

With the growing trend toward inclusion in special education, the number of students who are deaf and hard of hearing (DHH) who receive itinerant teacher support has increased. Since the 1970s student enrollment at site-based schools for the deaf has been decreasing (Mitchell & Karchmer, 2006). According to the U.S. Department of Education (2015), 87% of all DHH students attend general education classrooms for some portion of their school day. Typically, these students are supported by itinerant teachers of DHH who provide direct services to the students and consultation services to their classroom teachers (Foster & Cue, 2009).

Services from specialist teachers of DHH (TODHH) can be beneficial because these teachers can support the individual needs of students while still allowing the student to participate along with peers in the general education classroom. Itinerant TODHH have a range of responsibilities (Yarger & Luckner, 1999). Their caseloads often span several schools and include students who are highly variable in their age, degree of hearing loss and educational needs. They serve students from preschool through high school, with hearing losses ranging from mild to profound. They also serve students with hearing loss who have additional disabilities (Bullard, 2003). They must have knowledge in a variety of areas to best serve their students (Kluwin, Morris, & Clifford, 2004; Reed, 2003; Yarger & Luckner, 1999).

Although surveys and interviews of itinerant teachers have provided information, the responsibilities of itinerant TODHH remain ill-defined. Luckner and Ayantoye (2013) reported that 40% of teachers in their national survey of 365 itinerant TODHH did not have a job description, and another 22% indicated that there was not a good match between the provided job description and their actual responsibilities. The authors

speculated that the mismatch might occur because job responsibilities tend to be fluid. There are no published guidelines available from school districts or from professional organizations in the field delineating responsibilities that itinerant teachers should or should not undertake. Neither has there been much research on the specific services offered by itinerant teachers to DHH students, the basis on which decisions about services to DHH students are made, or the effectiveness of these services (Antia, Kreimeyer, & Reed, 2010).

Itinerant teacher responsibilities

Surveys, interviews, and observational studies on the role of itinerant teachers provide some information on the variety and scope of their responsibilities (Foster & Cue, 2009; Kluwin, et al., 2004; Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Reed, 2003). The most frequent and most important responsibility reported was providing direct service to DHH students (Foster & Cue, 2009; Luckner & Ayantoye, 2013; Power & Hyde, 2003). Luckner and Ayantoye (2013) surveyed a national sample of 365 itinerant TODHH. These teachers reported that their most important job responsibility was providing direct service to students. Similarly, Foster and Cue (2009) in a survey of 270 itinerant teachers, found that the most frequent task reported by these teachers was providing instruction to individual students. Itinerant teachers provided instruction in both academic and non-academic areas. Academic instruction, designed to help students succeed in classwork, included tutoring in a variety of subjects, as well as pre-teaching and re-teaching material covered in the classroom. Non-academic instruction included developing self-advocacy, self-esteem, and social skills.

In terms of time spent in direct instruction Power and Hyde (2003) and Hyde and Power (2004) found that 87% of their Australian itinerant TODHH spent six or more hours per week providing direct pull-out services to students. With a much smaller sample size of 25, Luckner and Howell (2002) found that U.S. itinerant TODHH spent 42% of their time working with students. Foster and Cue (2009) reported that, on average, teachers spent 33% of their time providing direct services to students. Luckner and Ayantoye (2013) reported that teachers spent about 14 hours a week providing direct instruction to students. However, teachers across several studies reported their concern that the shift toward more inclusive placements has led to a decrease in direct services to students (Foster & Cue, 2009; Luckner & Miller, 1994; Yarger & Luckner, 1999).

Consulting and collaborating with classroom teachers was another frequent and important responsibility of itinerant teachers (Foster & Cue, 2009; Luckner & Ayantoye, 2013). Consulting responsibilities included providing information about the impact of deafness and providing general education teachers with strategies to assist the DHH student in the classroom. Power and Hyde (2003) reported that 70% of Australian itinerant TODHH spent 10-30 minutes a week consulting with general education teachers, while itinerant TODHH in the U.S. averaged 2 - 3 hours per week in such consultation (Luckner & Ayantoye, 2013; Yarger & Luckner, 1999). Kluwin et al. (2004) found that itinerant teachers who had large caseloads or who were serving students with less severe hearing loss spent the majority of their time consulting with adults to make sure that classroom accommodations, as indicated on students' Individualized Education Programs (IEP), were implemented properly. Rabinsky (2013) found that collaboration was

essential for successful push-in services (i.e. special services provided within the general education classroom) with students who are DHH.

Other itinerant TODHH responsibilities included conducting student assessments, adapting classroom materials, monitoring and observing students to determine their functioning in the general education classroom, planning, attending meetings, and providing technical support for amplification equipment (Foster & Cue, 2009; Luckner & Ayantoye, 2013; Luckner & Howell, 2002). Antia (1999) found that itinerant teachers sometimes accepted additional roles such as sign language interpreters or instructional aides.

Barriers to Itinerant Teacher Services.

Apart from the lack of clarity on job responsibilities, researchers have reported a variety of barriers that resulted in itinerant teachers feeling ineffective in their ability to provide services to students. Itinerant TODHH identified lack of time as the primary barrier to effective itinerant teaching (Antia, 1999; Luckner & Ayantoye, 2013; Luckner & Howell, 2002; Yarger & Luckner, 1999). Reasons for time constraints included extensive driving time (Yarger & Luckner, 1999), number of school sites and scheduling difficulties (Luckner & Howell, 2002). Itinerant teachers reported that time constraints limited their ability to plan appropriately for their students. A commonly identified barrier was that few general education teachers with whom the TOD worked planned lessons with sufficient time for the itinerant teacher to adapt materials or make plans to support the DHH student (Antia, 1999; Reed, 2003).

Another theme related to time barriers was caseload size. As would be expected, Antia (1999) found that direct instructional time decreased as caseloads increased

creating concerns that student's needs were not met. Itinerant teachers with larger caseloads provided fewer direct services to students than those with smaller caseloads. When itinerant teachers had larger caseloads, their approach changed to consulting more with adults rather than teaching students directly (Kluwin, et al., 2004; Yarger & Luckner, 1999).

In several studies researchers identified navigating school and district politics as a barrier to itinerant teacher effectiveness (Foster & Cue, 2009; Guteng, 2005; Hyde & Power, 2004; Luckner & Howell, 2002; Yarger & Luckner, 1999). Itinerant teachers reported that they had to adjust their attitudes from school to school, which was difficult and stressful. New itinerant teachers reported that lack of administrative support made navigating the politics of a school more difficult. Participants reported feeling uncomfortable asserting themselves with general education teachers to ensure appropriate classroom accommodations for their students (Guteng, 2005). Itinerant TODHH who reported feeling comfortable in their role and with their skills also saw themselves as effective in service provision and advocating for their students despite the politics of a given school.

The concepts of control and ownership were also identified as barriers to effectiveness. When the general education teacher assumed ownership of the student, itinerant teachers reported a lack of control over the DHH student's educational program (Antia, 1999). Reed (2003) reported that many itinerant teachers felt that they had no control over the literacy environments of their students. She also found that itinerant TODHH who understood their lack of control and took ownership of the responsibilities of the position, rather than ownership of their students, believed they were more effective.

Itinerant teachers identified a lack of collaboration and a feeling of isolation as additional barriers to their effectiveness. Working at numerous schools led to a feeling of disconnectedness with other teachers and a perceived lack of support from administrators (Reed, 2003; Yarger & Luckner, 1999). Antia (1999) noted that feelings of isolation could lead to a lack of professional identity, especially for itinerant TODHH serving students in rural communities. Reed found that itinerant teachers lacked support from general education teachers and office personnel. New itinerant teachers felt anxiety about collaborating with parents regarding various sensitive issues, such as lack of communication between the parents and the student (Guteng, 2005). Rabinsky (2013), however, found that itinerant teachers who used a push-in model engaged more frequently in collaboration and experienced less feelings of isolation.

Present study

While the fluidity of the itinerant teacher's role can be an asset because the teacher can adapt responsibilities to meet the needs of individual students, the lack of any generally accepted guidelines is a potential problem. The role of the itinerant teacher can be interpreted by administrators as that of a tutor, sign language interpreter, audiologist or educational aide, which can lead to confusion about services that these teachers should provide. Little data exists on the specifics of direct instructional services provided by TODHH, or how teachers determine the kind, time, and intensity of direct instruction to individual students. This exploratory study draws on five-year longitudinal data of DHH students in general education classrooms (Antia, Jones, Luckner, Kreimeyer, & Reed, 2011; Antia, Jones, Reed, & Kreimeyer, 2009) to (a) describe the specific kinds of itinerant TODHH services provided to DHH students, (b) explore the relationship

between student academic performance and direct instructional support provided by the itinerant TODHH and (c) examine how service provision decisions are made by itinerant TODHH. We used quantitative data (academic achievement scores and teacher report of services) as well as qualitative interview data to answer the following research questions:

1. What direct academic and non-academic instruction do itinerant teachers provide to DHH students?
2. Is there a relationship between students' achievement scores in one school year and the direct academic instruction offered by the itinerant teacher in the subsequent school year?
3. How do itinerant teachers make decisions about the amount of service time to provide to each student?

Methods

The longitudinal study from which these data were obtained included 197 DHH students from Arizona and Colorado who attended general education programs between 2002 and 2007. Each student was followed for five years. We obtained demographic, service provision, and academic achievement data on each participating student annually. These data were taken from students' IEPs and academic records and were provided to us by each student's itinerant TODHH or a school administrator. In addition, we conducted in-depth case studies on 25 randomly selected students. For these case studies we interviewed the DHH student, his or her classroom teachers, itinerant TODHH, school administrators, parents, and interpreters (when applicable). Initial interviews were conducted for each student during the first two years of the study. In subsequent years we interviewed teachers and parents about students' continuing progress and requested

information about any significant changes. For this article we analyzed the initial teacher interviews conducted during the first two years of the study.

Participants and Setting

Deaf and hard-of-hearing (DHH) students from Arizona and Colorado were eligible to participate if, at the beginning of the longitudinal research project they a) had an identified bilateral or unilateral hearing loss, b) received services from a teacher of DHH students or had an IEP, c) attended general education classrooms in public schools for two or more hours per day, and d) were in grades 2 – 8 at the beginning of the study. Once enrolled, students remained in the study unless they withdrew or moved out of state. The study enrolled a total of 197 students. Of these, 53% were males; 71% preferred spoken communication; 71% used English in the home and 60% were White. Fifty-three percent of students had unilateral, mild, or moderate hearing loss while 36% had severe or profound hearing loss. Fifty-two percent were enrolled in elementary grades (2 - 5) at the beginning of the study and 58% spent more than 5 hours a day in the general education classroom. The number of students for whom we received data changed over the years because of attrition and our inability to track students who changed school districts or who moved out of state. For further information about the student participants in the larger study the reader is referred to Antia, et al. (2011).

We conducted detailed qualitative case studies on 25 students. These students were selected using a stratified random sampling process to ensure that we had representation of elementary and middle school grades, ethnic majority and minority students, and students with mild/moderate as well as severe/profound hearing loss. Of the case study students, 44% were male, 60% preferred spoken communication, 64% used

English in the home and 56% had unilateral/mild/moderate hearing loss (0-60 dB). For detailed information about the case study participants the reader is referred to Reed, Antia, and Kreimeyer (2008).

Students were enrolled in 125 different elementary or middle schools in rural and urban areas of Arizona and Colorado at the beginning of the study. In Arizona some districts provided their own services to DHH students, while other districts contracted with the Arizona State Schools for Deaf and Blind to provide itinerant teacher services. In Colorado, each school district hired itinerant teachers of DHH students.

In the first year of the study the students were served by 86 different teachers of DHH. We were not able to get demographic information on the teachers themselves except for those teachers whose students participated in the case studies. The 25 students selected for the case studies were served by 23 different teachers during the first two years of the study when the interviews were conducted. Each teacher had a Bachelor's or a Master's degree in education of DHH students. Their teaching experience with DHH students averaged 13 years, with a range from three months to 33 years.

Instruments and Procedures

Student demographic data. The research team sent a demographic questionnaire annually by mail to each itinerant TODHH who had a student who was enrolled in the study. Researchers followed up by mail, phone or e-mail as necessary to remind teachers to complete the questionnaire and to clarify any needed information.

The information requested that is relevant to this report included each student's gender, ethnicity, home language, degree of hearing loss, and number of hours in the general education classroom.

Direct instruction from the itinerant TODHH. The annual demographic questionnaire requested information on direct instruction provided by the itinerant TODHH to the student. Students usually received direct instruction during a pull-out time, when the TODHH worked with the student 1-1 in a space outside the regular classroom.

To report direct instruction, the itinerant TODHH selected from a checklist of items in academic and non-academic areas. Academic areas included math, science, reading, writing, and social studies. Non-academic areas included assistive technology, social skills, study skills, auditory skills, career development, learning strategies, self-advocacy, and speech. Teachers were invited to include other areas in which they provided direct instruction as needed. The researchers typically were able to reclassify these areas into one of the pre-determined categories provided.

Academic achievement. We obtained students' standardized achievement test data annually. All students in both states, Arizona and Colorado, were required to take standardized achievement tests in the spring of each academic year. The data were provided to us from students' files. Students in Arizona took the Stanford Achievement Test – 9th edition (Stanford-9) (Harcourt Educational Measurement, 1996) during the first three years of the study, and the Terra Nova – 2nd edition (CTB McGraw-Hill LLC, 2003) during the last two years. Students in Colorado took the Colorado Student Assessment Program (CSAP), (CTB McGraw Hill, 2004) for each of the five years. All three standardized tests have math, reading, and language/writing sub-tests at each grade level. The math sections assessed math computing and problem solving, the reading section assessed comprehension, while the language/writing section assessed writing conventions and processes.

Teacher interviews. Separate interview protocols were developed for itinerant teachers, classroom teachers, interpreters, parents, the case study student, and school administrators. For purposes of this article only the itinerant TODHH interviews from the first two years were analyzed. The interviews were conducted by researchers or research assistants and were conducted in person. Most interviews were conducted in a single session, but in some cases two sessions were necessary. Itinerant TODHH interviews were conducted at the student's school. Details about how the interview questions were developed are provided in Reed, et al. (2008). We asked two specific questions about itinerant TODHH services that provided the data analyzed for this paper:

- (a) How did you decide that this student needed the amount of time you are providing?
- (b) Given the time you have with this student how well do you feel you can meet the student's needs?

Each interview lasted from 30 minutes to an hour. Interviewers asked follow-up questions as needed and omitted questions if the interviewee had provided the relevant information while answering a previous question. All interviews were video or audio-recorded and transcribed by a trained transcriptionist. Interview transcripts were checked by researchers for accuracy. Interviews were entered into NVivo software and coded by the researchers.

Data Analysis and Results

We present the data analysis methods for each research question followed by the results.

Direct academic and non-academic instruction provided by itinerant TODHH

To answer this question, we analyzed the demographic data from years 2 – 5 to determine the total percentage of students each year who received direct instructional

services from a teacher of DHH. We examined the percentages for elementary and secondary students separately. We also examined direct instructional services in academic and non-academic areas separately. We did not include the data from year 1 in the analysis because the question about services was mistakenly omitted from a large number of questionnaires. The year 1 data are therefore unrepresentative and unreliable.

Academic instruction. Table 1 shows the numbers and percentage of students receiving direct academic instruction in one or more subject areas from a TODHH by year. Over the four years, 40% of students did not receive direct academic instruction from a TODHH. The majority of children (50%) received instruction in one to three areas while a small percentage (18%) received instruction in four or more areas. The percentage of students receiving no academic instruction increased from year 2 to year 5 indicating that as students advanced in grades they received less direct academic instruction from a TODHH.

Table 2 shows the percentage of elementary and secondary students receiving instruction in each academic area. Over 40% of students received direct instruction from a TODHH in reading and writing each year with a few exceptions. This was true for students in elementary and secondary grades although more elementary than secondary students received direct instruction in these areas. The TODHH provided direct instruction in math, social studies and science to 25% or fewer students.

Insert Tables 1 and 2 here

Non-academic instruction. Table 3 shows the numbers and percentages of students receiving direct non-academic instruction in one or more areas from a TODHH by year. Over the years less than 20% of students received no instruction in a non-

academic area from a TODHH. Most students (61%) received instruction in one to three different non-academic areas.

Table 4 shows the percentage of elementary and secondary students receiving instruction in each non-academic area. A majority (59%) of the students received instruction in self-advocacy; the percentage of students receiving instruction in self-advocacy remained stable from elementary to secondary grades. Study skills instruction was provided to a larger percentage of secondary students than elementary students, while instruction in assistive technology and auditory skills showed the opposite pattern. Few elementary students received instruction in career development, but almost a quarter of all secondary students received such instruction. Social skills and learning strategy instruction were provided to a relatively small percentage of both elementary and secondary students.

Insert Tables 3 and 4 here

Relationship between Students' Achievement scores and Direct Academic Instruction by TODHH.

In order to examine the relationship between student academic achievement in one year and direct academic instruction provided by the itinerant TODHH in the subsequent year, we first converted all the standardized achievement scores for math, reading and language into Normal Curve Equivalent (NCEs). These are standard scores with a mean of 50 and a Standard Deviation (SD) of 21.06. NCEs are similar to percentile ranks but provide an equal-interval scale, allowing computation of means and SDs. We grouped the students into three categories: low, mid, and high performers. Students with NCEs 35 or below were grouped into the low performance category, those with NCEs

above 35 and less than or equal to 65 into the mid performance category and those with NCEs above 65 into the high performance category.

The grouped score for a given year was cross-tabulated against direct services provided in each subject area for the following year to see whether service provision differed for low, mid and high performers; a chi-square test of independence was calculated to test whether the ratios differed between levels. Analyses were carried out for the entire group by year. In these analyses we included the data from all 5 years of the study. However, the analysis was only performed for those students who received instruction from a TODHH in years 2 – 5 and who had achievement scores for the previous year. For example, students who received math instruction from a TODHH in years 2 - 5 and who had math achievement scores from each preceding year were included in the analysis.

Table 5 shows the number and percent of students who did and did not receive reading instruction from a TODHH cross-tabulated by performance category. Students scoring low in reading were the most likely to receive reading instruction from a TODHH in the following year, while students scoring high in reading were least likely to receive instruction in reading. All chi-square tests of independence were significant, indicating that the likelihood of receiving reading instruction from a TODHH is related to the level of reading performance in the prior school year.

Table 6 shows the number and percent of students who did and did not receive language/writing instruction from a TODHH cross-tabulated by performance category. Students who scored low in language/writing were most likely to receive instruction in this area from a TODHH in the following year, while students who scored high were less

likely to receive writing instruction. The chi-square tests are significant only for Years 2 - 3 and for Years 4 - 5 suggesting that the relationship between language/writing achievement and language/writing instruction was less strong than for reading.

Table 7 shows the number and percent of students who did and did not receive math instruction from a TODHH cross-tabulated by performance category. Students who scored low in math were slightly more likely to receive instruction in math from a TODHH than students who scored high in math. The chi-square tests are significant only for Years 3-4, thus, the relationship between math achievement and math instruction from a TODHH is less strong than the relationship between reading achievement and reading instruction.

Insert Tables 5, 6, and 7 here

Itinerant TODHH Decision-Making regarding Instruction Services

To gain insight into the manner in which itinerant TODHH decided how much and what kind of instruction to provide to students, we examined the itinerant TODHH interviews for the 25 case study students. In this analysis we report on all service time provided by the itinerant TODHH, which includes direct instruction and consultation services. The data were analyzed qualitatively using inductive methods (Marshall & Rossman, 2011; Strauss & Corbin, 1990). Through comparative analysis, data were examined across teachers for themes regarding service time decisions. After the initial examination, each teacher interview was reexamined and coded according to the themes. Results are reported as summaries according to each theme.

Perceived student needs. The majority of itinerant teachers reported that they made service time decisions based on the needs of the students. They used information from

standardized district- and state-wide test results for reading, writing, and math to make these decisions. They also used information gathered from students' general education teachers and other service providers (e.g., Speech Language Pathologists or Special Education teachers). They used their own observations about students' self-advocacy and social skills to determine needs in these non-academic areas.

Several teachers reported that they were aware that they were providing more service time than the particular student actually needed. Many of the itinerant TODHH listed consultative services on the students' IEPs but continued providing direct instruction to the students during push-in or pull-out sessions. Several of the students served in this manner were reported to be functioning on grade level academically. These same students did not have equipment needs beyond their personal hearing aids, and one teacher commented that the student already had excellent self-advocacy skills even though she continued to provide instruction in this area. One teacher reported that she had difficulty determining an appropriate goal for a student who was "a very accomplished, high functioning student". In this case the goal for the student was to learn how not to rely on her mother, the notetaker, or the itinerant TODHH.

Student age. Teachers reported that they reduced direct instruction as students got older and more independent. This decision appeared to be dependent both on age and upon the students' ability to advocate in the general education classroom for their needs in relation to hearing loss. For example, one teacher reported that she reduced instruction as the DHH student got older so that he would not grow dependent on her and the services she provided. In this way she hoped to prepare him for more independence in high school and in the work place.

Many itinerant teachers reported that as their students got older, they would give them more autonomy and decision-making power. For example, one teacher reported that she gave an 8th grader the freedom to decide if he wanted to use the FM system.

Student or parent request. Some itinerant TODHH made decisions to increase or decrease instructional time at the students' or parents' request. For example, one student asked that services be reduced when he went into high school. Even though this decision was contradictory to the itinerant teacher's own recommendation based on the identified needs of the student, the teacher complied, reporting that the team did not want to force him to accept services. In another case, the student made a request for increased services because he noticed that another DHH student, who received more instructional time, was doing better in general education classes. In some situations, services were increased for a student at the parents' request. For example, one high school student's services were increased from consultation only to one hour per week of pull-out instruction so that the itinerant teacher could help the student prepare for the ACT and SAT college entrance exams.

Student performance in the general education classroom. A few itinerant TODHH indicated that they made service time decisions based on students' grades; those who did, stated that these decisions were made in collaboration with the students' general education teachers. Itinerant TODHH also made decisions to increase or decrease service time based on classroom test results and the students' standing in the general education classroom. Several teachers indicated that particular students' service times would be reduced or that they would be dropped from itinerant TODHH services altogether based on their exceptional performance in the general education classroom and on classroom

tests. A teacher who provided minimal services to a student, remained flexible from week to week and said she would provide additional time if the student needed immediate support in the general education classroom. Another teacher increased the DHH student's service time based on the recommendation of an experienced general education teacher. The itinerant teacher reported that she had become increasingly concerned about the student's lack of progress, but did not change the student's service time until urged by the general education teacher.

Provision of additional services. Teachers also based service time decisions on services DHH students received from other providers such as Speech Language Pathologists or special education teachers. For some itinerant teachers, particularly those serving students in rural areas, providing all the services the DHH student needed was difficult. They took advantage of additional services, such as resource room support from a special educator, to meet the student's needs. However, in some instances, these decisions were not based on student needs but on the need to alleviate time constraints or caseload sizes for the itinerant TODHH.

Reduction of itinerant teacher services occurred if DHH students spent increased time in a special education resource classroom. The teachers perceived this as an increase in independence because the students were going from one-on-one instruction with the itinerant TODHH to being able to function in a classroom with a small group of students.

In some cases, when students were receiving special education services in resource rooms, the itinerant TODHH did not provide direct academic support to the student, but was a consultant for accommodations related to hearing loss. For example, one student who was functioning several grade levels behind in literacy spent most of her day with

the teacher of learning disabilities in the resource classroom. The itinerant TODHH mentioned that she consulted with the resource and other teachers regarding the student's amplification because the student's only area of additional need was consistent use of her hearing aids.

Transitions. Teachers made decisions about service time based on transitions from one school to another, for example, from elementary to middle school. In some cases teachers indicated that they continued to provide services to higher functioning students to alleviate students' anxiety during these transitional periods.

Other teachers reported flexibility in service time decisions around transitional periods. They increased services when a student was transitioning from middle school to high school, for example, but reported they would decrease support time once the student adjusted to the transition. One teacher reported that when one of her students transitioned from elementary to middle school, there was a dramatic increase in the student's vocabulary needs. As a result, she increased direct service for a brief time so that she could pre-teach vocabulary. Another teacher was highly respectful of the student's wishes during a transitional period from one school to another. She recognized that the student wanted to remain in class as much as possible, so she made the decision to reduce service time and provide consultation services to the general education teacher.

Other. Many itinerant TODHH indicated that they made or maintained service time decisions based on a feeling of obligation to the student. Several teachers reported that although the students they served would "do fine" on a 504 plan, they had not yet transitioned the student to such a plan. One teacher stated that she continued providing services to a student who was functioning on grade level because she was seeing another

DHH student at the same time and could serve them together. She reported that the particular student did not have any educational needs stemming from his hearing loss and had made excellent progress the previous year.

One itinerant teacher reported that she felt it was her responsibility to provide support to general education teachers and staff members about teaching a DHH student. Several itinerant TODHH reported that they did not participate in a particular students' IEP service time decision because the decision had been made by another IEP team in another district; teachers indicated that they trusted the opinion of the previous IEP team.

Itinerant TODHH had to balance different requests for service time. One teacher reported that she had to “fight” to keep a student on services for two hours per week. The student had consistently made academic progress but had requested an increase in services. Although the special education director was opposed, the itinerant teacher was able to make a case for the student to remain on increased services until the end of that academic year. However, she expected that his services would be reduced to consultation the following school year.

Some teachers reported that they remained flexible about service time and always left time open to provide extended services to students who may need extra support at different times throughout the year. They did not report if this decision was made by the team or if the extra time the student was pulled from the general education classroom was a concern for the classroom teachers.

Discussion

Our findings indicate that the majority of DHH students in the sample received direct instruction in one or more academic areas from a TODHH. Typically, students

received services in one or two academic areas but an average of 18% of students received support in four or more academic areas. It is interesting to note that 40% of the DHH students did not receive academic support services from an itinerant TODHH. As students got older the percentage who received academic support decreased. We were not able to identify whether students who did not receive academic instruction remained on an itinerant teachers' caseload for non-academic services or for consultation.

The data from this study indicated that a substantial proportion (42%-59%) of students received reading and writing instruction from the itinerant TODHH. Although other researchers (Foster & Cue, 2009) have also reported that students receive direct instruction from itinerant TODHH in this area, this study documents that literacy instruction was provided to students in both elementary and secondary grades. This finding underlines the need for itinerant TODHH to be well prepared for literacy instruction at multiple grade levels.

Itinerant TODHH also provided direct instruction to DHH students in math, social studies, and science, although only 7 – 25% of students received service in these content areas. Because we did not obtain detailed information on the kind of instruction that itinerant TODHH provided we do not know if instruction in the subject areas focused on literacy and language support specific to the content. Teachers may have used these subject areas as a vehicle to teach particular learning strategies or study skills. Foster and Cue (2009) reported that itinerant teachers pre-teach or re-teach specific content. If this is the case, there may be a need for itinerant TODHH to have a working knowledge of the content areas for which they provide instruction.

A large percentage of students in this sample (61%) received direct instruction in non-academic areas such as self-advocacy, study skills, assistive technology, or social skills. A greater percentage of students received direct instruction in non-academic areas than in academic areas; while 80% of students received instruction in one or more non-academic areas; 60% of students received direct instruction in one or more academic areas. Our findings differ from Foster and Cue (2009) who reported that supporting student's development of personal and social skills (the areas we designated as non-academic skills) was the second largest category in which teachers reported working directly with students. It seems appropriate that DHH students receive support in the non-academic skills that are most likely to assist them across all academic areas. Teaching students study skills, learning strategies, and how to effectively use their assistive technology is likely to enhance academic engagement and learning in the general education classroom.

A detailed look at the non-academic areas of instruction revealed that most DHH students received instruction from the TODHH in the area of self-advocacy. The percentage of students receiving such instruction remained the same throughout elementary and secondary grades. Self-advocacy is a crucial skill for all students. Specific self-advocacy behaviors in which students engage are likely to change from elementary school to high school. Thus the focus on self-advocacy for students at all levels seems particularly appropriate

Some non-academic skills were emphasized during the elementary years, namely auditory skills and skills regarding assistive technology, while others, such as study skills and career development, were more likely to be taught to students when they were in

middle or high school. This division seems appropriate as once students have learned to use their amplification, or other assistive technology, they may not need additional instruction unless their technology needs change. Also, students who need to develop auditory skills are likely to have developed these by the time they reach high school. Additionally, middle and high school students are likely to have more autonomy when it comes to use of auditory skills and assistive technology.

Social skills were taught to a minority of students (15%). Interestingly, the percentage of students who received support services for social skills was nearly identical to the percentage of students who were identified as below average in social skills for this sample. Most DHH students in this sample were rated socially within the average range when compared to hearing norms (Antia, et al., 2011).

Luckner and Ayantoye (2013) noted that despite the widespread use of the itinerant model there has been no research on best practices. One practice that we attempted to explore was the relationship between student needs and the direct services provided by the itinerant TODHH. We did this by examining the relationship between students' achievement scores in reading, writing and math and the likelihood of receiving direct academic instruction from a TODHH in these areas in the following year. We expected that students who performed poorly in particular academic areas would be most likely to obtain services in that area from a TODHH in the subsequent year. Our findings indicate that a clear relationship existed between student reading levels and the likelihood of direct instruction in reading from the itinerant TODHH in the following year. However, the relationship between achievement and subsequent direct instruction in writing and in math was more variable over the five-year period. In general, however, our data show

that the neediest students are more likely than other students to get direct instruction in academic areas.

The data also show, however, that some high-performing students received direct instructional support while some low-performing students did not. The qualitative interview data indicated that many factors influenced decisions about service. The teachers reported that while they used achievement information they also took into account the student's age, student and parent requests, classroom performance, and other support services the DHH students were receiving. Most of these reasons seemed appropriate; however, in some cases students received direct services based on reasons such as a feeling of obligation or convenience that are less defensible.

Surveys (Luckner & Ayantoye, 2013; Power & Hyde, 2003) indicate that most itinerant TODHH believed that their services were effective, however, as pointed out by Luckner and Ayantoye, teacher perceptions, while valuable, are not sufficient to determine effectiveness. In the present study, several teachers who were interviewed expressed that the student did not need their services. Others provided reasons for service time decisions that had little to do with student needs. On the other hand, it was also clear that teachers made logical decisions on service time based on anticipated (rather than assessed) needs of students. For example, teachers reported that they increased service time during transitions from middle to high school, anticipating that students might require additional support. They also took into account parent and student requests thus honoring the spirit of the Individuals with Disabilities Education Act (IDEA) (2004), that decisions should be made by the entire IEP team, which includes parents, special

education teachers, general education teachers, related service personnel, and sometimes the student him/herself (Gartin & Murdick, 2005).

While IDEA clearly defines how a student qualifies for special education services, there are no guidelines available to assist with the determination of appropriate educational service time. The field needs to develop guidelines for how service time and type of direct services provided by itinerant TODHH are determined. Students should receive documented benefits from special education services (Yell, Shriner, & Katsiyannis, 2006).

Limitations

Like any study, this one has several limitations. The results are based on data collected from two states, Arizona and Colorado. Nationally representative data may tell a different story. We did not receive permission to collect demographic data about the itinerant teachers themselves and so do not have information about their education, expertise, or experience. Finally, we provided teachers with a list of direct service areas for check off. While academic subject areas do not necessarily need to be defined, other areas could have been better defined. Thus, for example, because we did not define study skills or learning strategies, we do not know what specific instruction might have been included in these two related categories. We did provide a write-in “other” category, and were able to classify most of the teacher responses by the pre-existing categories, so we believe that we did not omit specific areas in which teachers may be providing instruction.

Conclusions

Itinerant TODHH provide a range of academic and non-academic instruction to DHH students in general education classrooms. The primary areas for academic

instruction were reading and writing, while the primary area for non-academic instruction was self-advocacy. A larger percentage of students received instruction in non-academic areas than academic areas, which seems appropriate given that instruction in non-academic areas, such as self-advocacy and assistive technology, will benefit students in the general education classroom for other academic content.

For the most part itinerant TODHH are making decisions for academic instruction service time based on students' needs. However, the field should develop guidelines to provide better direction for itinerant TODHH, administrators, and other professionals to make service time decisions. These decisions are far too important to be left up to individuals without broad concurrence from our field.

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Table 1

Number and Percentages of Students Receiving Direct Academic Instruction from a TODHH by Year

| Number of areas of direct academic instruction | Year 2 N (%) | Year 3 N (%) | Year 4 N (%) | Year 5 N (%) | Average % Years 2-5 |
|--|-----------------|-----------------|-----------------|-----------------|------------------------|
| 0 | 46 (32) | 59 (41) | 61 (41) | 58 (45) | 40% |
| 1 | 29 (20) | 24 (17) | 30 (20) | 13 (10) | 21% |
| 2 | 32 (22) | 36 (25) | 20 (13) | 18 (14) | 19% |
| 3 | 20 (14) | 13 (9) | 6 (4) | 18 (14) | 10% |
| 4 | 8 (6) | 6 (4) | 15 (10) | 11 (9) | 8% |
| 5 | 8(6) | 7(5) | 9(10) | 2 (2) | 6% |
| 6 | 0 | 0 | 9 (10) | 9 (7) | 4% |
| Total N | 143 | 145 | 150 | 129 | |

Note. TODHH = Teacher of Deaf and Hard of Hearing

Table 2

Percentage of elementary and secondary students receiving instruction from a TODHH by academic area averaged across years

| Academic area | Elementary Students (Grades 2 – 5) | Secondary Students (Grades 6 – 11) | Total students |
|----------------|---------------------------------------|---------------------------------------|----------------|
| Reading | 56 | 42 | 46 |
| Writing | 49 | 43 | 43 |
| Math | 25 | 18 | 22 |
| Social Studies | 17 | 14 | 15 |
| Science | 7 | 12 | 11 |

Note. TODHH = Teacher of Deaf and Hard of Hearing

Table 3

Number and Percentages of Students receiving Non-Academic Instruction from a TODHH by Year

| Number of areas of instruction | Year 2 N (%) | Year 3 N (%) | Year 4 N (%) | Year 5 N (%) | Average % Years 2 - 5 |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|--------------------------|
| 0 | 29 (20) | 22 (15) | 32 (21) | 23 (19) | 19 |
| 1 | 39 (27) | 35 (24) | 43 (29) | 39 (30) | 23 |
| 2 | 29 (20) | 27 (19) | 30 (20) | 27 (21) | 20 |
| 3 | 23 (16) | 38 (26) | 22 (15) | 20 (16) | 18 |
| 4 | 9 (6) | 13 (9) | 14 (9) | 9 (7) | 8 |
| 5 | 6 (4) | 7 (5) | 3 (2) | 6 (5) | 4 |
| 6 | 7 (5) | 1 (1) | 2 (1) | 4 (3) | 3 |
| 7 | 1 (1) | 2 (1) | 3 (2) | 1 (1) | 1 |
| 8 | -- | -- | 1 (1) | -- | 0 |
| Total N | 143 | 145 | 150 | 129 | |

Note. TODHH = Teacher of Deaf and Hard of Hearing

Table 4

*Percentage of Elementary and Secondary Students Receiving Instruction from a TODHH
By Non-Academic Area Averaged Across Years*

| Non-Academic Area | Students Grades 2 – 5 | Students Grades 6 – 11 | Total Students |
|-------------------------|--------------------------|---------------------------|-------------------|
| Self Advocacy | 59 | 59 | 59 |
| Study Skills | 29 | 43 | 38 |
| Assistive Technology | 33 | 23 | 27 |
| Auditory Skills | 39 | 18 | 24 |
| Career Development | 3 | 21 | 16 |
| Social Skills | 19 | 14 | 15 |
| Learning Strategies | 15 | 18 | 12 |

Note. TODHH = Teacher of Deaf and Hard of Hearing

Table 5

Distribution of Direct Reading Instruction by Prior Reading Performance

| | Year 1-2 | | Year 2-3 | | Year 3-4 | | Year 4-5 | |
|-------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
| | N | % | N | % | N | % | N | % |
| | No | Yes | No | Yes | No | Yes | No | yes |
| Low | 15 | 38 | 29 | 43 | 26 | 31 | 15 | 21 |
| | <i>28</i> | <i>72</i> | <i>40</i> | <i>60</i> | <i>46</i> | <i>54</i> | <i>42</i> | <i>58</i> |
| Mid | 29 | 21 | 27 | 15 | 31 | 12 | 23 | 9 |
| | <i>58</i> | <i>42</i> | <i>64</i> | <i>36</i> | <i>72</i> | <i>28</i> | <i>72</i> | <i>28</i> |
| High | 8 | 4 | 13 | 2 | 10 | 2 | 9 | 1 |
| | <i>67</i> | <i>33</i> | <i>87</i> | <i>13</i> | <i>83</i> | <i>17</i> | <i>90</i> | <i>10</i> |
| Total | 52 | 63 | 69 | 60 | 67 | 45 | 47 | 31 |
| | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ |
| | 11.65 | .003 | 13.66 | .001 | 10.24 | .006 | 10.69 | .005 |

Note. Percent in italics. Bottom Rows represent Chi-Square Value and associated probability. Significant values are in bold type.

Table 6

Distribution of Direct Instruction in Language/Writing by Prior Performance

| | Years 1-2 | | Years 2-3 | | Years 3-4 | | Years 4-5 | |
|-------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | N | | N | | N | | N | |
| | No | Yes | No | Yes | No | Yes | No | Yes |
| Low | 21 | 29 | 30 | 40 | 38 | 24 | 18 | 19 |
| | <i>42</i> | <i>58</i> | <i>43</i> | <i>57</i> | <i>61</i> | <i>39</i> | <i>49</i> | <i>51</i> |
| Mid | 31 | 20 | 31 | 16 | 28 | 8 | 27 | 9 |
| | <i>61</i> | <i>39</i> | <i>66</i> | <i>34</i> | <i>78</i> | <i>22</i> | <i>75</i> | <i>25</i> |
| High | 6 | 6 | 7 | 4 | 11 | 1 | 5 | 1 |
| | <i>50</i> | <i>50</i> | <i>64</i> | <i>36</i> | <i>92</i> | <i>8</i> | <i>83</i> | <i>17</i> |
| Total | 58 | 55 | 68 | 60 | 77 | 33 | 50 | 29 |
| | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ |
| | 3.58 | .167 | 6.56 | .038 | 5.96 | .051 | 6.58 | .037 |

Notes. Percent in italics. Bottom rows represent chi-square value and associated probability. Significant values are in bold type.

Table 7

Distribution of Direct Mathematics Instruction by Prior Performance

| | Year 1 – 2 | | Year 2 – 3 | | Year 3 – 4 | | Year 4 – 5 | |
|-------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|
| | N | % | N | % | N | % | N | % |
| | No | Yes | No | Yes | No | Yes | No | Yes |
| Low | 20 | 7 | 36 | 10 | 25 | 18 | 25 | 9 |
| | <i>74</i> | <i>26</i> | <i>78</i> | <i>22</i> | <i>58</i> | <i>42</i> | <i>74</i> | <i>26</i> |
| Mid | 44 | 9 | 52 | 6 | 40 | 10 | 26 | 8 |
| | <i>83</i> | <i>17</i> | <i>90</i> | <i>10</i> | <i>80</i> | <i>20</i> | <i>76</i> | <i>24</i> |
| High | 9 | 2 | 9 | 3 | 14 | 0 | 11 | 0 |
| | <i>82</i> | <i>18</i> | <i>75</i> | <i>25</i> | <i>100</i> | <i>0</i> | <i>100</i> | <i>0</i> |
| Total | 73 | 18 | 97 | 19 | 79 | 28 | 62 | 17 |
| | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ | $\chi^2(2)$ | $p(\chi^2)$ |
| | .922 | .631 | 3.16 | .206 | 11.427 | .003 | 3.591 | .166 |

Note. Percent in italics. Bottom rows represent chi-square value and associated probability. Significant values are in bold type.