Knowledge and Attitudes of Faculty Members at a Saudi University Toward Deaf and Hard of Hearing Students in Higher Education

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Knowledge and Attitudes of Faculty Members at a Saudi University Toward Deaf and Hard of Hearing Students in Higher Education

A Dissertation

Submitted to the Graduate Faculty of the University of New Orleans in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Special Education

By

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B.A., Qassim University, 2009
M.A., University of Northern Colorado, 2014

May 2017
Dedication

To my father, Saleh Alajlan, and my mother, Hailah Algammas, who have supported me since I was a kid and have never stopped with their encouragement. Their support when I was home and after I came to the United Stated has never waivered or been diminished by time or distance.

To my wife, Albatool Abalkheel, who has stood with me in every moment, even though she is busy with her own studies. Her support always inspires me to be a better person.

To my daughter, Shayhanh, who came into this world while I was working on my master's and has been with us through all these hard days while her mother and I have both been busy with our doctoral degrees.

To my son, Wajeeh, whose first days will coincide with my graduation from the doctoral program.

To the rest of my family overseas, for their continuous support.
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Abstract

In Saudi Arabia, deaf and hard of hearing (D/HH) individuals rarely gain admission to Saudi universities, even though there is a law (i.e. the Disability Code) passed in 2000 to ensure that people with disabilities have equal access to post-secondary educational opportunities as their non-disabled peers. In the 16 years since the passage of this law, some attempts were made to enroll D/HH students in Saudi universities. Unfortunately, most of these attempts failed and therefore the actual enrollment of D/HH students in higher education is still limited. Possible reasons may include faculty members’ insufficient knowledge about, and negative attitudes toward, people who are deaf and hard of hearing. A literature review revealed few studies investigating faculty members’ knowledge and attitudes toward D/HH students. This study is designed to investigate the level of knowledge and the attitudes Saudi faculty members have about deaf and hard of hearing students. Data were collected through a convenience survey of selected faculty members in a single Saudi university. All participants in the study were faculty members (N=224) in the Humanities Colleges and Scientific Colleges at the university. A quantitative descriptive correlational analysis on the data revealed that faculty members who participated in the study generally have adequate knowledge about hearing loss and positive attitudes towards enrollment and instruction of this population of students. However, age, college type, academic rank and length of teaching experience were found to have significant effects on the knowledge and attitudes of faculty members, whereas gender was not a discriminating factor. Implications for deaf education in higher education institutions and recommendations for further study are provided based on the results of this study.

keywords: deaf / hard of hearing; higher education; Faculty members; Saudi Arabia; knowledge; attitudes
Chapter One

Introduction

The acquisition of a higher education has positive effects and impacts on the lives and careers of most individuals. As shown in the “Education Pays 2013: The Benefits of Higher Education for Individuals and Society” report, most people believe that obtaining higher education is necessary to achieving “healthier and more satisfying lives” with a “secure lifestyle” and for improving “the probabilities of employment and a stable career with a positive earnings trajectory” as well as for participating actively in civil society (Baum, Ma, & Payea, 2013). In many countries, including the United States (U.S.), deaf and hard of hearing (D/HH) individuals have the legally protected right, as do their hearing peers, to access higher education.

In the U.S., the country generally accepted as the leader in the field of deafness, the idea of enabling D/HH students to enroll in institutions of higher education originated in 1847 in the American Annals of the Deaf, a professional journal focusing on education and related services for D/HH individuals (Camp, 2011). In 1864, the first D/HH individuals began to enroll in the post-secondary program at the newly established College for the Deaf and Dumb in Washington, D.C (Armstrong, 2014). For the first 100 years higher education for D/HH individuals in the U.S. was relatively inadequate and limited compared to that available to their hearing peers. For instance, there were just 27 higher education programs in 1978 that had accepted deaf and hard of hearing students (Moores, 1982). However, with the passage of targeted legislation in the 1970s and 1980s, higher education opportunities for D/HH individuals in the U.S. were improved. Currently, D/HH students in the U.S. have access to a wide variety of programs and statistics show that there are about 28,000 D/HH individuals enrolled in post-secondary programs (Miller, 2015).
Unfortunately, access to extensive higher education opportunities is not the case in every country around the world. Ensuring the provision of higher education for D/HH students in certain other countries, including Saudi Arabia, the focus of the current study, is still only in the early stages. The passage of the Disability Code (referred to as the Code) in Saudi Arabia in December 20, 2000, afforded individuals with special needs, including those with hearing loss, the opportunity to access free and appropriate medical, psychological, social, educational, and rehabilitation services through public agencies. This Code also requires governmental agencies to provide assistance for eligible people to obtain welfare assistance, health, education, training, rehabilitation, employment, and complementary services (King Salman Center for Disability Research, 2004). The second area of article 2 of the Code is about education:

"This includes all phases of education (pre-school, general, vocational, and higher education) that are suitable to the abilities of the disabled and that are commensurate with their various categories and needs, including the continuous updating of curricula and services provided in this field." (King Salman Center for Disability Research, 2004).

Thus, some systemic level attempts enabling the enrollment of D/HH students at institutions of higher education did take place; but in reality the situation has not significantly improved in the 16 years that have passed since this Code was enacted.

Several factors contributed to the delay in the development of higher education opportunities for individuals in Saudi Arabia. These included: the lack of experienced faculty capable of teaching and working with this student population, the lack of training in methods of instruction, and an inability to engage in appropriate/accessible methods of communication with D/HH students. Attitudes of faculty toward D/HH students may also be negatively contributing factors. To determine the factors behind this lag in improving the enrollment of D/HH students,
and their subsequent successful achievement of a higher education, it is important to identify any issues involving faculty knowledge and attitudes.

Faculty knowledge and attitudes toward students, especially those who are differently abled (those who have a disability), have been shown to affect the success of these students (Sniatecki, Perry, & Snell, 2015). When knowledge increases and attitudes toward inclusion are positive, differently abled students’ academic success rates improve as well (Rao, 2004; Sniatecki, et. al. 2015).

Attitudes and knowledge are related. An increase in the knowledge about a subject can promote the development of positive attitudes concerning that subject (Staniland, 2009), especially because there is a relationship between attitudes and behaviors where an individual’s attitudes may predict his behavior (Ajzen & Fishbein, 2005; Festinger & Carlsmith, 1959; Fiske, Gilbert, & Lindzey, 2010; Smith, Terry, & Hogg, 2006; Wicker, 1969).

Identifying faculty knowledge about and attitudes toward D/HH students may allow institutions and educators to improve the situation in Saudi Arabia and accelerate the development of higher education opportunities for D/HH students (Jain, 2014). Assessing knowledge base is a rather straight forward process and faculty attitudes can be measured by investigating different factors, such as faculty readiness to make appropriate accommodations for students with disabilities (Becker, Martin, & Wajeeh, 2002; Bourke, Strehorn, & Silver, 2000), and faculty “preferences, feelings, emotions, beliefs, expectations, judgments, appraisals, values, principles, opinions, and intentions” regarding this group of students (Jain, 2014, p. 2).

**Significance of the Study**

This study focuses on knowledge and attitudes of faculty members in a Saudi university. In addition, it was designed to first document the existing rights of D/HH individuals to attend
institutions of higher education and then explore the means through which D/HH individuals can exercise those rights and be successful in academic endeavors when they do. D/HH students in a number of countries other than Saudi Arabia, such as the United States (U.S.) and Canada, often obtain degrees at mainstream colleges and universities alongside their hearing peers or at institutions dedicated solely to individuals who are D/HH such as Washington D.C.'s Gallaudet University and the National Technical Institute for the Deaf (NTID) in Rochester, New York. There are also universities that primarily serve hearing students, but accept and provide significant academic support for enrolled D/HH students, such as Pembroke College of Oxford University in the United Kingdom. Once graduated, these D/HH students can go on to make positive contributions to society and achieve greater independence.

Before passing the Disability Code in Saudi Arabia on December 20, 2000, no higher education programs existed that allowed D/HH students to enroll. After the passage of the Code, some attempts to enroll in Saudi colleges and universities took place, but most of them failed for reasons that need to be studied. Several factors may contribute to these difficulties, one of which is a “continuing attitude among the citizenry of some countries that deaf individuals are not capable of successfully completing a college or university education” (Brelje, 1999, p. 418). Most of the successful attempts were in 2-year programs in autonomous technical colleges. These programs are ongoing. Unfortunately, currently only one comprehensive university accepts D/HH students and their admission is limited to three programs in the Education College in that university. Given these factors, exploring faculty knowledge and attitudes toward D/HH individuals with a focus on the instruction of D/HH students appears to be a worthwhile research topic that may increase higher educational options, and ensure post-secondary academic success, for D/HH students in Saudi Arabia.
Purpose of the Study

This quantitative descriptive and correlational survey study is designed to explore the extent of the knowledge base in the area of hearing loss, and the similarities and differences in the attitudes and perceptions of faculty members in a Saudi university towards people, and in particular college students, who are deaf and hard of hearing. Survey respondents were faculty serving in two distinct types of colleges (Humanities Colleges and Scientific Colleges) within a single large Saudi university. Research is mixed on the effect of academic discipline on faculty knowledge and attitudes (Abu-Hamour, 2013, Murray, Wren, and Keys, 2008; Williamson, 2000). Given these previous findings, the author feels that it is important to investigate this variable in the present study.

Identifying faculty knowledge and attitudes and noting any differences between faculties of different types of colleges may ultimately help faculty members make changes in their instructional practices that will improve the success rates of future post-secondary D/HH students. If it is found that most faculty members have positive attitudes and a sufficient knowledge base, then D/HH students' enrollment and success at Saudi universities should simply be better facilitated administratively. However, if it is shown that many or most of the respondents have negative attitudes or deficient knowledge bases, the study would indicate the need for awareness programs and workshops to be conducted to better inform educators about this population so that, when D/HH enrollment increases, faculty will be appropriately prepared to work with these students.

Moreover, by creating a dialogue on a previously unexplored topic, this research can help open up more opportunities and chances for D/HH students to enroll in higher education programs in Saudi Arabia and, will in turn, have a positive impact on the individual lives of
D/HH Saudis. When D/HH individuals are able to access and successfully complete degree programs at institutions of higher education, the benefit is not just to the individual graduate but also to the society as a whole. As several studies have shown (Walter & Dirmyer, 2013; Walter, 2010; Walter, Clarcq, & Thompson, 2002; Schley, Walter, Weathers, & Hemmeter, 2011), D/HH individuals have more opportunities, better career choices, greater chances of obtaining professional work, a more secure lifestyle, prestige, and better emotional development when they possess higher education.

**Research Questions**

This study attempted to answer the following five questions:

1. What is the extent/level and accuracy of knowledge faculty members possess about D/HH students in a Saudi university?

2. To what extent does this level of knowledge vary dependent upon the college type (Humanities or Scientific) in which faculty members teach, their academic rank, age, gender, and their experience in teaching at an IHE?

3. What are the attitudes of faculty members in a single large Saudi university toward the enrollment and instruction of D/HH students in higher education?

4. Are there differences in the attitudes of faculty members in two different colleges (Humanities or Scientific) in a single large Saudi university towards the enrollment and instruction of D/HH students in higher education?

5. Are there attitudinal differences among faculty members in a single large Saudi university about the enrollment and instruction of D/HH students that are dependent upon their gender, age, academic rank, and their experience in teaching at an IHE?
Statement of Hypotheses

The research hypotheses of this study are:

1. There is a statistically significant difference between the knowledge of faculty members of Humanities Colleges and Scientific Colleges regarding the D/HH, where faculty members in the Humanities Colleges have a better understanding of D/HH students than faculty members of the Scientific Colleges.

2. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on college type, where those faculty members in the Scientific Colleges have less positive attitudes than those in the Humanities Colleges.

3. There is a statistically significant difference in the perceived readiness of faculty members to teach D/HH students where those in the Humanities Colleges feel more prepared to teach D/HH students than faculty members in the Scientific Colleges.

4. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on the faculty member’s age, where the older the faculty member, the less positive the attitude exhibited toward D/HH students and their enrollment in higher education.

5. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on the faculty member’s academic rank, where the higher the academic rank, the less positive the attitude exhibited toward D/HH students and their enrollment in higher education.

Definitions

For the purposes of this study, the following definitions were used to ensure consistency. They are arranged alphabetically in the following list:
**American Sign Language** (ASL): A sign language that uses the hands for communication with others, whether deaf or hearing, in place of a spoken language (Poe, 2006).

**Americans with Disabilities Act** (ADA): A provision passed in the U.S. in 1990 stating that "No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity" (Walter & Dirmyer, p. 4).

**Arab Open University** (AOU): A private university with many campuses located across several Arab countries in the Middle East, including Saudi Arabia.

**Arabic Sign Language** (ArSL): A sign language that most Arab deaf individuals use to communicate instead of spoken Arabic. ArSL differs in some of its grammar structures and vocabulary from spoken Arabic.

**Attitudes [A]**: "Relatively lasting clusters of feelings, beliefs, and behavior tendencies directed towards specific persons, ideas, objects or groups" (Baron & Byrne, 1984, p. 126).

**Deaf and Hard of Hearing** (D/HH): D/HH is an acronym that used for deaf and hard of hearing.

**Deaf**: A term that refers to an individual who has a decibel loss of 70 dB or greater, which most often prevents him/her from understanding speech through hearing alone, with or without a hearing aid (Menchel, 1995; Moores, 1996). “Usually, when referring to the audiological measure of deafness...a lowercase ‘d’ is [used] to describe hearing status. When referring to individuals who share a common [signed] language…a common history, and who do not view themselves as disabled but merely different from people who can hear, it is preferred to use the capital letter D.” (Reynolds, Richberg, Klein, & Parfitt, 2014, p. xi.)
Decibel (dB): The measure of the intensity (loudness) of a sound and “is [the] unit used to measure the degree of hearing loss” (Dudley, 1986, p. 10).

Faculty Members: Refers to instructors who teach at a university, college, or any post-secondary program, whether on a full- or part-time basis, regardless to their academic rank.

Gallaudet University: A public university located in Washington, D.C. that was initially established as the Columbia Institution for the Instruction of the Deaf and Dumb in 1864 by an act of the congress of the U.S. In 1894 the post-secondary arm of the institution was changed to Gallaudet College and in 1986 the college was granted university status.

Hard of Hearing: An individual “whose hearing is disabled to an extent (usually 35-69 dB) that makes it difficult, but does not preclude, the understanding of speech through the ear alone, with or without a hearing aid or cochlear implants” (Moores, 1996, p. 11).

Higher Education (HE): Post-secondary education offered by colleges or universities. Length of time required to obtain an undergraduate degree or certificate from these institutes varies, ranging from two to four years (Namour, 2012).

Institution of Higher Education (IHE): Any post-secondary degree granting institution such as a community 2-year college, 4-year college, or university granting graduate level degrees.

Knowledge [K]: The basic foundational information that, for purposes of this study, faculty members have about D/HH individuals.

National Technical Institute for Deaf (NTID): The NTID is the first and largest technological college in the world for students who are deaf or hard of hearing.
Oralism or Oral Communication: A spoken language where D/HH individuals "use lip reading, spoken language and voice training" to communicate (Poe, 2006, p. 1).

Perception: The way of regarding, understanding, or interpreting something (Perception, 2016).

Rochester Institute of Technology (RIT): A private university located in Rochester, New York. RIT is composed of nine academic colleges, including National Technical Institute for the Deaf.

Simultaneous Communication (Sim-Com): A method of communication used with D/HH individuals that involved lipreading, speech, and a signed language produced simultaneously (Ayres, 2004).


Conceptual Framework

Figure 1.1 The Unit's conceptual framework. This figure illustrates the theory-practice-research interaction model of the College of Education and Human Development in the University of New Orleans.
The development of this study is informed by the conceptual framework of the programs in education and counseling at the University of New Orleans (UNO) as provided in Figure 1.1. The framework focuses on the dynamic interaction of theory, research, and practice. For the current research, theories outlining attitudes and perceptions, such as Walker’s theory of the relationship between people’s attitudes and their social behavior (1969) and Fincham and Foster’s theory of the relationship between attitudes and beliefs (2005) form the foundation of the study. Improving practice, in this case the successful inclusion of deaf and hard of hearing students in higher education in Saudi Arabia is the ultimate goal. The results of this research will, hopefully, open greater avenues to higher education for deaf and hard of hearing individuals in Saudi Arabia.

**Organization of the Study**

This study is presented in five chapters. Chapter 1 provides essential information and it presents an overview of the study, including its introduction, its purpose, its background, its significance, the research questions and hypotheses, and a list of definitions. Chapter 2 begins with a brief presentation of the history of deaf education with a specific focus on educational post-secondary opportunities for students who are deaf or hard of hearing worldwide. The literature review continues in chapter 2 with an investigation of research comparing faculty knowledge and opinions and perceptions of students with disabilities and the subsequent academic success of such students. Chapter 3 introduces the design and methodology of the study and presents the study’s limitations. Chapter 4 presents the analysis of the data on knowledge base and attitudes towards individuals who are D/HH collected from a sample of faculty members at a specific Saudi University who teach in two distinct colleges. Finally, in
chapter 5, the results are discussed, interpreted in context, and recommendations are made for future investigations.

**Summary**

Deaf and hard of hearing individuals’ ability to enroll and succeed in Institutions of Higher Education (IHE) has been shown to improve their lives socially and financially and to open career opportunities that are not available without a college education. However, not all D/HH individuals have the chance to go to in Institutions of Higher Education. In Saudi Arabia, D/HH individuals rarely gain admission to Saudi universities, even though there is a law (i.e. the Disability Code) that passed in 2000 to ensure that people with disabilities get equal post-secondary educational opportunities as their non-disabled peers. Access to successful post-secondary education not only involves the ability of people with hearing loss to enroll in Institutions of Higher Education, but for those faculty members who will teach them to have the knowledge, attitudes, and instructional skills to make these students’ experiences beneficial. The present study was designed to investigate this topic and to that end it focused on the knowledge and attitudes about people with hearing losses of faculty members of two distinct colleges in a single large Saudi university.
Chapter Two
Literature Review

Introduction

Since the focus of this study is the knowledge and attitudes of faculty members concerning hearing loss and deaf and hard of hearing (D/HH) people, a short presentation of some of the most salient dimensions of these topics follows. This presentation of relevant information includes audiological definitions of various degrees of hearing loss, communication models, systems and language used by D/HH individuals, the delays in language development often seen in D/HH children, language related deficits in academic achievement and the academic ability of D/HH students.

The chapter also includes discussions of the historical trends in the education of D/HH students in post-secondary higher education programs, and laws and legislation concerning the education of D/HH students in Saudi Arabia as well as the United States (U.S.). Historically, the U.S. has been the international leader in disability rights legislation and instructional practices. Often, once the U.S. passes disability rights and education legislation or adopts new practices in the instruction of students with disabilities, other countries, in short time, follow. For example, The Americans with Disabilities Act (ADA), first passed in 1990, paved the way for The Disability Discrimination Act of Australia (1992) and The Disability Discrimination Act of the United Kingdom (1995). In a ‘white paper’ published by the Canadian Disability Policy Alliance and authored by McColl, Schaub, Samson, and Hong (2010) this fact is acknowledged. “The Disability Discrimination Act was enacted by the British Parliament in 1995 and, as a civil rights law, borrows extensively from the American model” (p. 24). They continue,
“As the first national disability law, the ADA was highly influential; its language of human rights and characterization of disabled persons as a discrete oppressed minority group has been imitated by other Western countries seeking to afford persons with disabilities similar protection under federal law” (p. 24).

In the Arabic speaking world, Jordan has been recognized as the leader in disability rights legislation. The Franklin and Eleanor Institute and World Committee on Disability awarded Jordan with the FDR International Disability Award in 2005. When giving the award, the chairman of the organization, Michael R. Deland, noted that Jordan, “was the first country in the Arab World to pass legislation based on the Americans with Disabilities Act (ADA), which was adopted by the United States in 1990” (Rutherford, p.1).

Although, the disability laws and actions section of this literature review focuses mainly on Saudi Arabia, landmark advances in the U.S., which so often have subsequent global reach, are also presented. Additionally, recognizing that the majority of readers of this work will come from either the U.S. or Saudi Arabia, a brief presentation of one another’s historical past in this area seems worthwhile.

Relevant information about knowledge and attitudes of the general public and higher education faculty members about disability and people with disabilities and more specifically, individuals with hearing losses is also presented in this chapter.

**Information on Hearing Loss and People with Hearing Loss**

The accepted acronym for “deaf/hard of hearing” people is ‘D/HH’. Scholars distinguish between these two groups (Deaf; Hard of Hearing) in terms of degrees of measured hearing loss. Individuals who are considered deaf are people who are diagnosed with a decibel (dB) loss of 70 dB or greater, which prevents them from understanding speech through the ear alone, with or without a hearing aid (Menchel, 1995; Moores, 1996). Although an individual with a 70-90 dB loss of hearing might be a candidate and receive cochlear implants, the individual is still
considered ‘deaf’ rather than ‘hard of hearing’, as all with 71-90+ dB hearing loss are routinely called deaf by the medical and educational communities. The category of ‘deaf’ includes any person who has “predominantly profound or severe hearing losses without the use of hearing aids” (Lang, 2002, p. 267). People commonly distinguish between “Deaf” and “deaf” (big D and small d). According to Reynolds, Richburg, Klein, and Parfitt (2014), the main difference between “Deaf” and “deaf” is that the lowercase word, ‘deaf,’ is used when discussing audiological measurements of deafness. On the other hand, the capitalized word, ‘Deaf,’ is utilized to refer to the people who share a common culture, use a common language (e.g. American Sign Language [ASL]) and usually do not view themselves as disabled, although, most countries do include the term D/HH in legal definitions of disability.

Ladd (2003) distinguished between the two differently, referring to them in terms of the age of onset of the hearing loss and the preferred way of socializing, stating that the lowercase word refers to individuals who lost their hearing late in life and prefer to continue within the majority hearing community of which they are already a part. In contrast, Ladd stated that the capitalized word ‘Deaf’ refers to those who lost their hearing at an early age and who prefer the community of similarly abled individuals who use sign language and possess a distinctive culture in a similar fashion to those of other minority groups.

In contrast, a hard of hearing individual is a person who has decreased ability in recognizing sounds, varying in degree from a slight inability to complete deafness (Stedman, 2000). This definition is based on a description of hearing functioning, rather than on specific degrees of hearing loss. On the other hand, Moores (1996) defined a hard of hearing individual using a measure of decibel hearing loss. He states that a hard of hearing individual is a person “whose hearing is disabled to an extent (usually 35-69 dB) that makes difficult, but does not
preclude, the understanding of speech through the ear alone, with or without a hearing aid" (p. 11).

Based on these definitions of deaf and hard of hearing, whether general or precise, D/HH individuals are defined as people who have an inability or difficulty in hearing spoken languages clearly with or without the use of hearing aids. The Ministry of Education in Saudi Arabia adopted a definition of D/HH based on degrees of decibel loss. Therefore, in Saudi Arabia, a hard of hearing individual is one whose hearing loss level ranges from 25 to 70 dB; and, a deaf individual is one whose hearing loss level is 71 dB and above. Because this study focuses on Saudi Arabia, these definitions are used for classification purposes.

A major focus of the current study is evaluating the knowledge base of the faculty participants regarding individuals with hearing losses. To that end and with the naïve reader and faculty member in mind, a presentation of basic facts about people who are D/HH follows.

**Language**

**Language development and language acquisition.** Language consists of words, cognitive structures, and thoughts that are present in the mind and conveyed to others through different communication modes. These can be spoken, written, or signed. Several studies have found a negative relationship between language development and early hearing loss (e.g. Freese, 2008; Hoskin & Herman 2001; Swanwick, Oddy, & Roper 2005). No matter what degree of loss a child has, there is likely to be a risk of language delay (Moeller, Tomblin, Yoshinaga-Itano, Connor, & Jerger, 2007). In most cases, the earlier in life this loss occurs, the greater the language deficit. Additional non-linguistic effects on the language development of D/HH individuals also may occur due to hearing loss. According to Agro (2014), hearing loss also has
negative effects on self-confidence. D/HH individuals may feel isolated because they cannot communicate with hearing individuals very well.

To overcome this deficit, extra effort must be expended toward the facilitation of language acquisition. In the past, individuals often believed that children with hearing loss would be much better at acquiring a visual language such as sign language (Spencer & Lederberg, 1997). However, with the development of medical technology and improved methods of amplification, spoken language acquisition is now much easier for D/HH children (Harkins & Bakke, 2011). Still, the essential question is: No matter the input channel, how does a person, whether with hearing loss or not, acquire language?

If the child with a hearing loss does not have a consistent, correct, constant, and easily accessible model for language development, language skills suffer greatly. Since it is estimated that 90% of children with hearing losses are born to hearing parents, access to early language models is limited (National Institute on Deafness and Other Communication Disorders, 2016). Often this deficit in language skills is carried throughout the D/HH person’s life affecting situations where language competency is essential, such as attendance in higher education programs. However, according to Nicholas and Geers (2006), early intervention and the use of amplification -- such as hearing aids and cochlear implants -- does help the D/HH child with spoken language acquisition.

Human language is not restricted to just the spoken form, it can also be signed. Meaning in sign language is in part expressed through facial expressions that are linguistically based body movement, gestures, and manual signs (Wilbur, 2011). For Deaf children, this visual-kinesthetic form of language can be acquired and developed gradually in a natural way, similar to the manner in which spoken language is developed by hearing children (Wilbur, 2011).
Acquiring a language, spoken or signed, is affected by environmental, biological, and social factors. Research has shown that a D/HH child develops sign language normally if there are Deaf people regularly interacting with the child (Lane, Hoffmeister, & Behan, 1996). This is demonstrated by D/HH children with Deaf parents who tend to learn sign language easily from the models of the signed language used by their parents. A child also can acquire signing proficiency through early intervention programs or during early education (Moores, 2010). Again, the key to signing proficiency is having correct, constant, and consistent language models present in the environment of the D/HH child who is developing signing proficiency. Lederberg, Schick, & Spencer (2013) stated that D/HH children with Deaf parents who are native signers have normal language development and similar skills to those of their hearing peers. Deaf children born to hearing parents who must learn sign language at the same time they try to model it to their D/HH children are at a linguistic disadvantage from the start (Mitchell & Karchmer, 2004).

**Communication methods.** At the root of almost all educational successes and challenges facing a person who is D/HH is not hearing loss but deficits in language abilities. Language is a system for communicating with others and creating analytical thinking as a foundation for learning in and out of school. To overcome communication challenges and obstacles, deaf and hard of hearing individuals need to acquire and develop competence in a first language at an early stage of life. According to Mahshie (1997), this requires parents of D/HH children to decide early what language model or linguistic input they will provide to their child.

Individuals who are D/HH often have their own methods of communication with one another and for communication with hearing people. Although several methods have been developed, the three most common are (1) sign language without speech, (2) oralism or oral communication, and (3) Simultaneous Communication (Sim-Com). According to Poe (2006),
sign language uses the hands for communication and interaction with others, whether deaf or hearing, in place of a spoken language. Therefore, sign language is a physical method of visual communication. People with severe and profound hearing loss often prefer to use sign language in their communication, particularly with other D/HH people but also with the hearing population who understand sign language. Several sign languages are utilized in the world including: American Sign Language (ASL), Arabic Sign Language (ArSL), and British Sign Language. Sign languages differ just as spoken languages differ.

Some D/HH individuals prefer to use a method which incorporates oral cues. According to Poe (2006), instead of sign language some D/HH individuals "use lip reading, spoken language, and voice training" (p.1). Oral cues help D/HH individuals communicate more easily with hearing people. This method is most successfully used by those with mild-to-moderate hearing loss (Poe, 2006). Another method is Sim-Com, which Ayres (2004) described as a method based on lip reading, speech, and a signed language utilized concurrently to communicate. This method is more successful when addressing groups that include hearing and D/HH people because it enables one’s audience members to track meaning through whichever method of communication is most easily understood, whether that is a signed language, the hearing of spoken language, or lip reading (Poe, 2006).

**Differences between ASL and spoken language.** Sign language is not the same as spoken language. American Sign Language (ASL), as an example, has its own grammar and vocabulary that is different from spoken English. It has a fingerspelling alphabet to code English letters and its own idioms that are different from spoken English ones (Marschark, 2005). Because of this difference in idioms and vocabulary, it is difficult for signers to find the exact meaning of each English idiom and phrase and therefore it is not accurate to say that these two
languages can be produced simultaneously (Spencer & Marschark, 2005). When Sim-Com is used it is important to note that the signed portion of the communication is not ASL, rather it is the use of signed vocabulary words in spoken language order.

**Arabic Sign Language.** Arabic Sign Language (ArSL) also has its own characteristics that differ from spoken Arabic. Each of the two languages has its own grammar, with the grammatical structures of ArSL said to be ‘basic’ (Abdel-Fattah, 2005). When interpreting from spoken Arabic, ArSL interpreters do not have to interpret every single word since the two languages are not simultaneously the same. Ideas rather than words are translated between the two languages because, like communication in ASL, words in ArSL “do not follow the same order of their spoken or written counterparts” (Abdel-Fattah, 2005, p. 216). With all these differences between sign and spoken languages, sign languages in general have a greater relationship between forms of words and their meanings than spoken languages (Brennan, 1987).

**Assists and Assistive Technology**

Deaf and hard of hearing students may need assistance in receiving and producing information to and from hearing people. This can be fulfilled by having interpreters that translate for them allowing the D/HH students adequate access to knowledge and promoting better communication interactions with their hearing peers. D/HH students integrated into mainstream schools, such as some universities, often need to be supported by having interpreters and note takers (Napier & Barker, 2004). Hired interpreters should be professionals who have advanced levels of language proficiency (Viera & Stauffer, 2000). Even though interpreters help in translating knowledge and communication, D/HH students may still need note takers to help them access knowledge and information (Hastings, Brecklin, Cermak, Reynolds, Rosen, & Wilson, 1997).
Michaels and McDermott (2003) stated that assistive technology (AT) "may be one of the greatest equalizing forces in the education and meaningful inclusion of students with disabilities both in terms of promoting access to the general curriculum and in facilitating the ability of students to demonstrate mastery of that knowledge" (p. 29). A wide variety of assistive listening devices and hearing technologies exist, including, but not limited to, hearing aids, sound boxes, FM systems, and cochlear implants. Hearing technology can improve the hearing of those with some existing function, however, it generally cannot improve the hearing of D/HH people to the levels experienced by typical hearing persons. According to Reynolds et al. (2014), "hearing aids can make sound louder, but they cannot make sounds clearer" (p. 170).

Technologies that support communication between D/HH individuals and others, hearing or non-hearing, are also available. These help D/HH individuals to communicative clearly and competently. Examples of these technologies include computers, Video Relay Services (VRS), web cameras, real time captioning, video remote interpreters, and speech-to-text/voice recognition tools such as Caption Mic or Dragon® Naturally/Speaking. A review of these technologies, among others, is found in Gierach (2009). Real Time captioning is a commonly used system in many U.S. universities. It enables D/HH students to access information through an immediate translation of the lecture to text by stenographers and special processing programs (Bishop & Collier, 1997). Similar to the situation in the United States, when a D/HH student enrolls in any higher education program in Saudi Arabia, the institute generally provides interpreters and assistants for the student.

General speaking, technologies that improve and/or develop the hearing and communication of D/HH people can be used to facilitate learning and allow students to achieve academically on a level comparable to that of their hearing peers. Such tools are particularly
helpful at the higher education level. According to Lartz, Stoner, and Stout (2008), using AT in public schools will improve the learning experience of D/HH children which in turn allows this group to experience the same success in educational opportunities and careers as their hearing associates. The positive effects of AT have been quantified by studies which show an increase in the number of D/HH students using technology to facilitate communication, particularly through the use of computers and e-mail programs. (Bowe, 2002; Ward, Wang, Paul, & Loeterman, 2007).

**Education of D/HH in the U.S.**

**Academic Ability and D/HH Students.** Some studies (e.g. Brelje, 1999; Lang, 2002; Hall, 2005; Noble, 2010) have indicated differences in academic ability between D/HH and hearing students in higher education settings. Lang (2002) and Noble (2010) attributed these difference to the challenges faced by D/HH students when accessing higher education where issues such as the lack of academic preparation, the lack of appropriate accommodations, and a myriad of difficulties integrating into the hearing-focused social world of the typical university come into play. These challenges cause some D/HH students to withdraw from higher education programs citing the psychological pressure to conform or “fit in” with the hearing world and the difficulties of communicating with hearing peers and professors as reasons for their withdrawal (Hall, 2005). Low academic achievement of D/HH students in higher education programs is often attributed to problems these students face in elementary, intermediate, and high school programs prior to accessing post-secondary learning (Brelje, 1999). These factors hinder the academic progress of D/HH students as well as create a feeling of constant struggle in the education environment (Antia, Jones, Reed, & Kreimeyer, 2009). These issues also mean that D/HH students may not achieve grades that accurately reflect their intelligence even though IQ
test scores of D/HH students have been found to be commensurate with those of hearing students (Agro, 2014). To help D/HH students to better succeed in higher education, appropriate accommodations must be made available. D/HH students may also benefit from mentor programs that help them understand the purpose of obtaining higher education, achieve appropriate motivation, and recognize the benefits of meeting the demands of the academic environment in which they find themselves (Pascarella & Terenzini, 1991).

While not describing the specific strategies implemented to ensure retention of D/HH students, Harris (2012) presented statistics from California State University-Northridge’s program aimed at increasing D/HH student retention rates in the Undergraduate Deaf Studies Program. These statistics reveal how targeted efforts can make a difference. Twenty-Nine D/HH students enrolled in the program in 2004; 17 of these graduated on time for a 62% retention rate. In 2006, the number of D/HH students enrolled in the program increased to 38; 20 of these graduated on time for an increased retention rate of 71%. Three years later in 2009, the number of enrolled D/HH students had dropped to 25, but the retention rate had increased to 84%. In the following year, 29 D/HH students were enrolled in the program in 2010, all of whom graduated on time for a 100% retention rate (Harris, 2012).

Some data seems to show variations in D/HH student retention and graduation that appear to be connected to the program in which the student is participating. For example, in reviewing statistics from 1970-2015 on cumulative percentages for graduation among D/HH students at Rochester Institute of Technology (RIT) and the National Technical Institute for the Deaf (NTID) which is RIT’s sole college devoted to the educational and social needs of D/HH students, the highest graduation percentage was 52% from career focused programs. This percentage includes both Associate and Bachelor’s degrees. Career focused programs cover a
wide range of technology majors, such as: accounting technology, administrative support
technology, applied computer technology, business technology, and visual communication. In
addition to those who achieved Associate or Bachelor’s degrees, 5% of D/HH students in career
focused programs acquired Master's degrees in Science in Secondary Education from NTID
(R.I.T., 2015).

Graduation rates of D/HH students in the other colleges of RIT are lower than those of
D/HH students who participate in programs at NTID. From 1970 to 2015, just 34% of D/HH
students enrolled at RITs main colleges were able to graduate. During the same time period, 66%
of D/HH students enrolled at NTID graduated. At RIT, about 7% of D/HH students received
degrees from the College of Imaging Arts and Sciences; just 1% were graduated from the
College of Engineering. In 2015, four D/HH students graduated from the College of Health
Sciences and Technology and 25 D/HH students graduated from the College of Business (R.I.T.,
2015). Overall, the annual reports for NTID from 1970 to 2015 show that the percentage of
D/HH students graduated from the College of Arts and the College of Technology exceeded the
number graduated from other programs, such as the College of Health, College of Engineering,
and College of Science.

Trends in the Education of D/HH students (K-12). The development of the general
field of education has occurred gradually over the centuries and, in modern times, over decades.
In the historical past, pedagogy was not a very advanced field and education techniques and
trends tended not to change dramatically – if they changed at all. Relatively recent innovations in
the field, such as research on effective teaching and the introduction of technology, have greatly
advanced methods over just a few decades.
Since 1975 in the United States, five patterns of educational placement for deaf and hard of hearing students have been seen: (1) Residential schools that house (when necessary) and educate students during the week; (2) Day schools, found primarily in large metropolitan areas, exclusively educating D/HH students in an otherwise standard school day length setting; (3) Classes designed for D/HH students within regular public schools; (4) Resource Room programs inside standard public schools where trained teachers provide D/HH students with individualized skill development, tailored to age, level of hearing, and/or academic ability; and, (5) ‘Push-in’ programs in which D/HH students attend general education classes with hearing peers and also receive specialized instruction from an itinerant teacher who provides differentiated lessons on a daily or weekly basis within the general education classroom (Moores & Meadow-Orlans, 1990).

From 1974 to 1986, there was a noticeable decrease (35% or 6,945 students) in the number of deaf students attending public residential schools in U.S. and an increase of about 29.8% (or 8,163) in the number of students attending public day classes (Moores & Meadow-Orlans, 1990). In the U.S., the drop in enrollment at separate “deaf schools” in favor of attendance at local public schools where the D/HH students are integrated with hearing students is attributable to the implementation of The Education for All Handicapped Children Act (P. L. 94-142) that President Gerald Ford signed into law 1975. In addition to the requirement that students with disabilities be educated with non-disabled peers to the maximum degree possible (Least Restrictive Environment clause), the law calls for “nondiscriminatory testing and for an individualized education program (IEP) for each student with special needs” (Moores & Meadow-Orlans, 1990, p.125). An IEP is created with parental input, outlines the student’s individual needs, and determines the steps the school will take to meet them.
Following the passage of the Americans with Disabilities Act (ADA) in 1990, inclusion of D/HH individuals in day-to-day activities of life, including matriculation in institutions of higher education (IHE), in U.S. continued to increase. Subsequent re-authorization of PL 94-142, renamed the Individuals with Disabilities Education Act (IDEA), occurred in 2000 and again in 2004 and strengthened this trend at the primary and secondary educational levels. IDEA directs schools to implement systems for mainstreaming and emphasizes institutional inclusion of students with IEPs in general education rather than specialized self-contained classrooms. These evolutionary steps in special education law in the U.S. created considerable advancements for deaf and hard of hearing students and influenced similar changes worldwide.

Education in Saudi Arabia

**Education in Saudi Arabia in the modern era.** When King Abdulaziz Al-Saud took control of the Al-Hijaz region in 1925, he established the Council of Education. With the subsequent formal establishment of the Kingdom of Saudi Arabia in 1932, the Saudi government was determined to develop the educational system in order to create a pioneering program of offerings in the region (Royal Embassy of Saudi Arabia, 2016).

In 1929, the Saudi government, through the actions of the Education Directorate, issued its first Policy of Education, consisting of 88 sections distributed among 7 chapters. Under this system, education became more formalized. In 1936, the Saudi government began to offer scholarships for students to study abroad. This practice was outlined in Section 34 of the Policy. The second Policy of Education was issued in 1938 and consisted of 196 sections distributed among 11 chapters (Hakeem, 2012).

Although there were clearly a number of efforts to develop and support education in Saudi Arabia, until the discovery of oil and the accompanying dramatic improvement to the
economy, the process was slow in the time period from 1932 until 1945 due to a lack of funding (Hakeem, 2012). Starting with the economic boom that began in 1945, and within just six years, the government built 226 schools where 29,887 students were educated (Royal Embassy of Saudi Arabia, 2016). In 1952, the government established the Ministry of Education for Boys to replace the Council of Education. At this time, there were about 323 schools in the different regions of the country (Umm al-Qura University, n.d.). The Ministry of Education for Boys was, as the name suggests, responsible for the education of boys enrolled in three stages: a) primary consisting of six grades; b) intermediate consisting of three grades; and, c) secondary which also had three grades. The number of such schools expanded quickly. There were 1,670 schools by 1970; 4,803 by 1980, and 7,153 schools had been established by 1990. This explosive expansion in boys' education continued with 11,032 schools established by 2000 (Al-Soghair, 2007).

The Saudi government established the General Presidency for Girls' Education in 1959; seven years after the Boys’ Council had been created (Umm al-Qura University, n.d.). This organization employed the same educational system as that in place for boys, with some modifications. The government established 17 schools for girls in the first year and 37 in the next (Al-Aqeel, 2005). The increases in the numbers of girls’ schools then began to mirror those seen in the boys’ program, with 838 girls' schools by 1972, 7,069 by 1992, and 11,432 by 2002 (Al-Hadlaq, 2014). Since 2000, the number of girls’ schools has exceeded the number of those for boys, reflecting the recognition by the Saudi government of the need to provide education for all citizens, but especially for girls who may not necessarily have the same opportunities to travel abroad to acquire education in other counties.

In 2003, the Saudi government merged the Ministry of Education for Boys with the General Presidency for Girls' Education into one Ministry of Education (Al-Aqeel, 2005). With
the enormous development of the Saudi economy through the expansion of the oil industry, the government continued to emphasize the importance of education and maintained its progress in opening schools all around the country (Al-Mousa, 1999). The total number of schools in 2013 was 34,749 and that number included 16,039 schools for boys and 18,710 schools for girls.

Education in Saudi Arabia is free to all students, including those with disabilities. The Ministry is responsible for building and maintaining all the schools. It also develops curricula and provides all textbooks – again, at no charge. Additionally, the Education Ministry, in consultation with the Ministry of Finance, is charged with recruiting and placing teachers. Finally, the Education Ministry also provides training and developmental programs for teachers, principals, and other educators (Hakeem, 2012).

**Special education in K-12 in Saudi Arabia.** During the early years after the establishment of the Kingdom in 1932, special education was not a priority in schools and there were few efforts to enroll students with disabilities in public schools. Families of students with disabilities tended to try to educate their children at home (Alquraini, 2010). This situation began to change in 1958, when the government established training programs for blind students to teach them how to use the Braille system of reading (Al-Salloom, 1995). In 1960, the Ministry of Education opened the country’s first school for blind boys, the Al-Noor Institute. One hundred and ten students joined the school in its first year (Afify, 2000).

In 1962, the Administration of Special Education was established (Hakeem, 2012). The Council of Ministers approved this department, set up under the Education Ministry, with Resolution No. 2385. The first school for blind girls was opened in 1964 and, in the same year, the Ministry also opened two deaf schools in the Al-Amal Institute: one for boys and another for
girls (Al-Kheraigi, 1989). This was the start of formal education dedicated specifically to deaf
and hard of hearing students in Saudi Arabia.

At that time, educators in the country were focused on developing programs specifically
designed to educate students in particular categories of disability in order to meet the special
needs of each. In 1972, the Administration of Special Education was renamed the General
Directorate of Special Education and was given more authority to administer to the needs of this
key group of students. Based on a proposal from some Saudi educators, students with disabilities
were divided into three categories: deafness, blindness, and cognitive disability. These changes
were implemented under Resolution No. 40/36/4/61 (Al-Mousa, 1999) and the first school for
students with intellectual disabilities was opened in the same year in 1972 (Alquraini, 2010).

With the establishment of the General Directorate of Special Education, education
services for those students with disabilities grew rapidly and expanded throughout all regions of
Saudi Arabia. The Directorate worked on developing and training teachers, establishing new
programs, developing and adapting curricula, and providing tools and materials designed
specifically for students with disabilities (Al-Mousa, 2005).

In 1983, the name was changed from the Directorate to the General Secretariat of Special
Education with an added mandate to develop and open new special education programs in all
regions of Saudi Arabia (Al-Mousa, 1999). The Council of Ministers approved the General
Secretariat with Resolution No. 3189. Subsequently, several programs were created for students
with disabilities, especially those in the three established categories. The General Secretariat of
Special Education divided administrative responsibilities into divisions of disability including:
deafness, learning disability, blindness, intellectual disability, autism, and multiple disabilities
(Al- Mousa, 1999).
From 1960 until 1987, a total of 27 schools were established for students with disabilities in the country. Ten of these schools were for D/HH students, another ten were for blind students, and the seven remaining schools were dedicated to the education of students with intellectual disabilities. Some of these schools were regular day schools and others were residential institutes where students lived full-time (Aldabas, 2015). In 1987, a tremendous advancement in Saudi Arabian special education was experienced and the government opened quite a few new schools and institutes for these students; the number of such schools increased from 27 to 54 between 1987 and 1990 (Aldabas, 2015). In other words, the number of schools for those with disabilities doubled in three years.

In 1990, the Ministry of Education also began to develop special education programs within the public schools, creating a more inclusive system for students with mild-to-moderate cognitive disabilities, mild-to-moderate autism disorders, blind students, and D/HH students but it was on a limited scale (Al-Mousa, 2010). Students with disabilities enrolled in these programs within the standard public schools but were educated in designated, separate classrooms. This system was one of partial inclusion for only some students with disabilities. The number of special education institutes and programs had grown to roughly 66 by 1995, serving 7,725 students with various disabilities (Al-Khashrmi, 2003). The numbers of such offerings then increased rapidly and by 2000, 512 programs existed serving 21,439 students (Al-Mousa, 2010). Since 2000, the emphasis and interest in providing special education programs has continued to grow and Saudi Arabia had 1,126 programs by 2002 (Al-Mousa, 2010). However, most institutes and programs were centered in large cities. The need for programs in less urban areas was quickly recognized and, in 2005, several programs opened in small cities to bring the total nationwide to 1,875 programs serving 43,379 students. The number then jumped to 3,239
programs serving 61,986 students in 2007, and to 3,657 programs in 2009 serving 70,449 students (Al-Mousa, 2010).

Today, thousands of public and private special education institutes and programs are found in both cities and villages throughout Saudi Arabia for students with a variety of disabilities. Students with severe or multiple disabilities continue to be educated at dedicated institutes and special schools that work on developing their academic and social skills (Alquraini, 2011). However, the majority of students with mild-to-moderate disabilities receive their education in standard public and private schools.

**K-12 schools for D/HH students in Saudi Arabia.** The first formal efforts to establish education for deaf and hard of hearing children and youth began in 1964, when the Ministry of Education established two institutes for D/HH students in Riyadh; one for boys and one for girls. These both bore the name Al-Amal Institute (Hakeem, 2012). Later, other branches of the institute were opened in several other cities in Saudi Arabia under the same name. In Arabic, “al-Amal” means “hope” and/or “ambition,” reflecting the belief that D/HH people are able to achieve their hopes and dreams in life through improved access to education. The Al-Amal Institute program is an eight-year program that starts with a two-year pre-school program open to children as young as 4-years old. A student then moves to the first grade at 6-years of age and moves through the levels until graduation from sixth grade. The Al-Amal Institute is a standard elementary school with the curriculum adapted to accommodate D/HH students.

According to the Saudi Association for Hearing Impairment (2014), the Institute began with just 41 D/HH students and 11 teachers. The main method used for communication and instruction was and still is Arabic Sign Language. The program includes studies on: religion, Arabic, sciences, and mathematics (Aldabas, 2015). At the time the Institute opened, there was a
lack of teachers trained to work with the D/HH. Therefore, in 1968 the Ministry of Education coordinated with the United Nations Educational, Scientific and Cultural Organization (UNESCO) to create a program to train 30 male and 30 female teachers. During this six-month program, educators were taught specialized methods for teaching D/HH students, aiding them in developing their abilities and addressing their specific needs. They also learned about social education, the psychology of D/HH students, and how to get D/HH students into appropriate sports and athletic activities. The program familiarized these teachers with new tools and materials to aid them in working with deaf and hard of hearing students (Saudi Association For Hearing Impairment, 2014). Also in 1968, the Ministry of Education worked on improving the level and quality of D/HH education with efforts such as the establishment of scholarships for principals and teachers to study instructional methods used to teach D/HH students in England (Saudi Association for Hearing Impairment, 2014). This work in the late 1960s is considered the start for D/HH education in Saudi Arabia.

With the return of these internationally trained teachers and with the passage of time, the Ministry of Education was able to open additional new institutes for D/HH students. In 1971, two Al-Amal Institutes were opened in Jeddah, the biggest city in the west of Saudi Arabia – again, one school was for boys and the other for girls. The following year, two gender-specific intermediate Al-Amal Institutes were opened in Riyadh. D/HH students enter intermediate Al-Amal Institute when they complete elementary school. These institutions focused on developing the academic, technical, and vocational skills of D/HH students in order to assist this population in acquiring technical jobs.

In 1975, Al-Amal Institutes were established in Al-Ahsa, a city in the east of Saudi Arabia; another pair of institutes were opened in Jeddah in 1980 (Hakeem, 2012). Subsequently,
the Ministry began to establish intermediate institutes throughout the country. The number of Al-Amal Institutes has increased so that, at this time, most regions of Saudi have ample schools to meet the needs of virtually any D/HH student in the country. According to the Saudi Association for Hearing Impairment (2014), there were 14 Al-Amal Institutes in 1988, continuing the upward shift in emphasis on addressing the educational needs of D/HH students. In 1989, the Ministry of Education opened a secondary institute for D/HH students, called the Secondary Technical School. Similar secondary institutes were then opened in the different regions of Saudi Arabia to further increase both higher education and career opportunities for D/HH students (Embabi, 2003).

When inclusion policies were implemented in K-12 schools in Saudi Arabia in 1990, a number of D/HH students enrolled in the new D/HH programs located in schools that previously had been limited to hearing pupils (Al-Mousa, 2010). These programs were instituted gradually throughout all regions of the country and by 2004 approximately 298 D/HH programs existed in Saudi Arabian schools; by 2007, there were 420 such programs (Al-Mousa, 2005/2010). One drawback to this progress in the area of inclusion was the determination of the Ministry of Education to close all the dedicated D/HH intermediate and secondary institutes, maintaining only the elementary ones. As a result, at this time, when a D/HH student graduated from an elementary level Al-Amal Institute, the only option was to continue education at a hearing school in a dedicated D/HH class. As of 2017, most cities and villages have their own inclusive D/HH programs and the Ministry of Education continues to open new D/HH programs within standard schools. The abundance of such programs is partially attributable to the fact that the Ministry has determined that the most constructive environment in which to education D/HH students is one with a very small number of students. Deaf and hard of hearing classrooms have a mandated 9:1
student: teacher ratio. If a program must accommodate more than 9 D/HH children, the Ministry opens another D/HH classroom within the same school.

To encourage and facilitate access to educational opportunities, the Ministry of Education pays a stipend to all Saudi students with disabilities in K-12 grades. The Ministry also pays for any equipment a student requires -- such as hearing aids. These students also receive cards that entitle them to receive a 50% discount on air travel. And, specialized centers for hearing diagnosis and speech/hearing therapy have also been established. These centers provide free services to any student who needs them (Embabi, 2003).

**Post-Secondary Education for D/HH Individuals**

Currently, in the U.S., deaf and hard of hearing students seeking higher education have access to all public, and most private, institutions, and to appropriate modifications as needed. However, this was not always the case. Higher education for D/HH students has passed through several stages and evolved over the past 250 years. Higher education for students who are D/HH in Saudi Arabia has a much shorter history.

**Post-secondary education for D/HH students in the United States.** In the United States, there are two federally funded institutions of higher education specifically for D/HH students: Gallaudet University and the National Technical Institute for the Deaf. These two institutions developed very differently although both were instrumental in providing specialized higher education for D/HH students as it is experienced today. Both draw students from around the world.

In 1856, Amos Kendall, a wealthy and well-connected Washington, D.C. insider, was asked to participate in the establishment of a school for deaf, mute and blind children. He donated the land on which the elementary school, the Columbia Institution for the Instruction of
the Deaf and Dumb and the Blind, was built. Subsequently in 1864, the school was approved by Congress to begin granting college degrees and the college program was designated the National Deaf-Mute College. It continued to operate under this name until 1954 when it was renamed Gallaudet College.

Eventually, as the school expanded, a determination was made to divide the programs and separate the grade school area from that of the collegiate offering. The elementary program was designated the Kendall School for the Deaf. Over time, high school level coursework was offered and in 1970 the Model Secondary School for the Deaf was established on the campus.

The school was designated a university under the Education of the Deaf Act, Public Law 99-371, which was signed into law in 1986 and this law renamed the college (Gallaudet University, 2016). Gallaudet University was the first IHE in the U.S. to offer higher education exclusively to deaf and hard of hearing students. The university offered a number of programs under the Liberal Arts and Sciences school.

Today, Gallaudet University is considered the foremost IHE serving the post-secondary educational needs of D/HH people in the world, offering undergraduate and graduate programs in many majors. These programs qualify students for a variety of careers and professions. In a report to the U.S. Office of Special Education and Rehabilitation Services (OSERS) Gallaudet University (2017) reported that the total student enrollment for the spring semester 2017 was 1,774, with undergraduate student enrollment of 1,348, and graduate student enrollment of 426.

The other notable U.S. IHE addressing focusing on the higher education needs of D/HH students is the National Technical Institute of the Deaf (NTID). NTID was established in 1965 and is sponsored by Rochester Institute of Technology (RIT), which was founded in 1829 as the Athenaeum. Locating NTID on RIT’s Rochester campus greatly widened the opportunities for
deaf postsecondary education; the school is essentially the technical counterpart to Gallaudet University (Rochester Institute of Technology, n.d.). Today, NTID is one of the nine colleges that make up RIT. NTID offers undergraduate and graduate programs focused primarily on majors in the sciences. NTID reports that as of the fall semester 2016 there were more than 1,350 D/HH students at NTID, primarily in undergraduate programs. International students at the Institute comprise 3% of the total student population and represent 16 different countries (Rochester Institute of Technology, 2016).

In addition to these academic institutions specifically dedicated to the post-secondary needs of D/HH students, educational opportunities at non-deaf oriented IHEs that offer appropriate modifications and supports has greatly increased. For example, according to Moores (1982), by 1975, 27 postsecondary programs in the U.S. accepting D/HH students; 77 such programs existed by 1978; and, 86 by 1980. In fact, by the 1982, about 80 colleges nationwide stated they offered programs tailored for deaf students (Moores, 1982, p. 310).

From the 1989-90 academic year through the 1992-93 academic year, about 37% of the 5,000 2-year and 4-year postsecondary education institutions in the U.S. stated they provided special support services to D/HH students. Services in academic year 1992-93 included: classroom notetakers (at 75% percent of institutions), sign language interpreters (67%), tutors (65%), assistive listening devices (33%), and oral interpreters (20%). About 29% of institutions also provided additional support services, such as "testing accommodations, counseling or advising, assistance with registration, classroom seating arrangements, tape recording of class sessions, and advocacy or consultation with instructors" (Lewis & Farris, 1994, p. iv).

According Lewis and Farris (1999), about 23,860 students with hearing loss were enrolled in higher education in the United States during academic year 1997-1998. The number
of deaf students obtaining higher education has therefore increased dramatically since the 1970s. However, Lang (2002) noted that “even with the expansion of support and access services provided in higher education programs over the past decade, the failure rate remains, on average, dismal” (p. 268) hovering near the 25% where only one of every four D/HH students graduates. Lang attributed this failure to the rareness of research investigating problems in the field of education regarding the success rates of differently-abled students. Such research would drive educators and institutions to optimize conditions for learning and determine solutions through the implementation of methods that promote educational success in a timely manner.

In 1996, the U.S. Department of Education established the Postsecondary Education Programs Network (PEPNet) because "institutions of higher education continue to be in need of technical and personnel assistance in supporting" their D/HH students (Miller, 2015, p 19). PEPNet is a national collaboration of four regional centers that provides technical assistance for D/HH students and academic institutions after these students graduate from K-12 schools. The goal of PEPNet is to enhance the capacity of institutions so that they may more appropriately serve this group of students. By 2007, with these service improvements and advancements in educational support, there were about 28,000-30,000 D/HH students enrolled in higher education programs in the U.S. and fewer than 3,000 of these students attended the federally-funded programs at Gallaudet and NTID (Miller, 2007). In the past, many D/HH students made their higher education decisions and developed their career aspirations based on what programs they could access at deaf focused IHEs such as Gallaudet University and NTID. Post-millennium, D/HH students can choose to attend any college or university in the U.S. and be assured of receiving the support services they need to be successful.
Higher Education in Saudi Arabia

Academic and vocational post-secondary education programs can dramatically improve developing countries economically and socially. In Saudi Arabia, higher education passed through several phases until it arrived at its current status.

The Ministry of Education established the first college in Saudi Arabia in Mecca in 1949; the next was also built in Mecca in 1952 under the name of Teachers College; and then in 1953, the government established two colleges in Riyadh in 1954 (Ministry of Higher Education, 2013). Because of the keenness of the Saudi government to develop higher education, the Ministry made a concerted effort to expand higher education that resulted in four colleges being built in five years. The plan also included the establishment of the country’s first university, King Saud University, in 1957 (Saleh, 1986). Initially, as post-secondary options in Saudi Arabia slowly developed, there was a difference between colleges and universities. Universities offered many majors while colleges focused on a single major such as the College of Arabic Language. By 1975, as the number of colleges and universities had increased, the Saudi government created a separate entity for higher education, the Ministry of Higher Education. The Ministry of Higher Education had the following responsibilities:

1. Proposing the establishment of higher educational institutions and authorizing the offering of special programs in accordance with the country’s needs;
2. Creating and administering universities and colleges in the Kingdom;
3. Raising the level of communication and coordination between institutions of higher learning and other governmental ministries and agencies regarding their interests and needs in higher education; and,
4. Representing the government abroad in all educational and cultural affairs, through various cultural and educational offices in over 32 countries. (Ministry of Education, 2015)
Traditionally, like most IHEs in the U.S., the colleges within Saudi universities are generally divided into two tracks: a humanities and social studies track (Humanities Colleges) and a sciences track (Scientific Colleges). The former includes subjects such as: religion, language, education, social studies, and humanities. The latter includes subjects such as: computer science, medicine, mathematics, physics, chemistry, and engineering. During the late 1970s vocational and training colleges were added under a department called the Technical and Vocational Training Corporation (TVTC). Such colleges had previously existed but were separately administered by three ministries: the Ministry of Education, the Ministry of Labor and Social Affairs, and the Ministry of Municipal and Rural Affairs (Technical and Vocational Training Corporation, 2014) – depending upon the nature of the training provided.

The Saudi government wanted to develop and prepare Saudi youth to be an essential part of the workforce and to develop participation in technical and industrial fields. To achieve this, the Council of Ministers established the TVTC and merged all the technical institutes and vocational training centers under the new Corporation with Royal Decree No. 30/M, in 1979. In support of the “Resolution of the Superior Committee of Educational Polices No. 209,” a statement issued in 1982 which emphasized the necessity of developing and supporting technical training centers and technical colleges as well as other potential paths by which students could access higher education (Technical and Vocational Training Corporation, 2014).

Currently, there are 54 vocational and training colleges across 13 regions separately serving men and women, and offering a variety of majors such as electronic technology, electrical engineering, mechanical engineering, computer science, telecommunications, and information technology. Some of these institutions offer two-year associate degrees while others offer four-year Bachelor programs (Technical and Vocational Training Corporation, 2016). The
increase in post-secondary education options in Arabia Saudi has been dramatic. Currently, approximately 203 universities and colleges across the country offer graduate and undergraduate studies programs that grant associate, bachelor’s, master’s, and doctoral degrees in a wide range of fields (Alamri, 2011).

**Preparation of teachers to serve students with disabilities.** Establishing departments of special education within Saudi universities helped to develop K-12 special education services and increase the number of trained teachers in the country. In 1984, King Saud University opened the first Special Education Department in a post-secondary institution. This program offered an undergraduate Bachelor’s for teachers. The program had five tracks or focus areas of education to prepare pre-service teachers to work with students with the following exceptionalities: blindness, deaf and hard of hearing, intellectual disability, learning difficulty, and gifted and talented. The program prepared many new teachers to work with students with disabilities or special needs and to help such students develop their academic and social skills (Al-Khashrmi, 2003). Several other universities then followed in the footsteps of King Saud University in creating their own special education teacher preparation departments. These additional programs allowed the government to provide K-12 schools with enough specialized teachers, in both administrative and education areas, to begin to meet the needs of special education students. Today, there are about 20 universities and colleges in the country that offer special education teacher personnel preparation programs granting graduate and undergraduate degrees in the education of students with disabilities.

**Post-secondary education for D/HH students in Saudi Arabia.** After the announcement of the Disability Code in 2000, many universities and technical colleges worked to increase D/HH student enrollment. Some of these efforts were successful and implemented for
the long-term; others were short-lived and did not help as many students as would have been expected. To create a more uniform program to encourage this student population’s enrollment, the Technical and Vocational Training Corporation (TVTC) created the first higher education program for D/HH students.

In 2004, TVTC began to give D/HH students admission to study at specific colleges, such as those focusing on computer sciences, telecommunications & information technology, and home economics. Most TVTC institutions offer associate degrees. These colleges continue to encourage D/HH student enrollment at a number of institutions across the 13 regions in Saudi Arabia. Examples of some prominent TVTC institutions are the College of Telecom & Information in Riyadh and the Buraidah College of Technology.

In 2005, the Arab Open University (AOU) in Riyadh started offering the first Bachelor’s program for D/HH students. AOU is a private university that occupies several campuses located throughout the Middle East offering programs that include: information technology and computing, language studies, business studies, and educational studies. However, AOU admissions for D/HH students were limited to only the educational studies program offered in Saudi Arabia. Three classes of D/HH students were graduated from this program and then the university stopped offering the degree. In addition, no precise information is available on the program’s success nor the success of its D/HH graduates. The reasons behind the cancellation of the degree were not disseminated.

In 2010, King Saud University gave permission for some D/HH students to enroll in its Education College, in a four-year program that results in a Bachelor’s degree upon completion. All D/HH students are required to pass a rehabilitation program prior to beginning their first semester. This Education College program allowed D/HH students to choose to study in any of
the following three areas: special education, art education, or physical education. To date, six male D/HH students and 21 female D/HH students have enrolled. In 2016, a Deaf individual, who had gotten his Bachelor’s degree from the Arab Open University (AOU), was the first D/HH student to be enrolled in King Saud University’s Master’s degree program in the Education of Deaf and Hard of Hearing Students. He became the first D/HH individual to be awarded a graduate degree from a Saudi University.

**Laws and Legislation Concerning the Education of D/HH Students**

Education programs are empowered when the government institutes regulations and legislation that expand opportunities for students. In the United States, numerous court challenges (e.g. Brown versus the Board of Education of Topeka Kansas, Rowley versus the Board of Education of Hendrick Hudson School District, Argenyi versus Creighton University, Endrew F. versus Douglas County School District) and laws (e.g. ADA, IDEA, Section 504 of the Rehabilitation Act of 1973) have paved the way for D/HH students to access education opportunities. In Saudi Arabia, there are also legislative actions the Saudi government implemented in order to facilitate the delivery of special education services. This section reviews the most important such policy actions and the resulting impacts on education and students with disabilities.

The Saudi government created Sections 54-57 and 188-194 in the “Policy of Education in Saudi Arabia” that was passed into law in 2000 (Alanazi, 2012). These sections stated that educating students with disabilities and those who are gifted is a responsibility of the Saudi education system. These policies resulted in the rapid development and expansion of special education in Saudi Arabia, the recognition of the problems that face about 20% of students with
disabilities in public schools around the world, and the acknowledgement that special education is beneficial for students with disabilities. (Al-Mousa, 2005).

To provide the best services for students with special needs, in 1962, 1972, 1973, and again in 1983 the Council of Ministers approved resolutions targeting the development of special education services in Saudi Arabia. The General Secretariat of Special Education in the Ministry of Education also put into place a strategic education plan comprised of 10 principles in 1996. These principles were focused on expanding the role of public schools in the provision of special education and increasing the support to institutes that specialize in the field of special education (Al-Mousa, 2005).

The Disability Code currently in place was initiated with Royal Decree No. M/37 of 2000 that approved Resolution No 224 (2000) of the Council of Ministers. The Disability Code consists of 16 articles each of which deals with a specific domain. Article 2 guarantees the delivery of certain essential services to individuals with disabilities and their families. These include: housing, healthcare, welfare support, education, training, work placement, social programs, participation and access to culture and sports, and other services necessary to allow those with disabilities to participate in society to the full extent possible. The action also addressed the role mass media plays in educating the community at large about disabilities.

Under the Education section, it is stated that individuals with disabilities have the right to free education at all educational stages (i.e., pre-school, elementary, secondary, vocational training, and higher education), depending upon their abilities and accommodation needs (King Salman Center for Disability Research, 2004). This law, in particular, was crucial to the expansion of post-secondary opportunities for young adults who are D/HH.
Employment of D/HH Individuals

Obtaining a degree in higher education is considered a conduit to a better work life post-graduation and higher education as a whole is viewed as a "growth industry" (Schley, Walter, Weathers, & Hemmeter, 2011). Higher education increases one’s chances for better jobs, more comfortable lifestyles, and improved economic status (Williams & Swail, 2005). However, because just a low percentage (about 25%) of D/HH individuals enroll in post-secondary programs in the U.S. (Lang, 2002), this population faces difficulties and challenges in obtaining employment. Accordingly, some studies indicated that D/HH individuals achieve far greater gains when a degree in higher education is part of their background. This is reflected in the types of jobs these degreed individuals acquire compared to those of D/HH individuals who do not possess higher education degrees (Walter & Dirmyer, 2013; Walter, 2010; Walter, Clarcq, & Thompson, 2002; Schley et al., 2011). Besides getting better jobs and higher salaries, D/HH individuals with higher education degrees tend to achieve higher social status, prestige, and emotional development (Schley et al., 2011). These positive outcomes support the need for programs that ease the entry of D/HH individuals into universities and colleges. In support of this thinking, the Americans with Disabilities Act (ADA) became law in 1990 to protect, among others, the rights of D/HH individuals to be free from discrimination when seeking employment (Reynolds et al., 2014).

Employment of D/HH individuals in the United States. Most deaf college graduates successfully gain employment and go into the labor force. In a longitudinal follow-up of 240 deaf college graduates, Schroedel and Geyer (2000) found that just 5 percent of participants were unemployed, while 95 percent of participants were in the labor force. Even though some D/HH individuals have traditionally felt a sense of inequality in career advancement as compared with
hearing peers, employment opportunities and are directly related to the increasing number of D/HH individuals who obtain higher educations. As shown in data collected in 2011 by U.S. Department of Commerce, most D/HH adults work in the field of office and administrative work, transportation and production, construction and sales, management, building and ground keeping, repair and maintenance, medical and healthcare, and food preparation and serving. Fewer numbers work in education, training and library science, business and finance, personal care and protective and security services (Employment Data for Adults Who are Deaf and Hard-of-Hearing, n.d.).

**Employment of D/HH individuals in Saudi Arabia.** One of the challenges that face D/HH individuals in Saudi Arabia is employment. The Disability Code in 2000 has ensured D/HH individuals' right to be hired for the same jobs as hearing applicants. In reality, D/HH individuals do not fill jobs that require certain levels of education and skills such as teaching in schools, instead those D/HH individuals who join the work force in Saudi Arabia usually are employed in low paying office jobs. Many specialists attribute the paucity of D/HH individuals working in more sophisticated jobs to the deficits in their skills and their lack of qualifications due to the limited number of post-secondary programs in which D/HH individuals can enroll.

**Attitudes and Knowledge about Disability and People with Disabilities**

**Attitudes [A].** Eagly and Chaiken (1993) defined an attitude as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p. 1). Baron and Byrne (1984) noted that attitudes are "relatively lasting clusters of feelings, beliefs, and behavior tendencies directed towards specific persons, ideas, objects or groups" (p. 126). Attitudes are also defined as the final result or summary of an evaluation of an object or thought (Malhotra, 2005). Some researchers (Ajzen & Fishbein, 2005; Festinger &
believe that there is a relationship between attitudes and behaviors, and that an individual’s attitudes may predict the person’s behavior.

The field of social psychology began to focus on the idea of “attitudes” in the early 20th Century and the concept was the subject of many different studies that examined attitudes about social issues (Thomas & Znaniecki, 1918). Theories on attitude evolved from the construct held by some psychologists that there is a relationship between people’s attitudes and their social behavior (Wicker, 1969). Theorists felt that attitudes play a significant role in shaping social interaction and the reactions of individuals to certain issues (Jain, 2014; Wicker, 1969).

Although there are a number of definitions of the word ‘attitude’, when psychologists use the term they refer to the different opinions and feelings individuals possess toward people (or objects), their ideas, and their behaviors. Hewstone, Fincham, and Foster (2005) stated that, "beliefs, feelings and behavior towards an object can influence attitudes towards it; and reciprocally attitudes towards an object can influence beliefs, feelings and behaviors towards it" (p. 363).

**Knowledge [K].** Attitudes are related to knowledge. One of the foundations for developing positive attitudes and behavior is having both enough and adequate knowledge (Staniland, 2009). Knowledge can be defined as differing from the concepts of perspective and discipline. The Oxford Dictionary defines knowledge as, "Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject" (Knowledge, 2016). People differ in the depth and breadth of knowledge they have about individuals with disabilities depending upon their personal backgrounds and experiences.
Knowledge and attitudes held by the general public about disability and people with disabilities. It has been the aim of several researchers to investigate what constitutes “adequate” knowledge on the part of the general public regarding different disabilities. These researchers found that the ‘average’ person exhibited limited understanding of the concept of disability and of people who possess disabilities (Alem, Jacobsson, Araya, Kebede, & Kullgren, 1999; Aminidav & Weller, 1995; Gordon Feldman, Tantillo, & Perrone, 2004; Tachibana & Watanabe, 2003; Tachibana, 2006). In some studies, subjects were unable to even recognize the degree or type of disability a presented individual possessed. For instance, only 24% of participants, of diverse ethnicities, were able to recognize intellectual disability (Scior & Furnham, 2011). The ‘average’ person also seems to be confused regarding the different terminology that is used to describe types of disability and may conflate the characteristics and needs of persons with differing disability diagnoses.

However, when it comes to the attitudes of the general public, it has been noted that attitudes toward individuals with disabilities seem to be impacted by what are perceived to be the prevailing attitudes within the community or country at large. For example, although just a few people in a study based in England expressed openly negative attitudes toward those with disabilities, the common attitude in the media and among the general population was that this group possessed less-than-average/normal ability and that large proportion of the general non-disabled population did not feel comfortable having individuals with disabilities in positions of authority (Staniland, 2009). In the United States, the negative attitudes toward those with disabilities were obvious and this was reflected in the lower wage rates available to such individuals. Baldwin and Johnson (2000) investigated the reasons behind poorer workforce outcomes for those individuals with physical disabilities, and found that such individuals,
although capable of work, generally achieved lower wage rates due to negative attitudes resulting in discrimination and prejudice. 

The negative attitudes of the general public have been found to not only involve doubts regarding the abilities of individuals with disabilities but promote the belief that these workers deserve lower wage rates. Such negative attitudes are evident in “derogatory stereotypes, beliefs that people with disability have a lesser position in society or that they have a diminished capacity to contribute due to their impairment” which results in maintaining “social distance from people with disability” and the exclusion of “them from their social networks” (Thompson, Fisher, Purcal, Deeming, & Sawrikar, 2011, p. 2).

Knowledge and attitudes of the general public about D/HH people. At times in the greater ‘hearing world’, D/HH individuals are considered “outsiders” whose social image is marked by negative stereotypes. D/HH people tend to suffer prejudicial attitudes mainly resulting from a lack of adequate knowledge on the part of the general public on how to communicate with D/HH individuals and a poor understanding of the abilities of members of the D/HH community (Munoz-Bael & Ruiz, 2000). Negative attitudes have been shown to be persistent over a span of years (DeLambo, Chandras, Homa, & Chandras (2007). These negative attitudes arise in different forms, such as: casual use of stereotypical negative metaphors (e.g., “It fell on deaf ears.”), derogatory and antiquated terminology (e.g., deaf and dumb), and, false beliefs about D/HH individuals (e.g., deaf people are cognitively disabled) (Nikolaraizi & Makri, 2004/2005). These negative attitudes, in turn, have negative effects on the social relationships and successful integration of D/HH individuals (LaBelle, Booth-Butterfield, & Rittenour, 2013), their healthy social and emotional development (Stuart, Harrison, & Simpson, 1991), and, their

Hearing people who know and use sign language have been found to exhibit more positive attitudes toward D/HH individuals than those who do not, suggesting that knowing how to communicate with Deaf individuals has positive effects on the hearing person’s knowledge and attitudes toward people who are deaf and hard of hearing (Nikolaraizi & Makri, 2004/2005). This is especially true in diverse communities (such as those in larger universities) that have a large population of D/HH individuals (Coryell, Holcomb, & Sherer, 1992). It has also been found that the average person tends to have a more positive attitude toward D/HH people when acquainted with a person of equal or higher status who happens to be deaf or hard of hearing (Cooper, Rose, & Mason, 2003). Women and younger people also tend to exhibit more positive attitudes toward D/HH individuals than men and older people (Cooper, Rose, & Mason, 2003). Self-esteem also has been found to be a discriminating factor for determining the attitude a given person will exhibit toward people who are deaf or hard of hearing. People with high self-esteem have been found to be more positive toward the D/HH than those with only average or low self-esteem (De Laat, Freriksen, & Vervloed, 2013).

Knowledge and attitudes of IHE faculty members about individuals with disability.

Higher education faculty members’ knowledge of, and attitudes toward, individuals with disabilities obviously impacts the quality of education such students receive and the level of inclusion such people experience in society. It is postulated, therefore, that if faculty members possess adequate knowledge of students with disabilities and knowledge about modification, their attitudes toward this population will be positive or at least comparable to their attitudes toward students without disabilities and that, as a result, they will provide all the
accommodations and modifications necessary to creating an environment conducive to successful outcomes for their students with disabilities (Sniatecki, Perry, & Snell, 2015). Several studies in various communities have focused on this issue (Abu-Hamour, 2013; Cook, Rumrill,
& Tankersley, 2009; Hong & Himmel, 2009; Leyser, Vogel, Wyland, & Brulle, 1998; Sniatecki, Perry, & Snell, 2015; Williamson, 2000). For example, Hong and Himmel (2009) investigated the knowledge, attitudes, and practices of 116 faculty members at an American university toward people with disabilities. The data they collected was from a mid-sized university with a total of 4,300 enrolled students. They focused on the variables of faculty gender, years of experience in higher education, work status, number of total students taught each semester, and experience working with students with disabilities. In general, the faculty members were found to have adequate knowledge of, and to exhibit positive attitudes toward, students with disabilities.

Lombardi, Murray, and Dallas (2013) suggested conducting research comparing faculty across disciplines to see if there is a significant difference based upon their academic disciplines. Such a comparison may reveal the relationship between faculty knowledge and attitudes dependent on their academic backgrounds and teaching areas. Some studies (e.g. Abu-Hamour, 2013) found that there was no significant difference in the attitudes of faculty members toward students with special needs dependent upon their academic discipline (i.e. colleges type). In contrast, Murray, Wren, and Keys, 2008; Williamson, 2000) found that this variable has effects on faculty members’ attitudes.

Williamson (2000) explored the attitudes of 71 faculty members at an American university toward students with a variety of disabilities Participants included both male and female instructors. Of their subject population, 32 were employed full-time and 39 were adjunct instructors. Instructors were based in different colleges, including Education, Business, and Arts
& Sciences. Having broken down faculty attitudes toward students with disabilities by participant gender, age, academic rank, academic unit, years of teaching experience, and previous contact with students with disabilities, Williamson found that faculty members generally have positive attitudes toward students with disabilities.

In a recent study, Abu-Hamour (2013) investigated the attitudes of 176 higher education faculty members toward efforts aimed at integrating students with a range of disabilities into a public university in Jordan. Of the participants, 57.1% were male and 42.9% were female; 14.7% were full professors, 30% were associate professors, and 55.3% were assistant professors. Analysis of the data showed that the majority of faculty members exhibited positive attitudes toward the inclusion of students with disabilities in higher education (about 85.9%, n=146). A higher percentage of male participants were found to have negative attitudes (83.3%) compared to female participants (16.7%); assistant professors presented as more positive toward inclusion (65.2%) than associate professors (24.4%) or full professors (10.4%); and, faculty members who had fewer years of experience (1-5 years) exhibited more positive attitudes toward inclusion of students with disabilities in higher education (57.8%) than those with 6-15 years of teaching experience (37.8%) and those with more than 15 years of experience (4.4%). However, there did not appear to be a significant relationship between attitudes and the areas of academic discipline (Humanities Colleges and Scientific Colleges), awareness of legislation regarding inclusion efforts, previous experience with higher education students with disabilities, and whether the instructor had undergone training on how to teach students with disabilities.

Abu-Hamour also found that respondents in Jordan who exhibited positive attitudes had previously taught students with disabilities; had found those students able to complete all the requirements of the class; were aware of and able to state that the law in Jordan gives students
with disabilities the right to obtain higher education; and/or, stated the belief that giving students with disabilities the opportunity to enroll in institutions of higher education would allow them to develop the skills necessary to be successful in the future.

Faculty members who exhibited negative attitudes toward students with disabilities, stated that they felt that their busy schedules prevented them from providing those students the special treatment these faculty perceived was necessary to educate such students, that students with disabilities were simply not able to fulfill the requirements necessary to achieving success in higher education, or that personally, they did not possess sufficient knowledge to modify their teaching or coursework in order to accommodate students with disabilities.

More recently, Sniatecki, Perry, and Snell (2015) explored the knowledge and attitudes of 123 faculty members at a public upstate New York university with an enrollment of 8,000 students, toward college students with disabilities. The main foci of the study were faculty beliefs about students with disabilities, the abilities of this population, and attitudes regarding how successful such students are perceived to be in different academic fields. Overall, the researchers found faculty at this university had positive attitudes toward students with disabilities and believed most students with disabilities possessed the necessary skill set to be successful in higher education at a level competitive with their non-disabled student cohort.

**Knowledge and attitudes of IHE faculty members about D/HH students.** Research investigating the knowledge and attitudes of higher education faculty toward D/HH students is limited. Typically, studies look at a broader population of people with disabilities and include individuals with diverse types of disabilities rather than specifically focusing on only those who are deaf or hard of hearing (Abu-Hamour, 2013; Williamson, 2000). Only one study was located that focused solely on investigating faculty attitudes toward D/HH individuals. In this study,
Alrayes (2004) investigated faculty attitudes toward adult deaf students and faculty perceptions of their capabilities, at an American university in Texas. The researcher examined the effects of faculty gender, age, academic college, academic rank, years of teaching experience, job status (full- or part-time), extent and type of contact with D/HH people, and the educational level of the D/HH students (if any) encountered. There were 214 faculty members included in the study. Alrayes found that female faculty members had more positive attitudes toward D/HH adult students than their male counterparts. Faculty members who reported more lengthy contact with D/HH people exhibited more positive attitudes toward the group than those with less experience with the demographic. However, the researcher found no significant difference in attitude based on the faculty member’s age, academic rank, years of teaching experience, or job status (full- or part-time). Generally, the conclusion was that most faculty members at the university possessed positive attitudes toward D/HH adult students and that they also exhibited positive perceptions of the capabilities of deaf and hard of hearing people in general.

Summary

This chapter provided relevant information related to items on the survey used in this study about D/HH people, the legal precedents and laws that have expanded their educational opportunities in the U.S. and Saudi Arabia, and the knowledge base and attitudes toward D/HH people held by the general public and, more specifically, by faculty members at institutions of higher education. As shown in this literature review, there is a lack of research investigating faculty member’s attitudes toward D/HH students in Saudi universities. This research endeavor looks to fill this gap and may reveal some of the reasons behind the scarcity of Saudi D/HH individuals with degrees in higher education as well as the reasons that higher education opportunities available to D/HH people remain relatively under developed in the country.
Chapter Three

Methodology

Introduction

A review of the literature focusing on the importance of higher education reveals that a number of researchers found that possessing a higher education degree leads to “healthier and more satisfying lives” with a “secure lifestyle,” improves “the probabilities of employment and a stable career with a positive earnings trajectory,” and increases citizens’ active participation in civil society (Baum, Ma, & Payea, 2013). Further review also reveals that many people with disabilities, including deaf and hard of hearing individuals in countries such as United States, have access to higher education programs and are able to earn post-secondary degrees (Camp, 2011). However, in some other countries, including Saudi Arabia, students with disabilities, including those students who are D/HH, struggle to gain admission to colleges and universities.

In Saudi Arabia, the provision of deaf education (pre-K-12) is still in its early stages and D/HH students are further challenged in gaining access to higher education even though 16 years have passed since Saudi Arabia’s Disability Code was enacted. Several factors seem to contribute to this delay, including the lack of experienced faculty members who are capable of teaching and working with D/HH students and the lack of training in implementing different methods of instruction and using appropriate methods of communication with this group of students. Negative attitudes of faculty toward D/HH students may also be related to this delay in providing a greater number of opportunities for successful enrollment and achievement in higher education for D/HH Saudis. Some psychologists believe that attitudes affect individuals’ social behavior (Wicker, 1969), and influence their beliefs and feelings (Hewstone et. al., 2005). Although there are some studies investigating attitudes of faculty members toward students with
disabilities, including D/HH students (e.g. Hong & Himmel, 2009; Williamson, 2000; Alrayes, 2004; Abu-Hamour, 2013; Sniatecki, Perry, & Snell, 2015), none of these studies focuses on faculty members in a Saudi university.

**Research Design**

**Research Questions.** This study attempted to answer the following five questions:

1. What is the extent/level and accuracy of knowledge faculty members possess about D/HH students in a Saudi university?

2. To what extent does this level of knowledge vary dependent upon the college type (Humanities or Scientific) in which faculty members teach, their academic rank, age, gender, and their experience in teaching at an IHE?

3. What are the attitudes of faculty members in a single large Saudi university toward the enrollment and instruction of D/HH students in higher education?

4. Are there differences in the attitudes of faculty members in two different colleges (Humanities or Scientific) in a single large Saudi university towards the enrollment and instruction of D/HH students in higher education?

5. Are there attitudinal differences among faculty members in a single large Saudi university about the enrollment and instruction of D/HH students that are dependent upon their gender, age, academic rank, and their experience in teaching at an IHE?

**Pilot Study**

A pilot study was conducted to help the researcher test a draft survey and identify which themes would emerge in the interviews. The pilot study laid the groundwork for the development of the final survey for this project. Conducting a pilot study provides a “small scale version or trial run in preparation for a major study” (Polit, Beck, & Hungler, 2001, p. 467). It pre-tests the
instrument and the appropriateness of the study questions and helps in developing the final instrument and checking its reliability and validity. As Blaxter, Hughes and Tight (2010) aptly stated, “You may think that you know well enough what you are doing, but the value of pilot research cannot be overestimated. Things never work quite the way you envisage, even if you have done them many times before, and they have a nasty habit of turning out very differently than you expected” (p. 138). The pilot study for this research was completed in preparation for the larger study and helped highlight themes to be studied further.

**Participants.** Baker (1994) stated that the appropriate number of participants in a pilot study is to be 10-20% of the supposed sample size for the main study to increase the likelihood of the success of both the pilot and the main study. The G-Power program for power analysis and sample size calculations, indicated that the minimum target number of participants in the main study should be 125 faculty members at a Saudi university and hence participants of this pilot study were twelve faculty members. Even though the researcher contacted sixteen members and asked them about participation in the study, just twelve of them agreed. They all are males and work at the same university in the geographic middle of Saudi Arabia. Pilot study respondents’ ages ranged from 28-50 years. Seven of the participants were from the Humanities Colleges and five from the Scientific Colleges. Table 3.1 presents the pilot study respondents’ demographic information.
Table 3.1

**Demographic Information of Faculty Members Participated in the Pilot Study**

<table>
<thead>
<tr>
<th>Member</th>
<th>College</th>
<th>Department</th>
<th>Academic Rank</th>
<th>Age</th>
<th>Years of IHE Teaching Experience</th>
<th>Type of Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Humanities</td>
<td>Islamic Studies</td>
<td>Professor</td>
<td>50</td>
<td>20</td>
<td>Phone</td>
</tr>
<tr>
<td>2</td>
<td>Humanities</td>
<td>Islamic Studies</td>
<td>Associate Professor</td>
<td>46</td>
<td>17</td>
<td>Phone</td>
</tr>
<tr>
<td>3</td>
<td>Humanities</td>
<td>Arabic</td>
<td>Assistant Professor</td>
<td>38</td>
<td>7</td>
<td>E-mail</td>
</tr>
<tr>
<td>4</td>
<td>Humanities</td>
<td>Arabic</td>
<td>Teaching Assistant</td>
<td>28</td>
<td>3</td>
<td>Phone</td>
</tr>
<tr>
<td>5</td>
<td>Humanities</td>
<td>English</td>
<td>Assistant Professor</td>
<td>32</td>
<td>5</td>
<td>Skype</td>
</tr>
<tr>
<td>6</td>
<td>Humanities</td>
<td>English</td>
<td>Lecturer</td>
<td>34</td>
<td>2</td>
<td>Phone</td>
</tr>
<tr>
<td>7</td>
<td>Humanities</td>
<td>Educational Technology Engineering</td>
<td>Assistant Professor</td>
<td>35</td>
<td>2</td>
<td>Skype</td>
</tr>
<tr>
<td>8</td>
<td>Scientific</td>
<td>Engineering</td>
<td>Teaching Assistant</td>
<td>29</td>
<td>1</td>
<td>E-mail</td>
</tr>
<tr>
<td>9</td>
<td>Scientific</td>
<td>Engineering</td>
<td>Lecturer</td>
<td>31</td>
<td>2</td>
<td>Phone</td>
</tr>
<tr>
<td>10</td>
<td>Scientific</td>
<td>Medicine</td>
<td>Assistant Professor</td>
<td>38</td>
<td>7</td>
<td>Phone</td>
</tr>
<tr>
<td>11</td>
<td>Scientific</td>
<td>Computer Science</td>
<td>Associate Professor</td>
<td>42</td>
<td>11</td>
<td>Phone</td>
</tr>
<tr>
<td>12</td>
<td>Scientific</td>
<td>Computer Science</td>
<td>Lecturer</td>
<td>33</td>
<td>4</td>
<td>Skype</td>
</tr>
</tbody>
</table>

**Data collection.** Data were collected through phone interviews, Skype interviews and emailed surveys to participants. Lichtman (2013) suggests that the researcher provide his interviewee with some preliminary information about his project before starting the interview. Based on this recommendation, the researcher introduced himself to the pilot study respondents, and before beginning the interview, he told the participants about the project and asked them if they would like to participate. The researcher asked the participants if they preferred to respond
through a phone call, a Skype interview, or via e-mail. The researcher then interviewed the participants who chose the phone call (N= 7) and Skype (N= 3), and sent the set of questions to the emails of the remaining pilot study participants (N= 2). Each phone and Skype interview took about 25 minutes. Participants who chose to respond via an e-mail responded within 13 days.

**Instrument.** The instrument for collecting data for the pilot study was created after reviewing the literature on faculty members’ knowledge about and attitudes towards students with special needs, including D/HH students, and looking at several survey instruments focusing on similar topics, such as those instruments developed by Berkay, Gardner, Smith (1994), Sniatecki, Perry and Snell (2015), Abu-Hamour (2013). A set of questions was prepared for use in interviewing the pilot study participants (See Appendix A).

**Data analysis.** After conducting the interviews and transcribing them, a qualitative analysis was undertaken to determine faculty members' knowledge and attitudes toward D/HH students. All participants’ responses were documented and entered into an Excel spreadsheet, which was used to prepare a data summary table. The researcher then summarized and identified the emerging themes. This analysis resulted in the following five themes: (1) knowledge about abilities of D/HH individuals, (2) attitudes about experiences with individuals with special needs, (3) attitudes about experiences with D/HH individuals, (4) communication with D/HH individuals, and (5) provision of higher education and jobs for D/HH individuals. Table 3.2 presents a summary of the themes and the participants who mentioned them. The results of this pilot study led the researcher to eliminate some questions in the current project’s survey draft and better develop others.
Table 3.2

**Emerging Themes from Pilot Study**

<table>
<thead>
<tr>
<th>Emerging Themes and the participants who mentioned it</th>
<th>Participant number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. Knowledge about abilities of D/HH individuals</td>
<td></td>
</tr>
<tr>
<td>A. Knows that they can hear and talk</td>
<td>X</td>
</tr>
<tr>
<td>B. Knows that they can read and write</td>
<td>X</td>
</tr>
<tr>
<td>C. Knows that they can have social relationships with hearing individuals</td>
<td>X</td>
</tr>
<tr>
<td>D. Knows that they can drive</td>
<td>X</td>
</tr>
<tr>
<td>2. Attitudes about experiences with individuals with special needs</td>
<td></td>
</tr>
<tr>
<td>A. Has positive attitudes towards their experience</td>
<td>X</td>
</tr>
<tr>
<td>B. Has negative attitudes towards their experience</td>
<td>X</td>
</tr>
<tr>
<td>C. Has never met any individual with special need, so has no attitude</td>
<td>X</td>
</tr>
<tr>
<td>3. Attitudes about experiences with D/HH individuals</td>
<td></td>
</tr>
<tr>
<td>A. Has positive attitudes towards their experience</td>
<td>X</td>
</tr>
<tr>
<td>B. Has negative attitudes towards their experience</td>
<td></td>
</tr>
<tr>
<td>C. Has never met any D/HH individual, so has no attitude</td>
<td>X</td>
</tr>
<tr>
<td>4. Communication with D/HH individuals</td>
<td></td>
</tr>
<tr>
<td>A. Has some knowledge about sign language or seen people using it</td>
<td>X</td>
</tr>
<tr>
<td>B. Has communicated with D/HH individuals</td>
<td>X</td>
</tr>
<tr>
<td>C. Has worked with an interpreter</td>
<td>X</td>
</tr>
<tr>
<td>5. Provision of higher education and jobs for D/HH individuals</td>
<td></td>
</tr>
<tr>
<td>A. Believe that D/HH individuals have fair chances to enroll IHE</td>
<td>X</td>
</tr>
<tr>
<td>B. Believe that D/HH individuals need more modifications and accommodations in IHE</td>
<td>X</td>
</tr>
<tr>
<td>C. Believe that D/HH individuals can work at any job they want</td>
<td>X</td>
</tr>
</tbody>
</table>
Faculty members who participated in this pilot study seem to have negative perceptions and faulty knowledge about abilities of deaf and hard of hearing individuals. Most of the respondents believed, somewhat incorrectly, that D/HH individuals could not hear or talk, their writing and reading skills were weak, they had more emotional problems than hearing people, and they could get married but it would be successful only if they married another deaf individual.

The pilot study participants displayed generally positive attitudes toward individuals with special needs. However, the only group of special needs students the respondents reported teaching were students with visual impairments. With hearing loss said to be an "invisible" disability, it is possible that the participants in the pilot study may very well have taught students who were deaf or hard of hearing but modifications needed to participate in courses may have been so minor that the respondents forgot to mention it during the interview process or were unaware of the fact that they were teaching students with hearing losses. Generally, the participants’ attitudes towards D/HH individuals seemed to be neutral though some of them doubted their own ability to communicate as effectively with D/HH individuals as hearing students.

In general, participants did not have experience with sign language interpreters and were not familiar with how Arabic Sign Language (ArSL) differs from spoken Arabic. They also did not have positive attitudes about D/HH individuals' abilities to be successful in higher education programs and to be able to integrate and interact effectively with hearing instructors and peers. However, most participants did express positive attitudes towards the need to prepare D/HH individuals to teach D/HH students. This may indicate they held positive attitudes concerning the rights of D/HH students to obtain post-secondary training.
The following demographic information was collected from the pilot study participants: (1) academic rank, (2) age, (3) gender, (4) college type, and (5) number of years in teaching at the post-secondary level. Both Williamson (2000) and Alrayes (2004) focused on the relationship between their participants’ academic rank, academic unit, age, and years of teaching experience and their attitudes toward students with disabilities, including D/HH students, in higher education. Williamson (2000) found that academic rank and academic unit (i.e., majors) had effects on the attitudes of faculty members, while gender, age, and years of teaching experience showed no significant effects on their attitudes. In contrast, Alrayes (2004) found that there were some effects related to gender and academic unit on faculty members’ attitudes, whereas academic rank and years of teaching experience did not have any influence on faculty members’ attitudes.

These factors also emerged in Abu-Hamour’s (2013) investigation of attitudes of higher education faculty toward inclusion efforts. Similar to Alrayes (2004), he found that gender is a discriminating factor, but unlike Alrayes (2004), he found some effects within academic rank. Additionally, he found that years of teaching experience were a crucial influencer.

**Participants Selection for the Main Study**

A survey was created based on the literature review and on the results of the pilot study. The resultant instrument used the survey research method of convenience sampling and was distributed to faculty members in a single large Saudi university located geographically in the middle of a Saudi Arabia. A link to the electronic survey was sent to deans and department chairs in the two types of colleges (Humanities and Scientific) who in turn sent the link to the survey to faculty members in their colleges and departments in this university. There was a recruitment letter inviting faculty members to participate in the study (See Appendix B). These invitations
introduced the researcher, included an overview of the purpose of the study, and asked recipients if they were willing to participate in the study since their participation was voluntary. If they responded affirmatively, they were directed to complete the electronic survey posted on Google Docs. This procedure assured participants anonymity.

The total number of faculty members who responded to this survey was 238 out of a total university faculty of 3890 members. Thus the sample represented approximately 6% of the total university faculty. The researcher excluded fourteen participants because they indicated that they had extensive experience with D/HH individuals; six of them had a D/HH person as a friend or family member, five of them had significant experience teaching deaf and/or hard of hearing (D/HH) students, and three of the participants knew some sign language or had extensively used interpreters in their work. Since the intent of this study was to survey faculty members who were relatively naïve about hearing loss and D/HH individuals, the fourteen respondents with significant knowledge and/or interaction with D/HH individuals were excluded. Applying this exclusion criteria led to a total sample of 224 participants.

Setting

Generally speaking, public universities in Saudi Arabia involve two main tracks: (a) a human and social track (Humanities Colleges), and (b) a science track (Scientific Colleges). Participants in this study were selected through a convenience sampling of faculty members in a university that has five colleges in the Human and Social track and eleven colleges in the Science track. The five colleges in the Human and Social track are the College of Sharia and Islamic Studies, the College of Arabic Language and Social Sciences, the College of Design and Home Economics, the College of Business and Economics, and the College of Education. In total, the five colleges in this track have 26 departments. In the Science track, the university has eleven
colleges: College of Agriculture and Veterinary Medicine, College of Science, College of Computer, College of Engineering, College of Architecture and Planning, College of Medicine, College of Applied Medical Sciences, College of Pharmacy, College of Dentistry, College of Nursing, and College of Public Health and Health Informatics. In total, the eleven colleges in this track have 52 departments.

**Survey Instrument**

Survey research methodology was used in this study to answer the proposed research questions. Survey research enables a researcher to generalize the results of the study from a sample to the general population (Creswell, 2009). Because it would be difficult to investigate the knowledge and attitudes of all faculty members in higher education in Saudi Arabia, survey research using a representative sample was deemed to be the most appropriate type of data collection method for this study as it allows for generalization to the larger faculty population at the university.

Following a review of the literature and after conducting a pilot study, a survey instrument for this study was built based on the common themes that emerged as factors that may determine and influence knowledge and attitudes of faculty members toward the issue of the inclusion of D/HH students in higher education in Saudi Arabia. The survey contains demographic information and 2 sections (Knowledge ‘K’ and Attitudes ‘A’) with a total of 26 questions. The first page of the survey instrument requires participants to fill-in the-blanks or check off selections for their demographic information. The Knowledge section (page 2) has 12 questions that require participants to choose ‘Yes/No’ or ‘I Do Not Know’ responses. These questions were constructed to evaluate the extent of the respondents’ knowledge base about hearing loss and teaching students who are deaf and hard of hearing. On the Attitudes section
(page 3), participants were asked to rate their attitudes toward teaching D/HH students on a 4-point Likert scale where a rating of ‘1’ signifies 'strongly agree' and a rating of ‘4’ signifies 'strongly disagree' (See Appendix C). Participants were not told that the second page targeted knowledge and the third page targeted attitudes.

**Reliability**

Cronbach’s Alpha was used in this study to measure the statistical scale reliability of the survey instrument. Cronbach's alpha is used to indicate internal consistency where it shows how a set of items as a group are closely related. An acceptable Cronbach’s alpha in the social science is .70 or greater (Drost, 2011). The statistical scale reliability of the Knowledge [K] section of the survey is .76, as shown in Table 3.3, whereas the statistical scale reliability of the Attitudes section [A] of the survey is .77, as shown in Table 3.4.

Table 3.3

**Reliability Statistics for Knowledge Survey Section**

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
<td>.758</td>
<td>.769</td>
</tr>
</tbody>
</table>

Table 3.4

**Reliability Statistics for Attitude Survey Section**

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
<td>.767</td>
<td>.772</td>
</tr>
</tbody>
</table>
Content Validity

Two methods were used to achieve content validity of the instrument. First, a pilot study was conducted to help the researcher test a draft survey. Second, a linguistic translation review was conducted to achieve content validity. While the initial survey was developed in English, the final survey was distributed in both Arabic and English. Therefore, the content validity of the translated version from English to Arabic was evaluated through a review of the draft survey by two trained bilingual educators who have a background in statistical analysis. This occurred prior to distributing the final translated survey to faculty member respondents.

First, an educator whose native language is English and second language is Arabic translated the survey into Arabic and then another bilingual educator whose first language is Arabic translated the survey back into English. A Skype meeting was held with those two reviewers and also a trained professional bilingual linguist in order to check the results and develop the final Arabic version. Both versions (English and Arabic) of the survey were then sent to five bilingual field reviewers to complete and provide the researcher with comments. Sixteen field reviewers who are current faculty members in the two-targeted types of colleges reviewed the resulting survey. Following this step, which was aimed at assuring content validity, the professional linguist reviewed the comments of the field reviewers and assisted the researcher in developing the final Arabic version of the survey for distribution.

Data Analysis Procedures

All obtained quantitative data were analyzed using IBM SPSS Statistics Version 19.0 software package for analysis. Standard statistical procedures and tests were used to compare the dependent variables (attitudes and knowledge of faculty members about D/HH students in a Saudi university) and the independent variables (age, gender, academic rank, college type, and...
years of IHE teaching experience). Descriptive statistics were used to summarize answers to the first and third questions. For the second, fourth and fifth questions, an Independent-Samples ($t$-test) test was run for the differences between faculty members' knowledge about and attitudes toward D/HH students dependent on their college type and gender. For the differences between faculty members' knowledge dependent on their age, academic rank, and years of IHE teaching experience in higher education, a Welch ANOVA test was run. When ANOVA’s assumption of homogeneity of variance has been violated, a Welch ANOVA can be applicable (Liu, 2015). This test is used in this study because Levene’s test shows that there is a significant difference in the homogeneity of variance.

Limitations of the Study

The study had the following limitations:

1. The study focused just on one university in the middle of Saudi Arabia.
2. The survey was written originally in English, but then it was translated and distributed in Arabic.
3. The survey instrument is newly developed and information on reliability and validity was limited to this study.
4. Survey Research on attitudes runs the risk of a subject providing a response that he or she thinks in more socially acceptable than what the subject actually believes.

Summary

The purpose of this study was to explore the extent of the knowledge base in the area of hearing loss, and the similarities and differences in the attitudes and perceptions of faculty members in two different colleges at a single large Saudi university toward deaf and hard of hearing people. More specifically, participants were asked questions focusing on the teaching of
college students who are deaf and hard of hearing. A survey was created after reviewing the
literature on knowledge and attitudes and after conducting a pilot study. The survey includes
questions about demographic information, knowledge of D/HH, and faculty attitudes. The total
number of considered participants in this study was 224. Quantitative analysis of data was
implemented to determine the level of knowledge faculty members have about D/HH individuals
and their attitudes toward the enrollment and instruction of this population of students. Factors
that may correlate with their knowledge about and toward D/HH students were investigated.
Chapter Four

Results

Overview

The purpose of this study was to explore the extent of the knowledge base in the area of deaf and hard hearing, and the similarities and differences in attitudes and perceptions of Saudi higher education faculty toward people, particularly college students, who are deaf and/or hard of hearing. A survey containing two main sections (Knowledge [K] and Attitudes [A] sections) along with demographic information was created to measure faculty member knowledge of, and attitudes toward, D/HH students. The data were analyzed using a variety of statistical analysis tools (e.g., descriptive statistics, t-test, and Welch’s F-test) to answer the following questions:

1. What is the extent/level and accuracy of knowledge faculty members possess about D/HH students in a Saudi university?

2. To what extent does this level of knowledge vary dependent upon the college type (Humanities or Scientific) in which faculty members teach, their academic rank, age, gender, and their experience in teaching at an IHE?

3. What are the attitudes of faculty members at a single, large Saudi university toward the enrollment and instruction of D/HH students in higher education?

4. Are there differences in the attitudes of faculty members in two different colleges (Humanities or Scientific) at a single, large Saudi university toward the enrollment and instruction of D/HH students in higher education?

5. Are there attitudinal differences among faculty members at a single, large Saudi university about the enrollment and instruction of D/HH students that are dependent upon gender, age, academic rank, and their experience in teaching at an IHE?
Five hypotheses were tested:

1. There is a statistically significant difference between the knowledge of faculty members of Humanities Colleges and Scientific Colleges regarding the D/HH, where faculty members in the Humanities Colleges have a better understanding of D/HH students than faculty members in the Scientific Colleges.

2. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on college type, where those faculty members in the Scientific Colleges have less positive attitudes than those in the Humanities Colleges.

3. There is a statistically significant difference in the perceived readiness of faculty members to teach D/HH students where those in the Humanities Colleges feel more prepared to teach D/HH students than faculty members in the Scientific Colleges.

4. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on the faculty member’s age, where the older the faculty member, the less positive the attitude exhibited toward D/HH students and their enrollment in higher education.

5. There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on the faculty member’s academic rank, where the higher the academic rank, the less positive the attitude exhibited toward D/HH students and their enrollment in higher education.

The results of the data analysis supported all five of the study hypotheses. This chapter begins with a demographic description of the participants and a description of the mean scores and standard deviations of the responses, followed by the findings of the study and correlation between the independent variables of gender, age, college type, academic rank and IHE teaching
experience and the dependent variable of knowledge and attitudes.

Demographic Description of the Participants

All faculty members who participated in this study belong to a single, large Saudi university. There was a total of 224 faculty member participants of different genders, ages, academic rank, college within the university, and years of IHE teaching experience. There were 130 males (58%) and 94 females (42%), as presented in Table 4.1.

Table 4.1

Gender of Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>130</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>94</td>
<td>42%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>224</td>
<td>100%</td>
</tr>
</tbody>
</table>

The faculty member participants ranged in age from 24- to 65-years old (See Table 4.2 for age of participants). Their ages are divided into four subgroups: a) 31-years old and younger; b) 32- to 39-years old; c) 40- to 47-years old; and, d) 48-years old and older. There were 57 faculty member participants who belonged to the first group (31-years old and younger); and 56 faculty member participants in the third group (40- to 47-years old) so these two groups form about 50% of the total number of participants at 25.5% and 25%, respectively. There were 74 participants from the second age group (32- to 39-years old) forming the highest percentage (33%). The fourth group (48-years old and older) was comprised of 37 faculty member participants, forming the smallest group (16.5%).
Table 4.2

Age of Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Under – 31</td>
<td>57</td>
<td>25.5%</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>74</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>56</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>48 – up</td>
<td>37</td>
<td>16.5%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>224</td>
<td>100%</td>
</tr>
</tbody>
</table>

Regarding academic rank, participants belonged to five academic ranks, including teaching assistants, lecturers, assistant professors, associate professors, and professors (See Table 4.3 for academic rank of participants). The largest subgroup of academic rank was assistant professors (77 participants), forming 34.3% of the total number of participants. This was followed by the subgroup of lecturers (60 participants), forming 26.8% of the sample. Teaching assistants (40 participants) and associate professors (39 participants) formed almost equal percentages, 17.9% and 17.4% of the total number of participants respectively. Professors comprised the fewest participants in this study (8 participants), forming 3.6% of the total number.

Table 4.3

Academic Rank of Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Rank</td>
<td>Professor</td>
<td>8</td>
<td>3.6%</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>39</td>
<td>17.4%</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>77</td>
<td>34.3%</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>60</td>
<td>26.7%</td>
</tr>
<tr>
<td></td>
<td>Teaching Assistant</td>
<td>40</td>
<td>17.9%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>224</td>
<td>100%</td>
</tr>
</tbody>
</table>

Regarding college type, faculty members participating in the study came from the two main tracks in the university: humanities and social studies track (Humanities Colleges), and the sciences track (Scientific Colleges). Participants’ distribution in these tracks was 120 faculty
members from Humanities Colleges (53.6%) and 104 from the Scientific Colleges (46.4%). This distribution is given in Table 4.4.

Table 4.4.

The College Type of Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleges</td>
<td>Humanities</td>
<td>120</td>
<td>53.6%</td>
</tr>
<tr>
<td></td>
<td>Scientific</td>
<td>104</td>
<td>46.4%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>224</td>
<td>100%</td>
</tr>
</tbody>
</table>

The number of years of IHE teaching experience possessed by participants ranged from 1 to 30 years (See Table 4.5 for years of IHE teaching experience of participants). Participants were divided into four subgroups dependent upon their years of IHE teaching experience: a) faculty members who taught for 1 to 6 years (92 participants) formed the largest numbers of participants (41.1%); b) faculty members who taught for 7 to 12 years (65 participants) formed 29% of the total number of participants; c) faculty members who taught for 13 to 18 years (32 participants) formed 14.3 % of the total number of participants and comprised the smallest group and, d) faculty members who taught for 19 years or more (35 faculty members) formed 15.6% of the total number of participants.

Table 4.5

Participants’ Years of IHE Teaching Experience

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of IHE</td>
<td>1 – 6</td>
<td>92</td>
<td>41.1%</td>
</tr>
<tr>
<td></td>
<td>7 - 12</td>
<td>65</td>
<td>29.0%</td>
</tr>
<tr>
<td></td>
<td>13 – 18</td>
<td>32</td>
<td>14.3%</td>
</tr>
<tr>
<td></td>
<td>19 – up</td>
<td>35</td>
<td>15.6%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>224</td>
<td>100%</td>
</tr>
</tbody>
</table>
Mean Scores and Standard Deviations

The survey used in this study is divided into two sections: (a) Knowledge, and (b) Attitudes, so each section was scored separately. For the Knowledge [K] section, the maximum score a participant could get was 24 where each correct answer of the 12 items was worth 2 points, any incorrect answer was worth 0, and responses of “I don’t know” were worth 0.5. An “I don’t know” response was scored .5 points because it reflects an understanding that the respondent “knows what he or she doesn’t know.” Not knowing an answer is different than “knowing” an incorrect answer. The decision to award a minimal point value to the answer of “I don’t know” was based on the recommendation of Groothuis and Whitehead (2002), who stated that this response includes mixed ideas about the topic/statement and therefore, it should not be treated as “Yes” or “No”. A higher score indicates greater knowledge about the items in the survey, whereas a low score indicates lesser knowledge. A participant is said to be knowledgeable if s/he achieved a score greater than 12 and up because 12 is half of the total score.

Knowledge [K].

Gender [K]. The highest obtained knowledge score in the survey was 24 which was achieved by both male and female faculty members in the Humanities Colleges who are either teaching assistants or lecturers (See Table 4.6 for summary of Knowledge section). The lowest knowledge score of 2.5 was achieved by a female associate professor in the Scientific Colleges. The mean score on the Knowledge [K] section of the survey for males was 16.25 with a standard deviation of 4.71, and their scores ranged from 3 to 24 points. The mean score for females was 16.00 with a standard deviation of 4.97, and their scores ranged from 2.50 to 24 points.

Age [K]. Regarding the variable of age, the mean knowledge score for participants who
were 31-years old and younger was 17.61 with a standard deviation of 3.50, and their scores ranged from 6 to 24 points. The mean score for participants whose ages ranged from 32- to 39-years old was 16.59 with a standard deviation of 4.10, and their scores ranged from 7.50 to 24 points. The mean score for participants whose ages ranged from 40- to 47-years old was 15.17 with a standard deviation of 5.55, and their scores ranged from 2.50 to 24 points. The last subgroup of this variable included participants who are 48-years old and older. The mean score here was 14.51 with a standard deviation of 5.92, and the scores ranged from 4 to 22.50 points.

**College type [K].** The third variable is college type where the mean knowledge score of participants from the Humanities Colleges was 17.47 with a standard deviation of 4.13, and scores ranged from 6 to 24 points. The mean score of participants from the Scientific Colleges was 14.63 with a standard deviation of 5.10, and scores ranged from 2.50 to 22 points.

**Academic rank [K].** The fourth variable was academic rank where the mean knowledge score of teaching assistants was 18.22 with a standard deviation of 4.20, and their scores ranged from 6 to 24 points. The mean score of lecturers was 17.23 with a standard deviation of 3.72 and their scores ranged from 10 to 24 points. The mean score of assistant professors was 16.50 with a standard deviation of 3.80 and their scores ranged from 4.50 to 22.50 points. The mean score of associate professors was 12.59 with a standard deviation of 5.91 and their scores ranged from 2.50 to 22.50 points. The last subgroup in this variable, professors, had a mean score of 11.69 with a standard deviation of 4.81. Their scores ranged from 4 to 20.50 points.

**IHE teaching experience [K].** The last variable in this section was years of IHE teaching experience. Participants with 6 years or fewer years of IHE teaching experience had a mean knowledge score of 17.33 with a standard deviation of 3.90, and their scores ranged from 6 to 24 points. Participants whose years of IHE teaching experience ranged from 7 to 12 years had a
mean score of 16.47 with a standard deviation of 4.63, and their scores ranged from 2.50 to 24 points. Participants with 13 to 18 years of IHE teaching experience had a mean score of 14.98 with a standard deviation of 4.73, and their scores ranged from 4.50 to 22.50. The last subgroup in this variable included participants with 19 years of IHE teaching experience or more. Their mean score was 13.51 with a standard deviation of 6.18, and their scores ranged from 3 to 22 points. A summary of the mean scores, number of participants, standard deviations, minimum scores, and maximum scores for each variable and its subgroups is provided in Table 4.6.

Table 4.6

*Summary for Each Variable with its Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroups</th>
<th>Mean</th>
<th>N</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>16.257</td>
<td>130</td>
<td>4.718</td>
<td>3.00</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>16.005</td>
<td>94</td>
<td>4.967</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.151</td>
<td>224</td>
<td>4.815</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td>Age</td>
<td>Under – 31</td>
<td>17.614</td>
<td>57</td>
<td>3.505</td>
<td>6.00</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>16.587</td>
<td>74</td>
<td>4.105</td>
<td>7.50</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>40 - 47</td>
<td>15.169</td>
<td>56</td>
<td>5.554</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>14.513</td>
<td>37</td>
<td>5.929</td>
<td>4.00</td>
<td>22.50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.151</td>
<td>224</td>
<td>4.815</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td>College Type</td>
<td>Humanities</td>
<td>17.470</td>
<td>120</td>
<td>4.135</td>
<td>6.00</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>Scientific</td>
<td>14.629</td>
<td>104</td>
<td>5.106</td>
<td>2.50</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
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<td>16.151</td>
<td>224</td>
<td>4.815</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td>Academic Rank</td>
<td>Teaching Assistant</td>
<td>18.225</td>
<td>40</td>
<td>4.206</td>
<td>6.00</td>
<td>24.00</td>
</tr>
<tr>
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<td>Lecturer</td>
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<td>3.726</td>
<td>10.00</td>
<td>24.00</td>
</tr>
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<td>Assistant Professor</td>
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<td>3.800</td>
<td>4.50</td>
<td>22.50</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
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<td>5.913</td>
<td>2.50</td>
<td>22.50</td>
</tr>
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<td></td>
<td>Professor</td>
<td>11.687</td>
<td>8</td>
<td>6.850</td>
<td>4.00</td>
<td>20.50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.151</td>
<td>224</td>
<td>4.815</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td>Years of IHE Teaching Experience</td>
<td>1 – 6 Years</td>
<td>17.337</td>
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<td>3.903</td>
<td>6.00</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>7 – 12 Years</td>
<td>16.469</td>
<td>65</td>
<td>4.628</td>
<td>2.50</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>13 – 18 Years</td>
<td>14.984</td>
<td>32</td>
<td>4.727</td>
<td>4.50</td>
<td>22.50</td>
</tr>
<tr>
<td></td>
<td>19 – Over</td>
<td>13.514</td>
<td>35</td>
<td>6.176</td>
<td>3.00</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.151</td>
<td>224</td>
<td>4.815</td>
<td>2.50</td>
<td>24.00</td>
</tr>
</tbody>
</table>
Attitudes [A].

The Attitudes section of the survey included a mixture of positively-keyed and negatively-keyed items. The first type included 7 items to which an agreement represents a relatively positive attitude such as, “I would be as comfortable communicating with a D/HH student as any other student.” In the 4-point Likert scale implemented in the survey, Strong Agreement or Agreement with such items indicated that the participant had a relatively positive attitude toward D/HH students. In contrast, the negatively-keyed items included 7 statements with which agreement represented a relatively negative attitude, such as “Having a deaf or hard of hearing friend would be difficult for me.” A Strong Agreement or Agreement with such items indicated a relatively negative attitude toward D/HH students.

Before computing the total score for each participant in the Attitudes section [A], the negatively-keyed items were reverse-scored. This process makes it possible for high scores on this section to indicate positive attitudes since all the items would be consistent with each other in their agreement and disagreement indication. Reverse-scoring negatively-keyed items was conducted in this study by recoding the responses using SPSS which transformed all 1’s on any negatively-keyed item to 4’s, 2’s to 3’s, 3’s to 2’s and 4’s to 1’s. By doing so, high scores on these items became low scores. Then, the total score for each participant in this section was computed. The higher score a participant achieved, the more positive their attitude toward D/HH students. The highest possible score was 56 and a participant was said to have a positive attitude if s/he achieved a score of 28 points or higher because this forms half of the total score. The highest obtained score in this section was 52 points by teaching assistants from the Humanities Colleges. The lowest obtained score was 15 by associate and full professors coming from the Scientific Colleges (See Table 4.7 for subgroups attitudes).
Gender [A]. The mean score on the Attitudes section [A] of the survey for males was 38.68 with a standard deviation of 6.69, and their scores ranged from 15 to 52 points. The mean score for females was 39.44 with a standard deviation of 5.93, and their scores ranged from 15 to 51 points.

Age [A]. The mean score for faculty members who were 31-years old and younger was 41.75 with a standard deviation of 3.50, and their scores ranged from 36 to 52 points. The mean score for participants whose ages ranged from 32- to 39-years old was 39.84 with a standard deviation of 3.51, and their scores ranged from 25 to 47 points. The mean score for participants whose ages ranged from 40- to 47-years old was 37.95 with a standard deviation of 7.86, and their scores ranged from 16 to 51 points. The last subgroup of this variable included participants who were 48-years old and older. Their means score was 34.67 with a standard deviation of 8.92, and their scores ranged from 15 to 52 points.

College type [A]. The third variable was college type where the mean score of participants from the Humanities Colleges was 40.60 with a standard deviation of 4.67, and their scores ranged from 22 to 52 points. The mean score of participants from the Scientific Colleges was 37.14 with a standard deviation of 7.52, and their scores ranged from 15 to 48 points.

Academic rank [A]. The fourth variable was the academic rank where the mean score of teaching assistants was 41.50 with a standard deviation of 3.86, and their scores ranged from 34 to 52 points. The mean score of lecturers was 41.42 with a standard deviation of 3.35 and their scores ranged from 35 to 49 points. The mean score of assistant professors was 39.52 with a standard deviation of 4.12 and their scores ranged from 24 to 51 points. The mean score of associate professors was 34.54 with a standard deviation of 9.39 and their scores ranged from 15 to 46 points. The last subgroup in this variable, professors, had a mean score of 25.12 with a
standard deviation of 6.06. Their scores ranged from 15 to 32 points.

**IHE teaching experience [A].** The last variable in this section was years of IHE teaching experience. Participants with 6 years or fewer years of IHE teaching experience had a mean score of 40.91 with a standard deviation of 3.83, and their scores ranged from 25 to 52 points. Participants whose years of IHE teaching experience ranged from 7 to 12 years had a mean score of 39.34 with a standard deviation of 4.07, and their scores ranged from 26 to 48 points. Participants with 13 to 18 years of IHE teaching experience had a mean score of 38.00 with a standard deviation of 8.42, and their scores ranged from 15 to 51. The last subgroup in this variable included participants with 19 years of IHE teaching experience or more. Their mean score was 34.26 with a standard deviation of 9.88, and their scores ranged from 15 to 49 points.

A summary of the mean scores, number of participants in the grouping, standard deviations, minimum scores, and maximum scores for each variable and its subgroups is provided in Table 4.7.
Table 4.7

Summary for Each Variable with its Subgroups in the Attitudes Section

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroups</th>
<th>Mean</th>
<th>N</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>38.684</td>
<td>130</td>
<td>6.692</td>
<td>15.00</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>39.436</td>
<td>94</td>
<td>5.930</td>
<td>15.00</td>
<td>51.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39.000</td>
<td>224</td>
<td>6.381</td>
<td>15.00</td>
<td>52.00</td>
</tr>
<tr>
<td>Age</td>
<td>Under – 31</td>
<td>41.754</td>
<td>57</td>
<td>3.496</td>
<td>36.00</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>39.837</td>
<td>74</td>
<td>3.511</td>
<td>25.00</td>
<td>47.00</td>
</tr>
<tr>
<td></td>
<td>40 - 47</td>
<td>37.946</td>
<td>56</td>
<td>7.856</td>
<td>16.00</td>
<td>51.00</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>34.675</td>
<td>37</td>
<td>8.916</td>
<td>15.00</td>
<td>49.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39.000</td>
<td>224</td>
<td>6.381</td>
<td>15.00</td>
<td>52.00</td>
</tr>
<tr>
<td>College Type</td>
<td>Humanities</td>
<td>40.608</td>
<td>120</td>
<td>4.667</td>
<td>22.00</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>Scientific</td>
<td>37.144</td>
<td>104</td>
<td>7.516</td>
<td>15.00</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39.000</td>
<td>224</td>
<td>6.381</td>
<td>15.00</td>
<td>52.00</td>
</tr>
<tr>
<td>Academic Rank</td>
<td>Teaching Assistant</td>
<td>41.500</td>
<td>40</td>
<td>3.863</td>
<td>34.00</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>41.416</td>
<td>60</td>
<td>3.346</td>
<td>35.00</td>
<td>49.00</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>39.519</td>
<td>77</td>
<td>4.121</td>
<td>24.00</td>
<td>51.00</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
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<td>9.391</td>
<td>15.00</td>
<td>46.00</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>25.125</td>
<td>8</td>
<td>6.057</td>
<td>15.00</td>
<td>32.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39.000</td>
<td>224</td>
<td>6.381</td>
<td>15.00</td>
<td>52.00</td>
</tr>
<tr>
<td>Years of IHE</td>
<td>1 – 6 Years</td>
<td>40.913</td>
<td>92</td>
<td>3.830</td>
<td>25.00</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>7 – 12 Years</td>
<td>39.338</td>
<td>65</td>
<td>4.066</td>
<td>26.00</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>13 – 18 Years</td>
<td>38.000</td>
<td>32</td>
<td>8.424</td>
<td>15.00</td>
<td>51.00</td>
</tr>
<tr>
<td></td>
<td>19 – Over</td>
<td>34.257</td>
<td>35</td>
<td>9.885</td>
<td>15.00</td>
<td>49.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39.000</td>
<td>224</td>
<td>6.381</td>
<td>15.00</td>
<td>52.00</td>
</tr>
</tbody>
</table>

Research Question #1: What is the extent/level and accuracy of knowledge faculty members possess about D/HH students in a Saudi university?

The descriptive statistics shown in Table 4.6 reflect that the mean score of knowledge of faculty members about D/HH students was 16.15 with a standard deviation of 4.81. Although there are members who reflected a lack of adequate knowledge about this group of students, by achieving scores as low as 2.50 points, several members got the maximum score in this section (24 points). As stated earlier, any score higher than 12 indicates that the faculty member is adequately knowledgeable about D/HH students. Chart 4.1 reflects the percentages of faculty members who scored higher than 12 and those who scored lower than this cut off score.
As shown in Chart 4.1, 82% of faculty members who participated in this study are knowledgeable about D/HH students as they achieved scores of 12 or higher, whereas just 18% indicated a lack of adequate knowledge about this student demographic. In other words, the vast majority of faculty members at the Saudi university who participated in this study have adequate knowledge about D/HH students.

However, responses on one of the items in the Knowledge section [K] (knowledge about Disability Code in Saudi Arabia) indicated that 71% of faculty members did not have sufficient knowledge about Saudi laws regarding D/HH education. This item reads: “There is a law in Saudi Arabia that ensures that deaf and hard of hearing individuals have the right to access higher education.” As shown in Chart 4.2, the majority of faculty members who participated in this study (63%) indicated that they were unaware of such a law and (8%) chose the response, “No” for a total of 71% without legislation knowledge.
Research question #2: To what extent does this level of knowledge vary dependent upon the college type (Humanities or Scientific) in which faculty members teach, their academic rank, age, gender, and their experience in teaching at an IHE?

To answer this question, each variable was analyzed separately.

**College type** [K]. Since there are just two types of colleges in the university under study, an independent-samples t-test was conducted to compare levels of knowledge of faculty members who participated in this study from the Humanities and Scientific Colleges. As shown in Table 4.8 and Table 4.9, a significant difference was found in the scores of faculty members from the Humanities Colleges ($M=17.47$, $SD=4.13$) and Scientific Colleges ($M=14.63$, $SD=5.11$); $t(222)=4.599, p < 0.01$.

The columns labeled "Levene's Test for Equality of Variances" on Table 4.9 indicate whether the assumption of the $t$-test that the variability of each group is approximately equal has
been met or not. In this table, it is shown that the assumption has been met since the significance level on the Levene test is .058. This value (0.058) is greater than α level for the test (.05) and therefore the Humanities and Scientific Colleges have about the same amounts of variability between scores. This equality requires reading the significance from the first row in Table 4.9.

Looking at the results for the $t$-test in the first row to see if the means for the two groups were significantly different or not indicated that the Sig (2-Tailed) value is less than .05 ($p < 0.01$); $t(222)=4.599$. Therefore, there is a statistically significant difference between the scores of the Humanities and Scientific Colleges. The mean score for the Humanities Colleges ($M=17.47$, $SD=4.13$) in Table 4.8 was greater than the mean score for the Scientific Colleges ($M=14.63$, $SD=5.11$), indicating that faculty members from the Humanities Colleges have significantly more knowledge than faculty members from the Scientific Colleges.

Table 4.8

*Statistics Based on College Type in the Knowledge Section*

<table>
<thead>
<tr>
<th>Variable</th>
<th>College</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
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<td>120</td>
<td>17.470</td>
<td>4.1354</td>
<td>.3775</td>
</tr>
<tr>
<td></td>
<td>Scientific</td>
<td>104</td>
<td>14.629</td>
<td>5.1061</td>
<td>.5007</td>
</tr>
</tbody>
</table>
**Independent Samples Test of College Type in the Knowledge Section**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$F$</td>
<td>Sig.</td>
<td>T</td>
</tr>
<tr>
<td>Scores</td>
<td>Equal variances assumed</td>
<td>3.644</td>
<td>.058</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>4.531</td>
<td>198.00</td>
</tr>
</tbody>
</table>

This result supported the first hypothesis of this study, that “there is a statistically significant difference between the knowledge of faculty members of Humanities Colleges and Scientific Colleges regarding the D/HH, where faculty members in the Humanities Colleges have a better understanding of D/HH students than faculty members of the Scientific Colleges.”

**Gender [K].** Similarly, an independent-samples t-test was conducted to compare levels of knowledge of faculty members dependent upon their gender. As shown in Table 4.10 and Table 4.11, there was no significant difference in the scores of male faculty members ($M=16.26$, $SD=4.72$) and female faculty members ($M=16.00$, $SD=4.97$); $t(222)= .386$, $p = 0.70$.

The columns labeled "Levene's Test for Equality of Variances" on Table 4.11 indicate that the assumption of the $t$-test that the variability of each group is approximately equal has been met since the significance level on the Levene test is .422. This value (0.422) is greater than $\alpha$ level for the test (.05) and therefore the scores of males do not vary too much more than the scores of females. This equality requires reading the significance from the first row in Table 83.
4.11. The Sig (2-Tailed) value is greater than .05 (p = .70); \( t(222)= .386 \). Therefore, there is no statistically significant difference between the scores of males and females.

Table 4.10

*Statistics Related to Gender in the Knowledge Section*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
<td>M</td>
<td>130</td>
<td>16.257</td>
<td>4.718</td>
<td>.413</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>94</td>
<td>16.005</td>
<td>4.967</td>
<td>.512</td>
</tr>
</tbody>
</table>

Table 4.11

*Independent Samples Test of Gender in the Knowledge Section*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( F )</td>
<td>Sig.</td>
</tr>
<tr>
<td>Scores</td>
<td>Equal variances assumed</td>
<td>.648</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>.383</td>
</tr>
</tbody>
</table>

**Age [K]**. Since there are more than two subgroups in the age variable, a One-way Analysis of Variance (ANOVA) test was run. The independent variable represented the different age groups of faculty members and the dependent variable was the total score that faculty members achieved on the Knowledge section [K] of the survey. However, in a survey with samples sizes that are not equal, when failing to meet the homogeneity of variances assumption, it is recommended that one use the Welch’s ANOVA or Welch’s \( F \)-Test in order to perform an ANOVA analysis. This was confirmed by using Levene’s test. The normal one-way ANOVA
test should not be utilized if the significance of Levene’s test is \( p < 0.05 \), which is considered significant. In such cases, the Welch’s \( F \)-test is the better tool to use. The Levene’s Test of Homogeneity of Variances of the age variable \( p < 0.01 \) is provided in Table 4.12.

Table 4.12

*Test of Homogeneity of Variances in the Knowledge Section*

<table>
<thead>
<tr>
<th>Levene’s Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.601</td>
<td>3</td>
<td>220</td>
<td>.000</td>
</tr>
</tbody>
</table>

Therefore, the Welch’s \( F \)-test was used, as represented in Table 4.13. An alpha level of .05 was used for all subsequent analyses. The analysis of faculty members’ total scores revealed a statistically significant main effect, \( Welch’s \ F(3, 103.65) = 4.30, p = .007 \), indicating that there is a variation in the scores of knowledge dependent upon age groups. Since the Welch’s \( F \)-test was used, the following formula was used to calculate an adjusted omega squared:

\[
est \omega^2 = \frac{df1 (F - 1)}{df1 (F - 1) + N}
\]

The estimated omega squared was 0.04, indicating that approximately 4% of the total variation in total scores on faculty member knowledge was attributable to differences between the four age subgroups.

Table 4.13

*Robust Tests of Equality of Means of Age Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>Statistic ( a )</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch’s</td>
<td>4.300</td>
<td>3</td>
<td>103.655</td>
</tr>
</tbody>
</table>

\( a \). Asymptotically \( F \) distributed.

Games-Howell post hoc comparisons are conducted to determine which pairs of the age subgroups’ means differed significantly. This test is used with unequal variances and is based on Welch’s test to evaluate whether differences between any pairs of means are significant (Hilton
The study found, as shown in Table 4.14, that faculty members aged 31-years old or younger ($M=17.61, SD=3.50$) had significantly higher total scores on the Knowledge section [K] than faculty members whose ages ranged from 40- to 47-years old ($M=15.17, SD=5.55$) and faculty members 48-years old and older ($M=14.51, SD=5.92$). Effect sizes were calculated using the formula of Cohen’s $d$:

$$d = \frac{M_1 - M_2}{\sigma_{pooled}} \text{ where } \sigma_{pooled} = \sqrt{\frac{\sigma_1^2 + \sigma_2^2}{2}}$$

The effect sizes for these two significant effects were 0.52 and 0.63, respectively.

Table 4.14

*Multiple Comparisons of Age Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>(I) Age Subgroup</th>
<th>(J) Age Subgroup</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under - 31</td>
<td>32 – 39</td>
<td>1.026</td>
<td>.665</td>
<td>.416</td>
<td>-.707 - 2.759</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>2.444*</td>
<td>.875</td>
<td>.032</td>
<td>.153 - 4.734</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>3.100*</td>
<td>1.079</td>
<td>.029</td>
<td>.235 - 5.965</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>1.418</td>
<td>.882</td>
<td>.379</td>
<td>-.888 - 3.724</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>2.074</td>
<td>1.085</td>
<td>.236</td>
<td>-.803 - 4.951</td>
</tr>
<tr>
<td>40 – 47</td>
<td>Under - 31</td>
<td>-2.444*</td>
<td>.875</td>
<td>.032</td>
<td>-4.734 - .153</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>-1.418</td>
<td>.882</td>
<td>.379</td>
<td>-3.724 - .888</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>.656</td>
<td>1.225</td>
<td>.950</td>
<td>-2.564 - 3.876</td>
</tr>
<tr>
<td>48 – Over</td>
<td>Under - 31</td>
<td>-3.100*</td>
<td>1.079</td>
<td>.029</td>
<td>-5.965 - .235</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>-2.074</td>
<td>1.085</td>
<td>.236</td>
<td>-4.951 - .803</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>-.656</td>
<td>1.225</td>
<td>.950</td>
<td>-3.876 - 2.564</td>
</tr>
</tbody>
</table>

*. The mean difference is significant at the 0.05 level.

**Academic rank [K]**. As with the age variable, an ANOVA test was run to find out if there was any significant difference in the knowledge scores between academic rank subgroups.
The assumption of homogeneity of ANOVA was also not met here, as indicated by the Levene’s Test of Homogeneity of Variances $(p<0.01)$ provided in Table 4.15.

Table 4.15

| Test of Homogeneity of Variances of Academic Rank Subgroups in the Knowledge Section |
|----------------------------------------|--------|--------|--------|
| Levene’s Statistic | df1 | df2 | Sig. |
| 6.287 | 4 | 219 | .000 |

The Welch’s $F$-test is represented on Table 4.16. The analysis of faculty members’ total scores revealed a statistically significant main effect, Welch’s $F(4, 41.84) = 7.10, p < .001$. This indicates that subgroups of Academic Rank significantly differ in their knowledge scores. The estimated omega squared ($\omega^2 = 0.098$) revealed that approximately 9% of the total variation in total knowledge scores is attributable to differences between the subgroups of academic rank.

Table 4.16

| Robust Tests of Equality of Means of Academic Rank Subgroups in the Knowledge Section |
|----------------------------------------|--------|--------|--------|
| Statistic$^a$ | df1 | df2 | Sig. |
| Welch’s | 7.106 | 4 | 41.841 | .000 |

$^a$ Asymptotically $F$ distributed.

The Games-Howell post hoc, as shown on Table 4.17, revealed that teaching assistants $(M=18.22, SD=2.21)$, lecturers $(M=17.23, SD=3.73)$, and assistant professors $(M=16.50, SD=3.80)$ had significantly higher total scores on the Knowledge section [K] than associate professors $(M=12.58, SD=5.91)$. The effect sizes for these three significant effects were 1.26, 0.94, and 0.79, respectively.
### Table 4.17

*Multiple Comparisons of Academic Rank Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>(I) Rank</th>
<th>(J) Rank</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>Lecturer</td>
<td>.991</td>
<td>.820</td>
<td>.747</td>
<td>-1.301 to 3.284</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Lecturer</td>
<td>1.725</td>
<td>.793</td>
<td>.202</td>
<td>-.495 to 3.945</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Lecturer</td>
<td>5.635*</td>
<td>1.157</td>
<td>.000</td>
<td>2.393 to 8.877</td>
</tr>
<tr>
<td>Professor</td>
<td>Lecturer</td>
<td>6.537</td>
<td>2.511</td>
<td>.159</td>
<td>-2.116 to 15.191</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Teaching Assistant</td>
<td>-.991</td>
<td>.820</td>
<td>.747</td>
<td>-3.284 to 1.301</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Teaching Assistant</td>
<td>.733</td>
<td>.647</td>
<td>.789</td>
<td>-1.057 to 2.524</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Teaching Assistant</td>
<td>4.643*</td>
<td>1.062</td>
<td>.000</td>
<td>1.652 to 7.634</td>
</tr>
<tr>
<td>Professor</td>
<td>Teaching Assistant</td>
<td>5.545</td>
<td>2.469</td>
<td>.259</td>
<td>-3.106 to 14.198</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Lecturer</td>
<td>-1.725</td>
<td>.793</td>
<td>.202</td>
<td>-3.945 to .495</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Assistant Professor</td>
<td>-.733</td>
<td>.647</td>
<td>.789</td>
<td>-2.524 to 1.057</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Assistant Professor</td>
<td>3.910*</td>
<td>1.041</td>
<td>.004</td>
<td>.972 to 6.848</td>
</tr>
<tr>
<td>Professor</td>
<td>Assistant Professor</td>
<td>4.812</td>
<td>2.460</td>
<td>.368</td>
<td>-3.841 to 13.466</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Lecturer</td>
<td>-5.635*</td>
<td>1.157</td>
<td>.000</td>
<td>-8.877 to -2.393</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Associate Professor</td>
<td>-4.643*</td>
<td>1.062</td>
<td>.000</td>
<td>-7.634 to -1.652</td>
</tr>
<tr>
<td>Professor</td>
<td>Associate Professor</td>
<td>-3.910*</td>
<td>1.041</td>
<td>.004</td>
<td>-6.848 to -.972</td>
</tr>
<tr>
<td>Professor</td>
<td>Lecturer</td>
<td>-6.537</td>
<td>2.511</td>
<td>.159</td>
<td>-15.191 to 2.116</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Lecturer</td>
<td>-5.545</td>
<td>2.469</td>
<td>.259</td>
<td>-14.198 to 3.106</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Lecturer</td>
<td>-4.812</td>
<td>2.460</td>
<td>.368</td>
<td>-13.466 to 3.841</td>
</tr>
<tr>
<td>Professor</td>
<td>Lecturer</td>
<td>-9.02</td>
<td>2.600</td>
<td>.996</td>
<td>-9.592 to 7.788</td>
</tr>
</tbody>
</table>

*. The mean difference is significant at the 0.05 level.

**Years of IHE teaching experience [K].** Again, as with age and academic rank, an ANOVA test was run for the variable years of IHE teaching experience. The assumption of homogeneity of variances was not met, as indicated by the Levene’s Test of Homogeneity of Variances (p=0.001) provided in Table 4.18.

### Table 4.18

*Test of Homogeneity of Variances in Years of IHE Teaching Experience Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>Levene’s Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.752</td>
<td>3</td>
<td>220</td>
<td>.001</td>
</tr>
</tbody>
</table>
The Welch’s $F$-test is represented on Table 4.19. The analysis of faculty members’ total scores revealed a statistically significant main effect, Welch’s $F(3, 82.753) = 5.150, p = .003$, indicating that faculty members with different years of IHE teaching experience significantly differ in their knowledge scores. The estimated omega squared ($\omega^2 = 0.052$) indicates that approximately 5% of the total variation in total knowledge scores is attributable to differences between the subgroups of the years of IHE teaching experience.

Table 4.19

Robust Tests of Equality of Means of Years of IHE Teaching Experience Subgroups in the Knowledge Section

<table>
<thead>
<tr>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch’s</td>
<td>5.150</td>
<td>3</td>
<td>82.753</td>
</tr>
</tbody>
</table>

a. Asymptotically $F$ distributed.

The only significant difference in this variable, as revealed in Games-Howell post hoc comparisons provided on Table 4.20, is found between faculty members with less teaching experience, from 1 to 6 years, ($M=17.33, SD=3.90$) and faculty members with 19 years of experience or more ($M=13.51, SD=6.18$). Younger faculty members had significantly higher total scores on the Knowledge section [K] than those with 19 years of experience or more. The effect size for this significant effect was 0.73.
**Table 4.20**

*Multiple Comparisons of Years of IHE Teaching Experience Subgroups in the Knowledge Section*

<table>
<thead>
<tr>
<th>(I) Teaching Experience</th>
<th>(J) Teaching Experience</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval Lower Bound</th>
<th>95% Confidence Interval Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 6 Years</td>
<td>7 – 12 Years</td>
<td>.867</td>
<td>.703</td>
<td>.607</td>
<td>-.965</td>
<td>2.700</td>
</tr>
<tr>
<td>13 – 18 Years</td>
<td>7 – 12 Years</td>
<td>2.352</td>
<td>.929</td>
<td>.068</td>
<td>-.123</td>
<td>4.829</td>
</tr>
<tr>
<td>19 – Over</td>
<td>7 – 12 Years</td>
<td>3.822*</td>
<td>1.120</td>
<td>.007</td>
<td>.832</td>
<td>6.812</td>
</tr>
<tr>
<td>13 – 18 Years</td>
<td>1 – 6 Years</td>
<td>-.867</td>
<td>.703</td>
<td>.607</td>
<td>-2.700</td>
<td>.965</td>
</tr>
<tr>
<td>19 – Over</td>
<td>1 – 6 Years</td>
<td>1.484</td>
<td>1.013</td>
<td>.465</td>
<td>-1.193</td>
<td>4.163</td>
</tr>
<tr>
<td>13 – 18 Years</td>
<td>7 – 12 Years</td>
<td>2.954</td>
<td>1.191</td>
<td>.074</td>
<td>-.201</td>
<td>6.111</td>
</tr>
<tr>
<td>19 – Over</td>
<td>7 – 12 Years</td>
<td>-2.352</td>
<td>.929</td>
<td>.068</td>
<td>-4.829</td>
<td>.123</td>
</tr>
<tr>
<td>19 – Over</td>
<td>13 – 18 Years</td>
<td>-1.484</td>
<td>1.013</td>
<td>.465</td>
<td>-4.163</td>
<td>1.193</td>
</tr>
<tr>
<td>19 – Over</td>
<td>13 – 18 Years</td>
<td>3.822*</td>
<td>1.120</td>
<td>.007</td>
<td>-6.812</td>
<td>-.832</td>
</tr>
<tr>
<td>19 – Over</td>
<td>1 – 6 Years</td>
<td>-2.954</td>
<td>1.191</td>
<td>.074</td>
<td>-6.111</td>
<td>.201</td>
</tr>
<tr>
<td>19 – Over</td>
<td>7 – 12 Years</td>
<td>-1.470</td>
<td>1.33</td>
<td>.691</td>
<td>-4.999</td>
<td>2.058</td>
</tr>
</tbody>
</table>

*. The mean difference is significant at the 0.05 level.

**Research Question #3: What are the attitudes of faculty members in a single large Saudi university toward the enrollment and instruction of D/HH students in higher education?**

The descriptive statistics shown in Table 4.7 reflect that the mean score of attitudes of faculty members toward D/HH students is 39.00 with a standard deviation of 6.38. The highest obtained score was 52 out of 56 points and the lowest score was 15 points. As previously indicated, a total score of 28 or higher indicates that the faculty member holds more positive than negative attitudes toward D/HH students. The mean score and the standard deviation indicate that faculty members who participated in this research hold generally positive attitudes toward D/HH students. Percentages of faculty members who hold more positive attitudes (94%) and faculty members who hold more negative attitudes (6%) are presented in Chart 4.3.
Research Question #4: Are there differences in the attitudes of faculty members in two different colleges (Humanities or Scientific) in a single large Saudi university toward the enrollment and instruction of D/HH students in higher education?

Responses of faculty members to the Attitudes section [A] of both types of colleges (Humanities and Scientific) were analyzed using an independent-samples t-test, as shown on Table 4.21 and Table 4.22. However, Levene’s test for equality of variances was found to be violated for this analysis since $p=0.001$, indicating a statistically significant difference in the variances between groups. Owing to this violated assumption, a $t$ statistic not assuming homogeneity of variance was computed and therefore it was needed to look at the second row of Table 4.22. The analysis indicated that there was a significant difference in the scores in the Attitudes section [A] of faculty members from the Humanities ($M=40.61$, $SD=4.67$) and Scientific Colleges ($M=37.14$, $SD=7.52$); $t(167.191)= 4.069$, $p < 0.01$. 

Chart 4.3. Percentages of Faculty Members’ Scores in the Attitudes Section
Table 4.21
Statistics Related to College Type in the Attitudes Section

<table>
<thead>
<tr>
<th>Variable</th>
<th>College</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
<td>Humanities</td>
<td>120</td>
<td>40.608</td>
<td>4.667</td>
<td>.426</td>
</tr>
<tr>
<td></td>
<td>Scientific</td>
<td>104</td>
<td>37.144</td>
<td>7.516</td>
<td>.737</td>
</tr>
</tbody>
</table>

Table 4.22
Independent Samples Test of College Type in the Attitudes Section

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>Scores</td>
<td>Equal variances assumed</td>
<td>11.814</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>4.069</td>
</tr>
</tbody>
</table>

This result supports the second hypothesis in this study that, “there is a statistically significant difference in the attitudes of faculty members toward D/HH students based on college type, where those faculty members in the Scientific Colleges have less positive attitudes than those in the Humanities Colleges.”

Focusing specifically on items that are designed to reveal faculty member readiness to teach D/HH students (items 2, 3, 5, 10, and 14 in the Attitudes section ‘A’ of the survey) where the highest possible score is 20, revealed that faculty members in the Humanities Colleges felt more ready to teach this group of students ($M = 16.33$, $SD = 2.57$) than faculty members in the
Scientific Colleges (\(M = 14.85, SD = 3.88\)). This result is indicated on Table 4.23.

Table 4.23

### Readiness to Teach D/HH Students Based on College Type

<table>
<thead>
<tr>
<th>College</th>
<th>Mean</th>
<th>N</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>16.333</td>
<td>120</td>
<td>2.574</td>
<td>6.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Scientific</td>
<td>14.846</td>
<td>104</td>
<td>3.878</td>
<td>5.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Total</td>
<td>15.642</td>
<td>224</td>
<td>3.322</td>
<td>5.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Therefore, the third hypothesis in this study, “There is a statistically significant difference in the perceived readiness of faculty members to teach D/HH students where those in the Humanities Colleges feel more prepared to teach D/HH students than faculty members in the Scientific College” is supported.

**Research Question # 5: Are there attitudinal differences among faculty members in a single large Saudi university about the enrollment and instruction of D/HH students that are dependent upon their gender, age, academic rank, and their experience in teaching at an IHE?**

Each variable in this question was separated to provide a detailed answer.

**Gender [A].** A t-test analysis was run to find out the effect of gender on faculty member attitudes. With the equality of variances, there was no significant difference in the scores in the Attitudes section between male faculty members (\(M = 38.68, SD = 6.69\)) and female faculty members (\(M = 39.44, SD = 5.93\)); \(t(222) = .869, p = .386\), as shown on Table 4.24 and Table 4.25.

Table 4.24

### Gender Statistics in the Attitudes Section

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>130</td>
<td>38.684</td>
<td>6.692</td>
<td>.586</td>
</tr>
<tr>
<td>Female</td>
<td>94</td>
<td>39.436</td>
<td>5.930</td>
<td>.611</td>
</tr>
</tbody>
</table>
Table 4.25

**Independent Samples Test of Gender in the Attitudes Section**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levene's Test</td>
<td>F</td>
</tr>
<tr>
<td>Scores</td>
<td>Equal variances assumed</td>
<td>2.298</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>.886</td>
</tr>
</tbody>
</table>

**Age [A].** The researcher intended to run an ANOVA test regarding the effects of age on the attitudes of faculty members, but a violation of the homogeneity of variances assumption was found, as indicated by the Levene’s Test of Homogeneity of Variances ($p < .001$) that is provided on Table 4.26. Therefore, a Welch’s $F$-test was run. As represented on Table 4.27, there is a statistically significant main effect, Welch’s $F(3, 97.35) = 10.143, p < .001$. The estimated omega squared ($\omega^2 = .11$), indicating that approximately 11% of the total variation in attitudes is attributable to differences between the subgroups of the age variable.

Table 4.26

**Test of Homogeneity of Variances of Age Subgroups in the Attitudes Section**

<table>
<thead>
<tr>
<th>Levene’s Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.341</td>
<td>3</td>
<td>220</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 4.27

Robust Test of Equality of Means of Age Subgroups in the Attitudes Section

<table>
<thead>
<tr>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch’s</td>
<td>10.143</td>
<td>3</td>
<td>97.349</td>
</tr>
</tbody>
</table>

a. Asymptotically $F$ distributed.

Games-Howell post hoc comparisons, as shown on Table 4.28 revealed that faculty members who were 31-years old or younger ($M=41.75$, $SD=3.50$) had significantly higher total scores (more positive) on the Attitudes section than all the other age subgroups: 32- to 39-years old ($M=39.84$, $SD=3.51$); 40- to 47-years old ($M=37.95$, $SD=7.86$); and, 48-years old and older ($M=34.67$, $SD=8.92$). The effect sizes for these three significant effects were 0.54, 0.62, and 1.04, respectively. Additionally, faculty members whose ages ranged from 32- to 39-years old ($M=39.84$, $SD=3.51$) had significantly higher scores than those who were 48-years old or older ($M=34.67$, $SD=8.92$). The effect size for this significant difference was 0.76.

Table 4.28

Multiple Comparisons of Age Subgroups in the Attitudes Section

Games-Howell

<table>
<thead>
<tr>
<th>(I) Age</th>
<th>(J) Age</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under - 31</td>
<td>32 – 39</td>
<td>1.916*</td>
<td>.617</td>
<td>.013</td>
<td>[.308, 3.524]</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>3.807*</td>
<td>1.147</td>
<td>.007</td>
<td>[.793, 6.822]</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>7.078*</td>
<td>1.537</td>
<td>.000</td>
<td>[2.971, 11.185]</td>
</tr>
<tr>
<td>32 – 39</td>
<td>Under - 31</td>
<td>-1.916*</td>
<td>.617</td>
<td>.013</td>
<td>[-3.524, -.308]</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>1.891</td>
<td>1.126</td>
<td>.342</td>
<td>[-1.071, 4.854]</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>5.162*</td>
<td>1.521</td>
<td>.008</td>
<td>[1.090, 9.233]</td>
</tr>
<tr>
<td>40 – 47</td>
<td>Under - 31</td>
<td>-3.807*</td>
<td>1.147</td>
<td>.007</td>
<td>[-6.822, -.793]</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>-1.891</td>
<td>1.126</td>
<td>.342</td>
<td>[-4.854, 1.071]</td>
</tr>
<tr>
<td></td>
<td>48 – Over</td>
<td>3.270</td>
<td>1.803</td>
<td>.275</td>
<td>[-1.474, 8.015]</td>
</tr>
<tr>
<td>48 – Over</td>
<td>Under - 31</td>
<td>-7.078*</td>
<td>1.537</td>
<td>.000</td>
<td>[-11.185, -2.971]</td>
</tr>
<tr>
<td></td>
<td>32 – 39</td>
<td>-5.162*</td>
<td>1.521</td>
<td>.008</td>
<td>[-9.233, -1.090]</td>
</tr>
<tr>
<td></td>
<td>40 – 47</td>
<td>-3.270</td>
<td>1.803</td>
<td>.275</td>
<td>[-8.015, 1.474]</td>
</tr>
</tbody>
</table>

*. The mean difference is significant at the 0.05 level.
This result supports the fourth hypothesis in this study that, “There is a statistically significant difference in the attitudes of faculty members toward D/HH students based on the faculty member’s age, where the older the faculty member, the less positive the attitude exhibited toward D/HH students and their enrollment in higher education.”

**Academic rank [A].** An ANOVA test was run to find out if the academic ranks of faculty members had significant effect on their attitudes toward D/HH students. Due to the violation of the homogeneity of variance, as indicated by the Levene’s Test of Homogeneity of Variances ($p=0.000$) provided on Table 4.29, the Welch’s $F$-test was used. The analysis of faculty members’ total scores on the Attitudes section revealed a statistically significant main effect by academic rank, *Welch’s $F(4, 41.936) = 18.655$, $p < .001* provided on Table 4.30. The estimated omega squared ($\omega^2 = 0.24$) indicates that approximately 24% of the total variation in total Attitudes scores was attributable to differences between faculty members in terms of academic rank.

Table 4.29

*Test of Homogeneity of Variances of Academic Rank Subgroups in the Attitudes Section*

<table>
<thead>
<tr>
<th>Levene’s Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.612</td>
<td>4</td>
<td>219</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.30

*Robust Tests of Equality of Means of Academic Rank Subgroups in the Attitudes Section*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch</td>
<td>4</td>
<td>41.936</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Asymptotically $F$ distributed.
Games-Howell post hoc, as shown on Table 4.31, revealed that teaching assistants 
\((M=41.50, \ SD=3.86)\) had significantly higher total scores on the Attitudes section [A] than 
associate professors \((M=34.54, \ SD=9.39)\) and full professors \((M=25.12, \ SD=6.06)\). The effect 
sizes for these two significant effects were 0.96 and 3.09, respectively. Lecturers \((M=41.42, \ \ SD=3.35)\) also achieved higher scores than assistant professors \((M=39.52, \ SD=4.12)\), associate 
professors \((M=34.54, \ SD=9.39)\), and full professors \((M=25.12, \ SD=6.06)\). The effect sizes for 
these three significant effects were 0.50, 0.97, and 3.15, respectively. Furthermore, assistant 
professors \((M=39.52, \ SD=4.12)\) had higher scores than associate professors \((M=34.54, \ SD=9.39)\) 
and full professors \((M=25.12, \ SD=6.06)\). The effect sizes for these two significant effects were 
0.69 and 2.78, respectively.

In addition, associate professors \((M=34.54, \ SD=9.39)\) had higher scores than full 
professors \((M=25.12, \ SD=6.06)\) regarding attitudes about D/HH students. The effect size for this 
significant effect was 1.19. This result supports the fifth hypothesis in this study that, “there is a 
statistically significant difference in the attitudes of faculty members toward D/HH students 
based on the faculty member’s academic rank, where the higher the academic rank, the less 
positive the attitude exhibited toward D/HH students and their enrollment in higher education.”
Table 4.31

Multiple Comparisons of Academic Rank Subgroups in the Attitudes Section

<table>
<thead>
<tr>
<th>(I) Rank</th>
<th>(J) Rank</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>Lecturer</td>
<td>.083</td>
<td>.748</td>
<td>1.000</td>
<td>-2.007</td>
<td>2.174</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>1.980</td>
<td>.770</td>
<td>.085</td>
<td>-.167</td>
<td>4.128</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>6.961*</td>
<td>1.623</td>
<td>.001</td>
<td>2.369</td>
<td>11.554</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>16.375*</td>
<td>2.227</td>
<td>.000</td>
<td>8.721</td>
<td>24.029</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Teaching Assistant</td>
<td>-.083</td>
<td>.748</td>
<td>1.000</td>
<td>-2.174</td>
<td>2.007</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>1.897*</td>
<td>.638</td>
<td>.028</td>
<td>.132</td>
<td>3.661</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>6.878*</td>
<td>1.564</td>
<td>.001</td>
<td>2.429</td>
<td>11.326</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>16.291*</td>
<td>2.184</td>
<td>.001</td>
<td>8.640</td>
<td>23.943</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>Lecturer</td>
<td>-1.980</td>
<td>.770</td>
<td>.085</td>
<td>-4.128</td>
<td>.167</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>1.897*</td>
<td>.638</td>
<td>.028</td>
<td>-3.661</td>
<td>-.132</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>4.981*</td>
<td>1.575</td>
<td>.022</td>
<td>.506</td>
<td>9.455</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>14.394*</td>
<td>2.192</td>
<td>.001</td>
<td>6.743</td>
<td>22.045</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>Lecturer</td>
<td>-6.961*</td>
<td>1.623</td>
<td>.001</td>
<td>-11.554</td>
<td>-2.369</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>-4.981*</td>
<td>1.575</td>
<td>.022</td>
<td>-9.455</td>
<td>-.506</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
<td>9.413*</td>
<td>2.616</td>
<td>.019</td>
<td>1.328</td>
<td>17.499</td>
</tr>
<tr>
<td>Professor</td>
<td>Teaching Assistant</td>
<td>-16.375*</td>
<td>2.227</td>
<td>.000</td>
<td>-24.029</td>
<td>-8.721</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>-16.291*</td>
<td>2.184</td>
<td>.001</td>
<td>-23.943</td>
<td>-8.640</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor</td>
<td>-14.394*</td>
<td>2.192</td>
<td>.001</td>
<td>-22.045</td>
<td>-6.743</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>-9.413*</td>
<td>2.616</td>
<td>.019</td>
<td>-17.499</td>
<td>-1.328</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Years of IHE teaching experience [A]. An ANOVA test was run for the variable years of teaching experience at an IHE, but, similar to the other variables, the assumption of homogeneity of variances was not met, as indicated by the Levene’s Test of Homogeneity of Variances (p=001) that is provided on Table 4.32.

Table 4.32

Test of Homogeneity of Variances of Years of IHE Teaching Experience Subgroups in the Attitudes Section

<table>
<thead>
<tr>
<th>Levene’s Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.244</td>
<td>3</td>
<td>220</td>
<td>.000</td>
</tr>
</tbody>
</table>
The Welch’s F-test was used and is represented on Table 4.33. The analysis of faculty members’ total scores on the Attitudes section revealed a statistically significant main effect, Welch’s $F(3, 76.108)= 6.735, p < .001$, indicating that faculty members with different years of IHE teaching experience significantly differ in their Knowledge scores. The estimated omega squared ($\omega^2= 0.071$) indicates that approximately 7% of the total variation in total Attitudes scores is attributable to differences between the subgroups in number of years of IHE teaching experience.

Table 4.33

<table>
<thead>
<tr>
<th>Statistic$^a$</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch</td>
<td>6.735</td>
<td>3</td>
<td>76.108</td>
</tr>
</tbody>
</table>

$^a$ Asymptotically $F$ distributed.

Games-Howell post hoc comparisons revealed, as shown on Table 4.34, that faculty members with fewer years of IHE teaching experience, from 1 to 6 years ($M=40.91, SD=3.83$) had higher scores (more positive) in the Attitudes section [A] than faculty members with 13 to 18 years of experience ($M=38.00, SD=8.42$) and faculty members with 19 years of IHE teaching or more ($M=34.26, SD=9.88$). The effect sizes for these significant effects were 0.40 and 0.89, respectively. Faculty members with 7 to 12 years of experience ($M=39.34, SD=4.07$) also had significantly higher scores than faculty members with 19 years of IHE teaching or more ($M=34.26, SD=9.88$). The effect size for this significant effect was 0.67.
Table 4.34

Multiple Comparisons of Years of IHE Teaching Experience Subgroups in the Attitudes Section

<table>
<thead>
<tr>
<th>(I) Teaching Experience</th>
<th>(J) Teaching Experience</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 6 Years</td>
<td>7 – 12 Years</td>
<td>1.574</td>
<td>.643</td>
<td>.073</td>
<td>-.0995 – 3.248</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 – 18 Years</td>
<td>2.913</td>
<td>1.541</td>
<td>.251</td>
<td>-1.241 – 7.068</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 – 12 Years</td>
<td>1 – 6 Years</td>
<td>-1.574</td>
<td>.643</td>
<td>.073</td>
<td>-3.248 – .0995</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 – 18 Years</td>
<td>1.338</td>
<td>1.572</td>
<td>.830</td>
<td>-2.884 – 5.561</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 – Over</td>
<td>5.081*</td>
<td>1.745</td>
<td>.029</td>
<td>.404 – 9.758</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 – 18 Years</td>
<td>1 – 6 Years</td>
<td>-2.913</td>
<td>1.541</td>
<td>.251</td>
<td>-7.068 – 1.241</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 – 12 Years</td>
<td>-1.338</td>
<td>1.572</td>
<td>.830</td>
<td>-5.561 – 2.884</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 – Over</td>
<td>3.742</td>
<td>2.238</td>
<td>.347</td>
<td>-2.159 – 9.645</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 – Over</td>
<td>1 – 6 Years</td>
<td>-6.655*</td>
<td>1.718</td>
<td>.002</td>
<td>-11.271 – 2.040</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 – 12 Years</td>
<td>-5.081*</td>
<td>1.745</td>
<td>.029</td>
<td>-9.758 – -.404</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 – 18 Years</td>
<td>-3.742</td>
<td>2.238</td>
<td>.347</td>
<td>-9.645 – 2.159</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

Summary

This chapter presented results of the quantitative analysis of the data that were collected to explore the extent of the knowledge faculty members in a Saudi university possessed about hearing loss and their attitudes toward D/HH students. Data involved responses to a survey distributed to 224 male and female faculty members within two types of colleges (Humanities and Scientific) at a single, large Saudi university. The analysis revealed that most faculty members in this university possessed adequate knowledge about D/HH students and had positive attitudes toward this population of students. However, college type, age, academic rank, and years of IHE teaching experience had a significant impact on the level of knowledge and attitudes of faculty members, while gender did not have any significant effect.
Chapter Five

Discussion

Summary of the Findings

This study was conducted to explore the extent of the knowledge faculty members in a Saudi university possess about hearing loss and their attitudes toward students who are Deaf and Hard of Hearing (D/HH). The research was designed to reveal similarities and differences in their knowledge and perceptions by analyzing their responses to a survey distributed to faculty within two types of colleges (Humanities and Scientific) at a single, large Saudi university. The data included the responses of 224 participants of both genders whose ages ranged from 24- to 65-years old. Participants hold different academic ranks at the university, including: teaching assistants, lecturers, assistant professors, associate professors, and full professors. The lengths of teaching experience also varied greatly from relatively inexperienced (one year) to very experienced (more than 19 years).

Quantitative methodology (both descriptive and correlational) was used in the study that included descriptive statistics, t-test, and Welch’s F-test tools. SPSS software was used for all data analyses. A detailed discussion of the data analysis is provided in this section, followed by implications for integrating D/HH students in higher educational institutions, recommendations for further study, and a summary.

Findings. The findings revealed by the data analysis included the following:

1. The results indicated that most faculty members who participated in the study possessed generally adequate knowledge about D/HH students.

2. College type, age, academic rank, and years of IHE teaching experience had a significant impact on the level of knowledge base of faculty members; however, gender did not have
any significant effect.

3. Faculty members at a single, large Saudi university who participated in this study generally had positive attitudes toward D/HH students in higher education.

4. Faculty members in the Humanities Colleges had more positive attitudes toward the enrollment and instruction of D/HH students in higher education than those from the Scientific Colleges.

5. Age, academic rank, and years of IHE teaching experience had significant impact on the attitudes faculty members had toward the enrollment and instruction of D/HH students in higher education; gender did not have any significant impact.

The results of the data analysis supported all five of the study hypotheses. In addition, the results indicated that 63% of the faculty members who participated in the study did not have enough knowledge regarding Saudi laws pertaining to D/HH education and students rights, although they were found to possess generally adequate knowledge about the deaf and hard of hearing people and held positive attitudes toward the enrollment and instruction of D/HH students in higher education.

**Overview of Discussion**

The discussion of the results that follows is divided into six section or topics. The first section focuses on the knowledge and attitudes of the faculty respondents as a group. In the remaining five sections, the discussion focuses on the faculty respondents’ knowledge and attitudes when the independent variables of age, gender, academic rank, years of experience teaching in an IHE, and type of college are considered. The first section on general faculty knowledge addresses the first and third findings of this study and the remaining five sections address the second, fourth, and fifth findings.
General knowledge of faculty members on hearing loss and their attitudes toward D/HH students. The study revealed that the understanding faculty members at a single, large university in Saudi Arabia possessed regarding D/HH individuals and the abilities of D/HH students was generally adequate and rather sophisticated. However, an interesting and seemingly contradictory trend was noted in responses to one of the items in the Knowledge section [K] during the data analysis. Although apparently rather enlightened regarding educating the D/HH, most faculty members did not have adequate knowledge of Saudi laws that establish and protect the rights of the deaf and hard of hearing to education in general and higher education.

About 63% of participants indicated they were unaware that the law in Saudi Arabia ensures the right of deaf and hard of hearing students to access higher education; 8% of respondents said that such a law does not exist. The relevant law was established in Saudi Arabia in 2000 (King Salman Center for Disability Research, 2004). However, clearly the majority of faculty members – even over 16 years later – possessed little to no knowledge of it. A possible reason for this lack of awareness is that the media in Saudi Arabia does not tend to cover or publicize the passing of such laws. Additionally, the lack of classes or other type of training on special education and education rights law may not exist in most Saudi education programs for K-12 teachers and IHE faculty. The lack of other social media communication could also be a contributing factor to faculty lack of awareness and knowledge.

Another finding was that the attitudes of faculty members were generally positive toward the enrollment and instruction of D/HH students in higher education programs. For example, faculty indicated that they believe that D/HH students who qualify academically should be granted admission to any post-secondary program. They also indicated that they are willing to make necessary modifications and accommodations that D/HH students need in their class to
make sure that they have an equal opportunity to succeed as hearing students. These results are consistent with results of other researchers on the topic such as that conducted by Hong and Himmel (2009) at a mid-sized university in the U.S. regarding attitudes toward people with special needs. That study found that the faculty member participants possessed adequate knowledge of, and exhibited positive attitudes toward, students with special needs.

The study results are also consistent with the results of research conducted by Sniatecki’s et. al. (2015) at a public, upstate New York university; Williamson (2000) at a different at an American public university; and, Abu-Hamour (2013) at a public university in Jordan. All of these studies found that faculty members had positive attitudes toward students with special needs, including D/HH students. Even though all of these studies focus on exploring faculty members’ attitudes toward students with special needs in general while this study focuses specifically on attitudes toward D/HH students, the results were similar. In addition, this study’s findings support Sniatecki et. al.’s (2015) statement that faculty members exhibit positive or at least neutral attitudes toward the population of students with special needs when they possess adequate knowledge of such students and their abilities.

**Gender.** Data analysis of faculty attitudes when participants were divided based on gender revealed that there was no significant difference between the knowledge and attitudes of male and female faculty members. This result concurs with Williamson’s (2000) finding that both male and female faculty members have positive attitudes toward students with special needs, indicating that gender made no significant difference in attitude of faculty members. However, this finding is not consistent with those of Abu-Hamour (2013) and Alrayes (2004) that gender had a significant effect on faculty member attitudes toward D/HH students. Both of these researchers found that female faculty members had more positive attitudes toward D/HH
adult students than their male counterparts and that a higher percentage of male participants had
negative attitudes than did female participants.

Disagreement between the results of this study and Williamson (2000), on the one hand, and those of Abu-Hamour (2013) and Alrayes (2004), on the other, might be attributed to the
effects of other variables on gender, such as college type, age, academic rank, and years of IHE
Teaching experience. Focusing specifically on Saudi Arabia in this study, it makes sense that
there is no significant difference between faculty members based on gender because of relatively
recent modernizations in the country that have equalized gender access to, and the likelihood of,
education, and the additional reality that both males and females have greater access to the media
which can be a very effective tool in developing and improving people’s attitudes toward and
knowledge of people with special needs.

Age. The study also revealed that age had a significant effect on faculty members’
knowledge and their attitudes toward individuals who are deaf and hard of hearing. Generally
speaking, younger faculty members had more knowledge and more positive attitudes than older
ones. This result is in contrast with the results of Williamson (2000) and Alrayes (2004) who
found that age of faculty members has no significant difference on their attitudes.

Effects of age on knowledge and attitudes of faculty members who participated in the
present study could be attributed to younger faculty members studying in inclusive schools,
especially because inclusion started relatively recently in Saudi Arabia. Older faculty members
involved in the study might never have studied with students with special needs. Contemporary
developments in the entire field of education in Saudi Arabia might also have a relevant effect on
the knowledge base and attitudes of young Saudis in general, and specifically of young faculty
members. Similarly, progressive attitudes in the media and the recent emergence of social media
might also have some effect, especially as younger people tend to be connected to these phenomena more than older ones.

**College type.** This study also revealed differences in the level of knowledge and attitudes of faculty members from the Humanities Colleges versus the Scientific Colleges. Differences were also found in these two subsets toward the idea of enrollment and instruction of D/HH students in higher education. Faculty members in the Humanities Colleges seemed to have more knowledge about D/HH individuals than those in the Scientific Colleges. They also held more positive attitudes toward the population than faculty members in the Scientific Colleges. Deeper knowledge seems to promote more positive attitudes. In addition, faculty members in the Humanities Colleges perhaps chose professions that are more “people” oriented, whereas those faculty members in the Scientific Colleges are more focused on work in laboratories and may lack extensive human contact in their work. This result was reflected in faculty members’ perceived readiness to teach D/HH students where faculty members in the Humanities Colleges exhibited more perceived readiness to teach this group of students than their fellow faculty members in the Scientific Colleges.

These results are consistent with the findings of Williamson (2000) and Alrayes (2004) who noted that faculty members’ college type (Humanities or Sciences) had a significant effect on their attitudes. Alrayes (2004), for instance, found that faculty members in Humanities Colleges, such as the Department of Developmental Studies and Library, had more positive attitudes than faculty members in the Scientific Colleges, as represented by the College of Engineering. Williamson (2000), however, found that faculty members in the College of Education had the least positive attitudes toward students with a range of special needs. He attributed this low rate of positive attitudes in his study to the increase in the rate of retirement of
faculty members in the College of Education that increased stress and potentially a more demanding work load on remaining faculty and, in addition, the retirement and replacement of the President. He also noted that in this particular college, several key administrators had died creating further instability in the administrative structure of the college which affected faculty negatively. Findings of this present study and those of Williamson (2000) and Alrayes (2004) contradict Abu-Hamour’s (2013) finding that there was no significant relationship between attitudes and area of academic discipline.

A possible reason for the difference in the knowledge and attitudes of these faculty members is that faculty members in the Humanities Colleges receive more background in the field of education and social science areas during their undergraduate and graduate studies than their cohort in the Scientific Colleges. In addition, those in the Humanities Colleges may have more contact with students with special needs in general education as they frequently conduct visits to schools, including schools/programs specifically for special education students and inclusive schools. Additionally, faculty in the Humanities may have had greater opportunities to work with and conduct research with individuals with disabilities than faculty in the hard sciences. Their greater knowledge might also be developed through regular contact with educators, social workers, and counselors.

**Academic rank.** Grouping faculty members who participated in this study based on academic rank revealed a significant difference in their knowledge and attitudes. Generally speaking, faculty members with lower academic rank exhibited more knowledge and more positive attitudes than faculty members with higher academic rank. This result is consistent with the Williamson (2000) and Abu-Hamour (2013) studies, but it contradicts that of Alrayes (2004) who found that academic rank had no significant effect on faculty member attitudes.
Williamson (2000) attributed this difference to outspokenness of faculty members with higher rank, or what he called faculty members “with academic rank,” as compared to faculty members with lower academic rank. These tenured faculty members may not feel the need to respond in “more politically correct terms” (p. 64). Another reason, derived from Williamson (2000), is that those faculty members with higher rank are more involved in university committees, serve as department chairs, and are responsible for developing curriculum. These responsibilities could increase their stress and reduce the amount of time they have to work with students with special needs.

Abu-Hamour (2013) added that the busy schedules of such higher ranked faculty members impacts their ability to provide students with special needs the special treatment that they may require. Furthermore, such faculty might feel that such students will not be able to fulfill the requirements of their classes without time-consuming support from the professor. Regarding their knowledge level, faculty members with higher academic rank tend to be older than other faculty members and so age, also found to be a factor, could have some negative impact on knowledge in this subset.

**Years of IHE teaching experience.** The final grouping of faculty members was on the variable of the length of teaching experience in higher education institutions. In general, it was found that faculty members who had less experience had more knowledge about hearing loss and the abilities of D/HH students. This subset also held more positive attitudes toward the enrollment and instruction of D/HH students in higher education. These results agree with the result of Abu-Hamour (2013) who found that years of teaching experience were a crucial influencer on the attitudes of faculty members in a public university in Jordan. In contrast, these

Other variables in this study, such as age and academic rank might have some impact on the effect of years of IHE teaching experience. The higher the rank, the more likely the older the instructor. As age increased, knowledge decreased, and attitudes became more negative. Other possible reasons might be related to type of teaching method, strategies, and standards faculty members use in their teaching. Experienced faculty members may use more advanced teaching methods, possess more developed strategies, and have higher standards when measuring the success of their students. Therefore, they may also apply higher standards when evaluating students in higher education and may feel that D/HH students might not be able to meet such standards or achieve success in their classes. Another reason might be related to the use of technology where experienced faculty members are sometimes found to use technology less than new faculty members. As a result, more experienced faculty might encounter difficulty and feel less comfortable in providing required accommodations because they typically use less or no technology in their classrooms.

**Implications for the Education of D/HH Students in Higher Institutions**

Obviously, higher education faculty members’ knowledge about deaf and hard of hearing people in general, the abilities of D/HH students, and their attitudes toward the enrollment and instruction of D/HH students in higher education impacts the quality of education such students receive, the level of ‘true’ inclusion such people experience, and their success in the classroom. The present study found that overall, faculty members at a single, large university in Saudi Arabia have adequate knowledge about this demographic. This might be a good predictor of the success for supporting this population’s access to this university, especially in the Humanities Colleges since faculty members in this track were found to possess more knowledge and have
more positive attitudes than faculty members in the Scientific Colleges.

However, the lack of awareness faculty members possessed regarding the law in Saudi Arabia that ensures deaf and hard of hearing individuals have the right to access higher education needs to be addressed. Knowledge of special education in general and D/HH education in particular and the relevant laws must be enhanced. Greater awareness is needed to improve faculty member knowledge related to this specific issue. Various methods and channels can be used to improve such knowledge, including: workshops, courses, seminars, educational brochures, and posters. Having educational programs and classes in general education programs focusing on hearing loss and teaching students who are D/HH are also needed to develop the knowledge of future generations of faculty.

Any variables that were found in this study to be related to less knowledge and more negative attitudes toward D/HH students could be targeted in future faculty seminars and workshops so as to develop their knowledge and reduce negativity in their attitudes. Hosting successful D/HH students from other institutions and arranging visits to inclusive schools that have D/HH students could also be helpful. Beginning of year faculty orientation could address this issue as well as an amendment to the faculty handbook that adds a section on the Disability Code and suggestions for successfully including students with various disabilities. Developing faculty members’ knowledge of D/HH students and knowledge about specific modifications these students might require could be used to increase the positivity of attitudes toward this population as well as encourage such faculty to provide necessary accommodations and modifications to such students.

A reduction in the responsibilities of those faculty members who teach D/HH students might increase positivity in attitudes. Since the often busy schedules of these faculty members
might prevent their providing D/HH students with any needed special attention, a reduction in responsibilities could help these instructors devote more time to understanding and developing the accommodations and modifications necessary to assure the success of D/HH students in higher education.

**Recommendations for Further Research**

This study was designed to reveal the extent of Saudi higher education faculty members’ knowledge about hearing loss, and their attitudes toward D/HH students. However, academic success is not only the responsibility of IHE faculty, so further study is needed to investigate the readiness of high school enrolled D/HH students to continue on to higher education programs. Similarly, additional study of a more granular level is needed to analyze the knowledge and attitudes of faculty members across departments within colleges. This more specific information at the departmental level will help the university administration to determine departmental readiness to accept and effectively work with students who are deaf and hard or hearing and identify departments that may require professional development focusing on meeting the needs of D/HH learners before placing such students in their courses. Since this study was limited to one university in Saudi Arabia, it would be helpful to conduct studies at other Saudi universities to see if knowledge and attitudes of faculty members might vary based on the size, region, or location of the university.

**Summary**

This study was designed to measure the extent of knowledge of faculty members about hearing loss, the abilities of D/HH students, and the attitudes of such faculty toward the enrollment and instruction of this population. Participants were 224 male and female faculty members of different ages, academic rank, and length of teaching experience. The surveyed
faculty working in either the Humanities or Scientific Colleges at a single large university in Saudi Arabia. In general, the study revealed that the participating faculty members had adequate knowledge about hearing loss and had positive attitudes toward D/HH students.

These results suggest a positive future for deaf and hard of hearing education in higher institutions. Relevant implications and pathways were provided to increase faculty member knowledge and to encourage more positive attitudes toward D/HH post-secondary students. These findings indicate improved educational opportunities for D/HH students. Suggestions for future research were provided, including a need for studies investigating D/HH high school student readiness to enroll in higher education institutions, and research focusing on the differences in knowledge and attitudes of faculty members across specific departments. This study was limited to only one university in the middle of Saudi Arabia and so conducting a study investigating knowledge and attitudes of faculty members at other Saudi universities could reveal some significant differences related to region and location.
References


Appendices

Appendix A

Pilot Pre-Dissertation Project

Title:

Saudi faculty members’ knowledge and attitudes toward deaf and hard of hearing students in higher education: A preliminary inquiry

Procedure:

The following questions were asked of 6 faculty members at a Saudi university. Two professors per college were randomly selected for each of the following colleges: College of Humanities, College of Sciences, College of Technical Studies.

Purpose of the Study:

Currently, post-secondary options are very limited for individuals with special needs and more specifically significant hearing loss in Saudi Arabia. The responses to this pilot study survey helped frame the questions asked for a much larger study of the knowledge and attitudes (K & A) about and toward the inclusion of students with hearing loss in higher education at the same Saudi university.
This pilot study has three sections:

1. Demographic questions

2. True/False questions

3. Narrative questions

▶ Demographic questions:

1. Title and rank: .............................................................

2. College (Humanities, Sciences Technical): ......................

3. Department: .............................................................

3. Age: ...........................................................................

4. Years of college/university teaching: ............................

5. Gender: .....................................................................
True or false questions:

1. A person who is deaf cannot hear anything. True False
2. Most deaf people cannot talk. True False
3. Most deaf children have deaf parents. True False
4. Deaf students are usually as smart as hearing students. True False
5. Most deaf people can read and write. True False
6. Deaf people can drive cars. True False
7. Most deaf adults marry other deaf adults. True False
8. Deafness can always be corrected with surgery. True False
9. Often deaf and hard of hearing people have more emotional problems than hearing people because they cannot hear. True False
10. Arabic sign language is spoken Arabic directly and completely translated to hand gestures. True False

Narrative questions:

1. Please define the term “students with special needs”?

2. Other than in a student–teacher relationship, do you know or have you ever communicated or worked with a person with special needs?
   a. If yes, describe the person(s) and the experience.
   b. If no, do you think you can communicate with such a student effectively? Why? What difficulties might you face?
3. Have you ever taught a student with special needs?
   a. If yes, describe the student(s) and your experience.
   b. What additional accommodations and assists did these students need to be successful in the classes you taught?
   c. If no, do you think you can teach a student with special needs successfully? Why? What additional accommodations and assists might students need to be successful in the classes you teach?

4. Is there a difference between a person who is deaf and a person who is hard of hearing?
   a. If yes, describe the difference?

5. Have you ever meet a deaf person or person who was hard of hearing?
   a. Describe that interaction or relationship.

6. Let’s look at communication between people with hearing losses and hearing people:
   a. In what ways do deaf people communicate with hearing people?
   b. In what ways do hard of hearing people communicate with hearing people?

7. Have you ever seen an Arabic Sign Language (ASL) interpreter with deaf people?
   a. Describe the setting and situation where you observed this.

8. Have you ever had an Arabic Sign Language Interpreter interpret for you?
   a. If yes, describe the experience.

9. What kinds of difficulties do you think deaf and hard of hearing students may face in higher education programs in Saudi Arabia?

10. What post-secondary opportunities do deaf and hard of hearing people have?
11. What post-secondary opportunities should deaf and hard of hearing people have?
   a. What kind of educational opportunities should deaf people have?
   b. What kind of educational opportunities should hard of hearing people have?
   c. What kind of jobs would be appropriate for hard of hearing people?
   d. What kinds of jobs would be appropriate for deaf people?
   e. What type of jobs would be appropriate for hard of hearing people?
   f. What kinds of jobs would NOT be appropriate for deaf people?
   g. What kind of jobs that you think would NOT be appropriate for hard of hearing people?
Appendix B

Recruitment Letters

Dear faculty member,

I am writing to invite you to participate in Saudi Faculty Members’ Knowledge and Attitudes at a Saudi University Toward Deaf and Hard of Hearing Students in Higher Education, a study that I am conducting to fulfill the requirement of the doctoral degree at the University of New Orleans. I received your email through getting the list of emails of all faculty members at your university. Since you are a faculty member in this Saudi university, you are eligible for this study.

This study is designed to explore the extent of the knowledge base in the area of hearing loss, and the similarities and differences in the attitudes and perceptions of Saudi higher education faculty towards people, and in particular teaching college students, who are deaf and hard of hearing.

If you are interested in participation or learning more about this study, please do not hesitate to contact me on my phone number (+15044323412) or my email (as-55as@hotmail.com).

Your participation in this study is your decision as participation is voluntary. Whether or not you participate in this study will have no effect on your relationship with your university. If you are not interested in this study, you do not have to respond to this email.

Thank you for your time and consideration. I look forward to hearing from you.

Best Regards,
Mohammed Alajlan, M.Ed.
Ph.D. candidate
Appendix C

Survey

December 25, 2016

Dear faculty member,

My name is Mohammed Alajlan and I am on leave from my teaching position at Qassim University. Currently, I am a doctoral student working under the direction of Professor Kate Reynolds in the College of Liberal Arts, Education and Human Development at the University of New Orleans in Louisiana, USA.

For my dissertation work, I am conducting a research study to explore the extent of the knowledge base in the area of hearing loss, and the similarities and differences in the attitudes and perceptions of Saudi higher education faculty towards people, and in particular towards teaching college students, who are deaf and hard of hearing. Survey respondents are faculty serving in two distinct types of colleges (College of Humanities and College of Science) within Qassim University.

I am requesting your participation. This will take about 10–15 minutes and involves completing questions on a short survey. Your participation in this study is voluntary and your name, demographic information, and responses will remain confidential and never be shared.

I would greatly appreciate it if you would accept my invitation to participate in my research. Again, the survey is anonymous. The results of the study may be published but your name will not be known.

If you have any questions concerning the research study, please call me at (504) 432-3412 or e-mail me at the address below. Questions about your rights as a participant in this research, or if you feel you have been placed at risk, can be directed to Dr. Kate Reynolds at the University of New Orleans at 504-280-7162.

Return of the survey will be considered your consent to participate

Sincerely,

Mohammed Alajlan, M.Ed.
Doctoral Student

malajlan@uno.edu
Faculty Demographic Information

1. Gender: _____ Male _____ Female

2. Age: __________

3. Academic Rank: _____Professor _____Associate Professor
   _____Assistant Professor _____ lecturer
   _____Teaching Assistant _____ Other (explain) ………………………
   ………………………

4. College: _____Humanities College _____Scientific College

5. Academic Department: ______________________________________________

6. Total number of higher education teaching years: _____ Years

7. I have taught a deaf and/or hard of hearing (D/HH) student. _____Yes _____No

8. I have a D/HH person as a friend or family member. _____Yes _____No

9. I know some sign language or have used an interpreter in my work. _____Yes _____No

10. I have a diagnosed hearing loss. _____Yes _____No
Please put a check (√) mark for your answer.

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deaf and hard of hearing individuals possess IQs in the same range as the general population.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>Deaf and hard of hearing individuals can participate in programs alongside hearing students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Deaf and hard of hearing students have the same academic potential as hearing students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Deaf and hard of hearing individuals have the ability to pursue higher education.</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Deaf and hard of hearing individuals can obtain and maintain employment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Hearing aids allow deaf and hard of hearing individuals to hear as well as hearing individuals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Deaf and hard of hearing individuals can drive.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Deaf and hard of hearing individuals need Braille or large letters in order to read.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Most deaf and hard of hearing individuals have parents who are also deaf or hard of hearing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Deaf and hard of hearing individuals can develop typical interpersonal relationships such as friendships and marriage.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>If an interpreter is present, make sure you speak and look at the interpreter and not to the deaf or hard of hearing person.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>There is a law in Saudi Arabia that ensures that deaf and hard of hearing individuals have the right to access higher education.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Faculty Survey – Page 2 – Deaf and Hard of Hearing (D/HH)

<table>
<thead>
<tr>
<th>Scoring Key:</th>
<th>1 – Strongly Agree</th>
<th>2 – Agree</th>
<th>3 – Disagree</th>
<th>4 – Strongly Disagree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>I believe I would be as comfortable communicating with a deaf or hard of hearing student as any other student.</th>
<th>Select Your Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I am willing to do all that it would take to make sure that any deaf or hard of hearing student in my class has an equal opportunity to succeed as my hearing students.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>3</td>
<td>I believe that deaf and hard of hearing students who qualify academically should be granted admission to any post-secondary program.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>4</td>
<td>I believe that deaf and hard of hearing college students will advance more rapidly academically when educated in separate classrooms, apart from hearing students.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>5</td>
<td>I believe that in Saudi Arabia deaf and hard of hearing students should have the same educational opportunities as hearing students.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>6</td>
<td>I am uncomfortable when I see deaf or hard of hearing individuals communicating using sign language.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>7</td>
<td>I believe deaf and hard of hearing individuals are not disabled but merely different from hearing peers.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>8</td>
<td>I believe that deaf and hard of hearing individuals should work in jobs where they do not have to communicate with hearing people.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>9</td>
<td>I believe that deaf and hard of hearing individuals who have higher intellectual abilities have clearer speech than deaf or hard of hearing students who are not as intelligent.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>10</td>
<td>I believe I am competent to teach deaf and hard of hearing students.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>11</td>
<td>I believe deaf and hard of hearing individuals should learn to speak rather than use sign language.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>12</td>
<td>I believe that deaf and hard of hearing individuals should pursue corrective surgery.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>13</td>
<td>I believe having a deaf or hard of hearing friend would be difficult for me.</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>14</td>
<td>I believe that university classes should be modified to meet any additional needs deaf and hard of hearing students might have.</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>
Vita

The author was born in Al-Qassim, Saudi Arabia. He completed his Bachelor’s degree in Special Education (Deaf and Hard of Hearing major) from Qassim University in 2009. He earned double master’s degrees in Special Education and Educational Technology from the University of Northern Colorado in 2014. Also, the author was granted a Graduate Certificate in the Education of the Deaf and Hard of Hearing students from Missouri State University in 2014. He joined the University of New Orleans - Special Education Graduate Program to pursue a Ph.D. in Deaf and Hard of Hearing education in 2014.