who with a hearing aid and a cochlear implant. During the observations, all of the students were pretty quiet and focused on their tasks. No negative factor causing a distracting noise was observed. The classroom door was always closed.

Assistive listening devices. Even though the interpreter always translated the teacher's speech, the classroom teacher used a personal microphone to increase the level of her voice, which is a part of a Frequency Modulation (FM) system, which one of the students who is hard f hearing used. The microphone was connected to the receiver that worked with the student's hearing aid.

Table 5

Assistive listening devices in classroom 1

FM system connected to the hearing aid
• with a personal microphone

When students were working individually or with peers, the teacher turned off the microphone in order not to cause any noise disturbance. During times when the teacher needed to speak to the class, I observed that she would wear the microphone again. The teacher later reported that, if she is standing a close distance to the student, then the student has some ability to understand without the microphone, but it might be difficult for the student to understand when the distance between teacher and student increased.

Third Grade Classroom

Description of classroom. There were two seating areas in this classroom. The first area was comprised of rows of students' desks that were grouped in fives. There was also a special area covered with a colorful rug. This area was used for small group activities as well as whole class reading and drama activities. When I first entered the class, I noticed this area and found it to be very warm and inviting. The physical environment of the classroom was designed by taking into account the comfort of the students who also appeared very comfortable with the class routines.

The teacher. During my observation period, there was one hard of hearing student who was receiving inclusion in her classroom. The teacher has a Master's degree and 14 years' teaching experience at the elementary level. She said that her educational background had not provided any knowledge regarding students who are DHH. She stated:

> I did not learn about hearing impaired students in my teacher education program. Even though I have attended several Professional Development events, none of which has specified interventions that work for hearing impaired students. However, the special education teacher is a great wealth and source of information. She is able to help teachers in the building gain knowledge of different interventions that are necessary for students who are DHH to be successful with the classroom. (Teacher 2, 2017)

Strategies Used by Teacher 2

Instructional strategies. One of the first things that caught my attention when I entered the classroom was the big colorful papers that included information about the definitions and vocabulary of reading and mathematics subjects hanging on the wall. As I observed later, during the lessons, the teacher wrote notes about the subject on these papers, which she hung on the board while teaching the students. Later, these papers were hung on bulletin boards or walls with the help of students. The teacher used these notes when she wanted to repeat the information or to remind students about the subject. Additionally, this allowed the student who is hard of hearing, as well as other students, to access the information whenever it is needed.

Table 6

Instructional strategies in classroom 2

Instructional strategies
Short/brief directions and verbal instruction
Repetition of the information
Written notes on the board
Varying instructional activities to engage all type of learners
Interaction opportunities between students who DHH and students with hearing
Encouraging students who are DHH to be active
Determining preferred communication
• Spoken language
Speaking fluently/clearly and audibly
Asking brief and clear questions

The teacher used language/art and math workstations in three observed lesson. It seemed that all of the students were engaged in the lessons and activities. During the individual and group activity times, the teacher rotated among the student desks so that she could provid support

to students who needed extra help or who did not focus on their work. She used the overhead projector to project the class-related questions, and she called on the students who completed the given tasks to solve the problems on the board. The teacher did not repeat the questions for the student who is hard of hearing because the questions were presented visually via the overhead projector for the whole class. When the teacher called the student who is hard of hearing up to the board to solve math problems that were projected via the over head projector, she explained the questions again to ensure that the student understood.

Despite the fact that the student did not call for help, the teacher went to the student who is hard of hearing several times and asked if she understood. The teacher was very careful to make the questions and the instruction as clear and understandable for her as possible. Further, the teacher always spoke using very understandable and audible speech. I noticed many times that she kept an eye on the student. The teacher later reported that whenever she felt the student was confused, she went to her to ask whether the student needed help. Even though the teacher was very careful to repeat the unclear parts for the student, she said that sometimes the student needed extra help because of the pace of the other students and the complexity of the lessons. Later, the teacher stated:

> The special education teacher teaches my student in the special education classroom as partly. She provides pre-teaching before I teach a new topic in my classroom. Sometimes, she also provides post-teaching to repeat the given information in my classroom because the pace of other students' learning may be hard for my student who is hard of hearing. (Teacher 2, 2017)

In the short-term workstations, the teacher appeared to put in effort to keep the students' active in their learning. She used a chart called "Rocking Behaviors" to encourage positive behaviors; she also used verbal praises. Occasionally, the teacher moved the students' names to a higher level on this chart when they demonstrated appropriate behaviors and stayed on task. The

teacher stated that she used this strategy to encourage all students, including the student who is hard of hearing, to stay on task and to engage in activities.

Even though the teacher attached importance to clarifying and repeating class-related questions, she did not repeat what other students said in the whole discussions despite the fact that distance might have been a problem for the student who is hard of hearing. There was no interpreter in the class. A desktop speaker helped the student who is hard of hearing to hear other students, but the voices of the other students were perhaps sometimes too weak for the student to hear because the microphone used for this system was located by the teacher and not the other students. The tone and pace of the teacher's speech were clear and understandable. However, sometimes, very rarely, the teacher spoke very quickly; when she did this, she seemed to take notice immeditely and return to her usual, slower pace. The teacher stated, "The speaker system has worked out the best for my student. I can walk around often with a voice that normally is loud and carried."

The lessons and activities were designed to enable the students to work cooperatively with each other. In an activity, for instance, each student worked for five minutes on the same project with different groups. The groups were created randomly, which permitted the student who is DHH to interact with students from outside of her sitting group.

Visual and technological support. The teacher integrated technology into the lesson by using iPads and the overhead projector. The iPads that include applications pertinent to the subjects were always accessible to the students. In addition, the teacher always projected the information onto the board using the overhead projector. It seemed like a useful means of providing the information visually. During the observations, I noticed that the teacher wrote the new words on the corner of the white board before starting the lessons, and she would describe

some of them. However, she did not provide the definitions of these words in written format in the same location.

Table 7

Visual and technological support in classroom 2

Visual Aids
• Classroom rule charts
• Task organizer
• Conceptual maps
• Behavioral development charts
Technological support
• Overhead projector
• iPads with applications
• The internet
Providing vocabulary in written format
• Notes on the board
• Notes on the bulletin boards and walls

The teacher decorated the walls and the boards with written and visual information. When I entered the classroom for the first time, I readily noticed class rules, vocabulary charts, conceptual maps, procedures, spelling charts, and math charts supported with visuals. The teacher used the task organizers to facilitate transitions between the lessons and activities. As the teacher stated, it was especially important for the student who is hard of hearing who spends a part of the day in the special education classroom. Task organizers and daily schedules made it easier to track activities and class routines as the student moved from class to class.

Seating arrangement and noise management. In terms of seating, no specific arrangement was made for the student who is hard of hearing. The rows of tables were organized into five different groups. The teacher did not need to be close to the student because of the convenience that the speaker provided. However, the seating arrangement prevented the student from seeing a majority of the students in the class. The student sat parallel to the board. Although she could easily see by turning her head, it slowed down the work she focused on.

Table 8

Seating arrangement and noise management in classroom 2

Student who is hard of hearing partly face the smart or white board Eliminating background noises

There were no high-noise areas (e.g., noisy air conditioners, heaters, overhead projector, or pencil sharpener) that might negatively affect the student's hearing. As I witnessed many times, the teacher interfered with the students who wanted to talk without permission while she was talking to the student who is hard of hearing. Additionally, she used a reinforcement chart to encourage students to be quiet in the classroom during the activities and instructions.

She kept the door of the class closed all the times. There was no noise from outside. The classroom windows were well insulated; therefore, no noise was heard from outside. I also realized that none of the students used the pencil sharpener during the lessons. There were pencils already sharpened on the teacher's desk. As the teacher stated, pencils are supplied to prevent distraction among students and to reduce the noise for the student who is hard of hearing. In addition, the teacher always turned the microphone off in order not to cause any rustle when the student did not need to hear the teacher.

Assistive listening devices. A personal desktop speaker with a personal microphone was used for the student who is hard of hearing. The teacher mentioned that the portable speaker on the student's desk prompted the teacher's speech to be cleared and more audible for the student who is hard of hearing.

Table 9

Assistive listening devices in classroom 2

Desktop Speaker with a personal microphone • No hearing aid

The teacher always checked the microphone before she began talking, and asked, “Can you hear me well?” to ensure that the student could hear the teacher’s voice clearly and could understand what the teacher was saying.

Fourth Grade Classroom

Description of classroom. The classroom was split up into different sections for different activities such as group discussion, individual studies, and hands-on work. The teacher allowed the students to use any part of the classroom during reading activity times. In my observations of reading hours, I noted that the students sit and even lie down wherever they want as the teacher reads books to them. During these times, the students were allowed to occupy themselves with other activities. While some were interested in their iPads, others did hands-on activities. However, it was interesting that they were very interested in questions related to the books; the teacher asked the questions, and the students gave appropriate answers.

The teacher. She has a BS and has been working for two years as a general education teacher. She currently teaches fourth graders at Cardinal Elementary School. She worked with two students in the past that had cochlear implants. There was one student who is hard of hearing in the classroom I observed. Even though her educational background did not address the education of students who are DHH, as she said, she has made a great effort to learn about strategies to support the education of her students who are DHH. She said that the support of other professionals at her school plays an important role in this regard. The teacher stated,

> Our school is wonderfully adapted for the students who are DHH. The special education teacher of students who are DHH is a fantastic asset to this school. She works extensively with my student, and always makes sure my student’s needs are met. The social worker, behavior specialist, administration, teachers, and anyone else are very supportive. (Teacher 3, 2017)

She also reported that she pays great attention to improving the interaction and collaboration between her students as well as her student who is hard of hearing. The classroom activities and instructions are designed to support group studies as well as individual studies.

Strategies Used by Teacher 3

Instructional strategies. The teacher tries to provide class-related information in multiple ways by including different activies such as workstations, verbal instruction with visual and technological support, and individual and group studies. In all of these activities, the teacher always provided clear instruction for all students. Before starting an instruction, she ensured that the FM system, which was connected to the student's hearing aid, worked and the sound was clear to the student. The teacher usually spoke fluently and clearly. Moreover, her facial expressions and gestures were clear and supported what she was talking about. As a person who is not native in English, even I was able to easily understand the teacher.

Table 10

Instructional strategies in classroom 3

Instructional strategies
Short/brief/clear directions and verbal instruction
Repetition of the information
Written notes on the board
Varying instructional activities to engage all type of learners
Interaction opportunities between students who DHH and students with hearing
Encouraging students who are DHH to be active
Determining preferred communication
• Spoken language
Speaking fluently/clearly and audibly
Asking brief and clear questions

Even though the teacher gave clear instructions at the beginning of the lessons and activities, several times, I observed that she went to the student who is hard of hearing and repeated what she said to the whole class. In one activity, after handing out the activity sheets to

the whole class, she went to the student who is hard of hearing and told the student the instructions once more. She also gave a few examples to facilitate the students' understanding. Further, when the teacher realized that the student did not know certain words, she tried to explain them by making analogies. This strategy encouraged the student who is hard of hearing to answer the activity questions on the sheet.

In terms of providing information in written format, the teacher used both a white board and overhead projection. In the math lesson, for instance, the questions were projected onto the board. In addition, the teacher actively used the board to draw shapes and lines to explain math questions. During reading times, the teacher wrote out unknown words from the textbook on the corner of the board and explained these words by giving examples. As seen on the walls and bulletins, in order for students to be able to practice new words later and to be more exposed to these words in a visual way, the teacher created charts of the most important new words and the most important information encountered during lessons.

In the workstations, the students worked and cooperated as a group to fulfill the assigned tasks. In one part of the lesson, the teacher even organized a competition between the groups. In this activity, the student who is hard of hearing was encouraged by the teacher and wanted to speak on behalf of her group. The teacher stated:

> My student does not like to be out of her comfort zone, but she is always willing to try and work with new people if I ask her too. I also have her come up to the board (with her peers as well) to work out problems, and when we do 'popcorn' reading, I will call on her to read aloud to the class. She is treated as a normal student. I just reiterate a lot of the instructions with her to make sure she understands and I ask her to 'show me' when she is working so that I can check her for understanding. (Teacher 3, 2017)

The teacher also explained the student who is hard of hearing's relationship with the peers as follows:

> My student responds well to having a friend. If there is something she is unsure of, or is upset about and does not want to tell me, she will tell her friend who then will come tell me. She also responds really well to working with that friend and a few other close in-class acquaintances, when doing group work or partner projects. (Teacher 3, 2017)

Visual and technological support. The bulletin boards and walls were decorated with visuals. In particular, and something that was also noted in other observed classrooms, class-related subjects were written on large papers and hung on the walls; this captured my attention. Moreover, classroom and school rules, a job chart, morning procedures, vocabulary charts, and conceptual maps were hung across the classroom. The daily schedule was written on one side of the board. As explained earlier, the teacher noted the new, unknown words that had come from course lessons on the board. However, the definitions of these words were later presented in written format on vocabulary charts or large notepapers.

Table 11

Visual and technological support in classroom 3

Visual aids
• Classroom and school rule charts
• Vocabulary charts
• Job chart
• Conceptual maps
• Morning procedures
• Daily schedule
Technological support
• iPads with applications
• Overhead projector
• The internet
Providing vocabulary in written format
• Notes on a corner of the board
• Notes on the bulletin boards and walls

Additionally, the teacher paid attention to integrate the overhead projector into the lessons along with verbal instructions. Information and questions regarding subjects were usually projected to the wall via the overhead projector. Moreover, the students were allowed to use

iPads that had been assigned to each student. The iPads were used actively during the reading hours and recess times. In other lessons, the teacher directed the students to use the smart board and textbooks.

The iPads included educational applications designed to meet students' individual needs and paces. For instance, there were applications that enabled students to read and complete exercises related to the readings. The teacher mentioned that these applications supported her students' understanding because they included more visuals. Moreover, the students could use these applications to read at their own paces.

Seating arrangement and noise management. There were two different seating areas, one of which included the grouping of student tables in the center of the classroom. The teacher, as mentioned earlier, paid attention to group activities and work. It was observed that the student who is hard of hearing was involved in her group and worked with the group members collaboratively and actively. In this setting, two seats were assigned for the student who is hard of hearing. One of these is very convenient in terms of seeing the board and the teacher. The second seat enabled the student to more comfortably see other students; she was unable to see the board from this seat, however. The student had to turn her head to see the board. In my observations, I noticed that during classroom discussion times, the student would switch to the chair from which she could see the whole class. When the teacher gave a lecture and used the board, the student switched to the seat that allowed her to see the board. The second seating area included the semi-circle desk. This semi-circle desk was used for whole class instruction where all students could see and interact with each other.

Table 12

Seating arrangement and noise management in classroom 3

Assigning two different seats

Eliminating background noises

During the observations, no factor to cause noise in the class was observed. Students were encouraged to follow classroom rules and to acitvely participate in class. As observed many times, when the teacher noticed that students' attention had started to wane, and students started talking to each other about things irrelevant to the lesson, she called the names of the students who were talking and said, "Alex (pseudonym) are you with me?" Student conversations led to a buzzy sound in the classroom. When the teacher called the names of the students who were conversing inappropriately, they immediately stopped talking and focused on the instruction and their work. The teacher used a microphone very carefully. She turned the microphone off when it was necessary for the student to study quietly or if the student did not need to hear the teacher.

Assistive listening devices. The teacher used a personal microphone connected to the students' hearing aid. Before starting class instruction or talking, the teacher always checked that the microphone was turned on. The teacher also checked whether the microphone was connected when the student went out and came back. As stated in the seating and noise management section, the teacher turned off the microphone in order to not to cause any noise when the student did not need to hear her.

Table 13

Assistive listening devices in classroom 3

FM System with a personal microphone • Connected to the hearing aid

Discussion and Conclusion

The current study focuses on strategies used by general education teachers to address the needs of students who are DHH; these strategies are intended to help the students benefit more fully from being a part of the inclusive classroom environment. The main purpose of the study

was to examine the strategies used by general education teachers in their attempts to adjust their instruction and classroom environments for the inclusion of students who are DHH. To this end, three general education teachers whose classrooms include students who are DHH were observed, as this permitted the researcher to examine the usage of inclusive strategies. Moreover, some follow-up questions were directed to these teachers. These questions arose from the observations and also sought information regarding the educational backgrounds of the teachers regarding students who are DHH.

Per the findings from this research, it is possible to conclude that the general education teachers have been attempting to use strategies that will enable their students who are DHH to benefit from their instruction. Their attempts also contributed to an environment in which the students who are DHH interacted with students with hearing and were a part of their classrooms. Additionally, teacher responses to follow-up questions highlighted the support of interpreters and special education teachers of students who are DHH for the application of strategies. For instance, all three teachers reported that their teacher education program did not sufficiently address the needs of students who are DHH. They see the special education teacher and interpreters who work with the students who are DHH as great support.

The existing literature places great emphasis on the importance of teachers' educational backgrounds and professional experiences in matters related to students who are DHH (Chorost, 1988; Eriks-Brophy et al., 2006; Eriks-Brophy & Whittingham, 2013; Marschark et al., 2011). Although the current study found inadequacies in those realms, those inadequacies were balanced and supplemented by teachers' efforts and collabaration and the support of other staff with different professional backgrounds.

Instructional Strategies

The observations that took place in three different general education classrooms indicate that the general education classroom teachers place great emphasis on the use of various instructional activities to engage all types of learners. For instance, workstations were effectively used in the three observed classrooms. It seems that workstations engage most of the students who are DHH as well as students with hearing and keep them active in studying as either individuals or parts of groups. In addition, teachers provide multiple representations of information by including visual and technological aids in their instruction to support verbal instructions. A study conducted by Angelides and Aravi (2007) shows that teachers' attempts to enhance the instructional benefits to students who are DHH affect their success positively. In this study, it was reported that multiple representations of the information, consideration of students' individual needs via setting goals based on their abilities, and clarification of lessons promote these students' academic success. The authors state that after simplifying tasks, instructions, etc. (e.g., providing unknown words in written and simple format, including more visuals) in a history class that was very complicated for the students who are DHH, the students better understood the lessons.

The instructions were designed for both individual and group activities. Individual studies primarily addressed the individual needs of students and enabled the students who are DHH to work their own pace. Group activities promoted interaction between the students who are DHH and students with hearing. The students who are DHH were encouraged to be involved in instructions and classroom activities. In doing this, all of the teachers kept their instructions and directions generally brief, or they provided more detailed explanations for the students who are DHH to ensure they understood what was expected of them. These results are consistent with other studies that have shown that length and pace of the instruction and directions are effective

at encourage the understanding of students who are DHH because shorter instruction is more meaningful for them (Reich & Lavay, 2009; Cawton, 2001; Berndsen & Luckner, 2010). The teachers were careful to speak breifly when using spoken language, and they made sure to be clear and understandable for the benefit of their students who are hard of hearing. Spoken language was supported via clear facial expressions and hand gestures. The repetation of the information was provided when it was deemed necessary. In a study on successful students who are DHH in inclusive classrooms, it was found that vocabulary support, additional teaching, and repetition of information are important to support the learning of these students general education classrooms (Ayantoye & Luckner, 2016).

Questions directed to all students were generally repeated for the students who are DHH if the teachers realized that they were not understood by the students who are DHH. In the kindergarten classroom, especially, interpreters were in charge of providing the repetation of the information and questions for the students who are DHH, and they used sign language to do this. The teacher of the kindergarten classroom was not advanced in the use of sign language; however, the interpreters were very helpful in their ability to translate classroom instruction and discussions for the student who was DHH. The interpreters' roles were not only to provide translation but also to support the teacher's instruction by providing one-on-one study opportunities for the student who was DHH. The result is thus in agreement with studies conducted by Cawton (2001), and Zawolkow and DeFiore (1986). These studies indicate that interpreters who study with students who are DHH in inclusive settings do not only provide translation between them and other people with hearing, but they also provide repetation of the information and tutoring.

The results of this study are in tandem with other study findings that have shown that the inclusion of students who are DHH in general education classrooms is not only beneficial to them, but it is also beneficial to their peers with hearing (Berndsen & Luckner, 2012; Kelman & Branco, 2004). As observed in the kindergarten classroom, the inclusion of the students who are DHH has created a mutually beneficial environment. Due to the inclusion of these students, the students with hearing were provided opportunities to accelerate in learning sign language. It was observed during the workstation sessions that some students with hearing communicated with their peers who are DHH in sign language. In a sense that, this has created an enabling environment in which the students with hearing started improving their sign language skills. As also seen in the three classrooms, the students with hearing work in concert with the students who are DHH. Thus this shows the whole idea of inclusion was effective in terms of creating a more enabling environment as well as an environment in which more accepting attitudes were practiced, nurtured, and established.

In the literature, there are some studies that emphasize the importance of lip-reading as a helpful strategy in students who are DHH learning (Eriks-Brophy et al., 2006; Schultz et al., 2013). In contrast to these studies, any strategy to facilitate lip-reading did not occur in the observed classrooms. These studies state that the position of teachers is very important to enable the students who are DHH to see the teachers' faces so that they are able to read their lips if the teachers do not use sign language. In the observed classrooms, two of the teachers did not use sign language. The teacher who teaches the kindergarten classroom used sign language, but she was not advanced. In these classrooms, the students who are hard of hearing paid attention to teachers' voices with the support of assistive listening devices. The student who is deaf focused primarily on the interpreter in order to follow the instruction and classroom discussions. As a

researcher, I wanted to inquire as to why the teachers did not show much effort to facilitate lip-reading while teaching, and I asked follow-up questions about this. One of the reasons was that the effective use of technology in the form of the FM System and desktop speaker reduces the need for lip-reading to a great extent. Moreover, the teachers reported that the students who are DHH were encouraged to improve their listening skills over lip-reading skills.

Visual and Technological Support

Written and visual sources were observed in all three classrooms as an important part of the subjects and classroom activities. All of the teachers integrated technology into their lessons effectively. For instance, the third- and fourth-grade teachers both used overhead projectors during the observation periods. The teachers usually reflected class-related information and questions on the wall using their overhead projectors. In addition, iPads and the Internet are always available for all students so that they may practice learning subjects and use the educational applications provided by the school administration. A number of studies (e.g., Reich & Lavay, 2009; Berndsen & Luckner, 2012; Schultz et al., 2013) have emphasized the importance of using visual support and technological support to facilitate the understandings of students who are DHH. Since visual and technological aids, such as posters, charts, smart boards, iPads, and pictures, have a big impact on student learning, it was found essential to include them in the instruction and classroom activities. In one study, for instance, there was a marked difference in DHH students' pretests and posttests after the implementation of a reading curriculum that was supported via extra visuals (Trezek, Wang, Woods, Gampp, & Paul, 2000).

The teachers paid attention to the contribution of vocabulary in written format. All three teachers wrote possible unknown words on the board and vocabulary charts that also included the explanations of these words. As emphasized by many scholars (e.g., Ayantoye & Luckner,

2016; Angelides & Aravi, 2007; Berndsen & Luckner, 2001), these strategies are important to enhance students who are DHH's understanding of new words.

All three of the teachers decorated their classroom walls and boards with written and visual information. For instance, the following visuals are seen in the three classrooms: classroom rules and procedures charts, task organizers, conceptual maps that were created in the lessons together with all of the students, subject matter information charts, pictures, and vocabulary charts. Unlike the third-grade and fourth-grade classrooms, the kindergarten classroom teacher provided extra visuals such as illustrated storybooks for students who are DHH.

Seating and Noise Management

Seating arrangement varied in each classrooms depending on the type of instruction and activities. In the kindergarten classroom, the circle time activity desk and students' rows enabled them to see the teacher, the board, and other students easily. However, the seating arrangement that permitted all students to sit on the floor randomly did not allow the students who are DHH to as easily see other students. This is something that might prevent them from properly following the classroom diccussion and seeing other students' facial expresions and gestures. In the third-grade classroom, the seating arrangement allowed the student who is hard of hearing to see the board and other students parcially In the fourth-grade classroom, the student who is hard of hearing was assigned to two different seats, as this enabled her to switch her seating depending on activity type. In one of the seats, the student could see the board and overhead projector easily. The other seat enabled her to more readily see the other students and follow the classroom discussion. Additionally, since all of the students who are hard of hearing received support from assistive listening devices, not a big effort was observed in regard to standing closer to the

students. Later, all teachers reported that the microphones that are connected to the students' hearing aids or desktop speaker transmitted their voices clearly and audibly.

Per the observations, there are some important points that need to be noted with regard to the seating arrangements. As stated in the literature, it is very important for students who are hard of hearing to see speakers' facial expressions and hand gestures so that they may interpret the received voices better. This requires an effective seating arrangement (Guardino & Antia, 2012; Trussell, 2008). Contrary to the literature, two of the observed classrooms' seating arrangements were not such that the students could see both the board and other students at the same time. Only in the fourth-grade classroom was the student who is hard of hearing provided two different seats, which enabled her to follow the whole class discussions and instructions easily just by switching seats. In other classes, however, the teachers largely ignored this necessity. As mentioned earlier, all classrooms were partitioned to create special areas for specific activities. Even though some areas in those classrooms allowed the students to see both boards, other students, and teachers, not all arrangements served this purpose.

According to Bradlow, Kraus, and Hayes (2003), it is very important that teachers pay closer attention to providing a clear hearing environment for students who are hard of hearing so that they students may receive spoken language clearly. A study whose findings support others found in the literature noted that a noisy environment results in a decrease in the speech perception of students who are hard of hearing (Crandell & Smaldino, 2000). During the classroom observations, no background noises were noticed in the classrooms. Air conditioners, overhead projectors, and computers were working very quietly. Any noises that originated from outsid the classrooms did not affect the inside of the room. The windows seemed well insulated such that outside noices were prevented from affecting the indoor classroom environments.

Additionally, the teachers took great care to ensure that their classrooms were quiet. Students were often gently reminded of the classroom rules. Further, the teachers encouraged and reinforced the students by using behavioral development charts. It was also observed that the visual and written schedules helped to maintain classroom silence and allow for smooth and effective transitions between activities or instructions.

Assistive Listening Devices

All of the teachers used a personal microphone to support the students' assistive listening devices in the three classrooms. As stated in a number of studies (Larsen & Blair, 2008; Crandell et al., 1996; de Souza Jacob et al., 2012; Anderson & Goldstein, 2004; Zanin & Rance, 2016), these devices and microphones are used to provide clear and understandable hearing for the students who are DHH. The teachers are very careful about the microphones that are connected to the students' hearing aids or the desktop speaker. During times when the students who are DHH are working individually or as group, the teachers usually prefer to turn off the microphones so as to avoid causing any rustles that may affect the students' hearing and motivation. Further, when the students come to the classroom, the teachers check to ensure that their personal microphones are connected to the students hearing aids and the speaker. It was also observed that the teachers sometimes asked students who are DHH whether they can hear them clearly.

Limitation of the Study

Even though this study achieved its objectives, there were some inevitable limitations. The first limitation of this study is the sample size. This study was conducted with a small sampling that consisted of three general education classroom teachers. Since deafness/hard of

hearing has a low incidence rate among disabilities, finding general education classrooms that include students who are DHH in the town limited this study's sample size.

The second limitation of the study is that it was conducted with only teachers. Therefore, reflecting the classrooms' activities and instructions without involving the students limited the descriptions of the classroom interactions and activities. Additionally, I was unable to see the documents related to the students who are DHH such as IEPs (Individualized Educational Plans). It would be useful in terms of seeing suggested accommodations regarding student inclusion on the IEPs and assessing how many of these accommodations are being fulfilled by the teachers.

Recommendations

My purpose was not to generalize, but to understand in depth how general education teachers support their students who are DHH. Replication of this study in different schools with larger sampling size will help to see how teachers in different school conditions promote these students' inclusion. In addition, replication of this study in schools that are served students who are DHH by itinerant teachers will be helpful to examine different settings and see how teachers in these schools promote these students' inclusion. Future research should also consider addressing the students' and their families' perception to examine whether students who are DHH need additional support in inclusive environment.

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Appendix A

LETTER OF CONSENT
Special Education Program Indiana University
Esra Erbas

… /…. /2017

Dear Teachers,

You are being invited to participate in a research study on strategies to facilitate the inclusion of deaf or hard of hearing students. In particular, I am interested in how strategies used by general education teachers in their attempts to adjust their instruction and classroom environments for the inclusion of students who are deaf or hard of hearing.

I will observe your instruction 3 times. During the observation, I will not ask any question and cause any distraction. After the completion of one or more of the observations, I will direct follow-up questions to you that will take around 20 minutes. The interviews will be audio-recorded.

There are no anticipated risks or discomforts related to this research. Several steps will be taken to protect your identity. While the interviews will be audio-recorded, the record will be destroyed once they have been typed up. All information you supply during the interviews will be held confidence, and your name will not appear in any report or publication of the research. Your data will be safely stored in the researcher's personal computer that will be locked and only the researcher will have access to this information.

Your participation in the study is completely voluntary and you may refuse to answer any question or choose to stop participating at any time. If you have questions about the research in general or about your role in the study, please feel free to contact Esra Erbas, M.S.Ed. Student in the special education, at the Department of Curriculum and Instruction, Indiana University, Bloomington, telephone ……, and e-mail .....

Legal Rights and Signature:

I _____ consent to participate in the research strategies to facilitate the inclusion of deaf or hard of hearing students conducted by Esra Erbas. I have understood the nature of this study and wish to participate. My signature below indicates my consent.
Signature of Participant(s)_____ Date_____

Appendix B

INFORMED CONSENT LETTER
Special Education Program Indiana University
Esra Erbas

… /…. /2017

Dear Parents or Guardians,

My name is Esra Erbas. I am a master's student in the special education program at Indiana University. I will conduct a research on strategies to facilitate the inclusion of deaf or hard of hearing students. In particular, I am interested in how strategies and methods used by general education teachers in their attempts to adjust their instruction and classroom environments for the inclusion of students who are Deaf or hard of hearing.

For this study, I will observe your child's classroom 3 times. The aim of this study is to observe the instruction of teachers and strategies used by the teachers in the classroom. I will not include your child in my study. I will not include any information of your child in this study.

There are no anticipated risks or discomforts related to this research. Several steps will be taken to protect classroom identity. All information supplied during the observations will be held confidence, and your child's name will not appear in any report or publication of the research. The data will be safely stored in the researcher's personal computer that will be locked and only the researcher will have access to this information.

If you have questions about the research in general, please feel free to contact Esra Erbas, M.S.Ed. Student in the special education, at the Department of Curriculum and Instruction, Indiana University, Bloomington, telephone ……, and e-mail ……

Appendix C

Data Collection Chart

Observed teacher (pseudonym)_____ Lesson_____

Observer_____ Date_____

General observation notes

Time start_____ Time end_____

Instructional Strategies	Observed	Comment
Short and brief directions and verbal instruction	○ Yes ○ No	
Repetition of the information when students who are DHH need	○ Yes ○ No	
Repeating questions and answers from other students	○ Yes ○ No	
Written handouts or notes on the board	○ Yes ○ No	
Varying instructional activities to engage all type of learners	○ Yes ○ No	
Interaction opportunities between students who are DHH and students with hearing	○ Yes ○ No	
Encouraging students who are DDH to be active (e.g. being on task, engaging in the lesson)	○ Yes ○ No	
Determining preferred communication • Interpreter	○ Yes	

• Sign language • Speech reading • Lip reading • Spoken Language	○ No	
Speaking fluently/clearly and audibly	○ Yes ○ No	
Asking brief and clear questions	○ Yes ○ No	
Visual and Technological support		
Using visual aids • Classroom rule charts • Task organizers • Graphic organizers • Vocabulary chart Technological support • Smart Board • iPads/Computers • The Internet	○ Yes ○ No	
Providing vocabulary in written format (e.g. flashcards, notes on the board…)	○ Yes ○ No	
Videos with closed captions or subtitles	○ Yes ○ No	
Using facial expressions and hand gestures clearly	○ Yes ○ No	
Seating arrangement and noise management		
Sitting and standing closer to the students who are DHH	○ Yes ○ No	
Students who are DHH face the board or overhead projector	○ Yes ○ No	
Facing to the students who are DHH	○ Yes ○ No	
Students who are DHH see other students and follow	○ Yes	

classroom discussions	o No	
Eliminating background noise	o Yes o No	
Using assistive listening and communication devices		
FM systems/ speakers	o Yes o No	
Other Devices	o Yes o No	

Notes:

Appendix D

Interview Questions

Part 1

1. How old are you?
2. What is your highest degree?
3. How long have you been working as a general education teacher?
4. Have you ever had a student who is deaf or hard of hearing in your classrooms before this classroom?
5. How long have you been working with deaf or hard of hearing student(s)?

Part 2

1. How do you know what strategies to use?
    a. Do you get support from other professionals (e.g. interpreters, special educators, speech therapist, school administrators)? If yes, how do you describe their support?
    b. Did you learn about education of students who are deaf or hard of hearing in your teacher education program?
    c. Did you attend any PD (Professional Development) events? If yes, did these events help you for the education of students who are deaf or hard of hearing?
2. What kinds of strategies do you think are more helpful to promote the inclusion of the student who is deaf of hard of hearing in your classroom?
3. In my observations of your classroom, I realized that you employ …….. Why did you need to use. …… ?
4. What kind of activities do you incorporate into your classroom in order to increase interaction opportunities between students who are deaf or hard of hearing and their peers with hearing?
5. Is there anything you would like to add?

Appendix E

Definition of Terms

Inclusive classroom. This refers to general education classrooms in which students with and without disabilities are educated together.

Deaf. "This term refers to students when their unaided hearing loss is in excess of 70 decibels and precludes understanding of speech through the auditory mechanism, even with amplification, and the student demonstrates an inability to process linguistic information through hearing, even with amplification" (South Dakota Department of Education, 2013, p. 138).

Hard-of-hearing. "This refers to a hearing loss where there may be enough residual hearing that an auditory device, such as a hearing aid or FM system, provides adequate assistance to process speech" (Disabilities, Opportunities, Internetworking, and Technology [Do-It], 2017).

Hearing aid. "A hearing aid is a small electronic device that is worn in or behind ears. It makes some sounds louder so that a person with hearing loss can listen, communicate, and participate more fully in daily activities" (National Institute on Deafness and Other Communication Disorders [NIDCD], 2017).

Cochlear implant. Cochlear implants are surgically implemented devices that contribute access to sounds and speech. These devices may be used for children or adults who cannot benefit from hearing aids due to their severe to profound hearing loss (ASHA, 2017).

Frequency modulation (FM) systems. "FM systems are like miniature radio stations operating on special frequencies. The personal FM system consists of a transmitter

microphone used by the speaker (such as the teacher in the classroom, or the speaker at a lecture) and a receiver used by you, the listener. The receiver transmits the sound to your ears or, if you wear a hearing aid, directly to the hearing aid" (ASHA, 2017).

Desktop speaker. " In this system, the teacher's voice is transmitted from the teacher microphone to the speaker on the desk not to a hearing aid" (M. Wicker, personal communication, May 5, 2017).

CURRICULUM VITAE

Esra Erbas

EDUCATION

B.S. Cumhuriyet University- School of Education 2004-2008

Elementary Education (Classroom Teacher Education Program)

M.S. Indiana University-Bloomington (IUB) 2015-Present

Special Education Program

HONORS AND AWARDS

Turkish Ministry of Education Scholarship for M.S.Ed. and Ph.D. 2013-Present

Prime Ministry of Turkish Republic Undergraduate Educational Scholarship 2004-2008

The Ministry of Turkish Internal Affairs Fellowship 2007-2008

EXPERIENCE

1. **INDIANA UNIVERSITY- Bloomington, IN** 2016- Present

Digital Collection Services**,**

2. **INDIANA UNIVERSITY, Bloomington, IN** 2012

Volunteer Teacher Aid in Campus Children Center (CCC),

3. **TURKISH MINISTRY OF EDUCATION, Bitlis** 2010- 2011

Elementary School Teacher,

4. **PUBLIC TRAINING CENTER, Bitlis** 2010- 2011

Adult Literacy Education Teacher,

5. **TURKISH MINISTRY OF EDUCATION, Istanbul** 2008-2010

Elementary School Teacher,

CONFERENCE PRESENTATIONS

• Erbas, E. (May, 2017). The Effect of Relationships Between Families, Schools, and Societies on the Development of a Child with Special Needs. Paper Presented at *13th International Congress of Qualitative Inquiry* (ICQI 2017). University of Urbana-Champaign-Illinois, USA.

• Erbas, E. (May, 2017). Strategies to Promote the Inclusion of Students who are Deaf or Hard of Hearing. Paper Presented at *Global Conference on Education and Research* (GLOCER 2017), Sarasota-Florida, USA.

CERTIFICATES

Communication Disorders Certificate- Istanbul 2009

Special Education Symposium- Istanbul 2009

Child Development and Education Certificate Program- Bitlis 2011

Indiana University Intensive English Program (IEP) 2015

MEMBERSHIPS

Council for Exceptional Children 2016

LANGUAGES

English (Advanced)

Turkish (Native)