Online Journal of Communication and Media Technologies, 2023, **13**(2), e202311
e-ISSN: 1986-3497

OPEN ACCESS

Research Article

Pre-service special educators' levels of readiness to learn sign language

Omar A. Alawajee [1*]
0000-0003-0540-3629

[1] Department of Special Education, College of Science and Arts, Qassim University, Ar Rass, SAUDI ARABIA
[*] Corresponding author: o.alawajee@qu.edu.sa

Citation: Alawajee, O. A. (2023). Pre-service special educators' levels of readiness to learn sign language. *Online Journal of Communication and Media Technologies, 13*(2), e202311. https://doi.org/10.30935/ojcmt/12922

ARTICLE INFO

Received: 31 Oct 2022
Accepted: 25 Jan 2023

ABSTRACT

Sign language is critical to deaf individuals' education and mental health, as it provides them adequate opportunities to communicate well in school and express themselves and their feelings to others. Pre-service special educators should be able to use sign language effectively with their future deaf students. This study aimed to determine whether pre-service teachers are ready to learn sign language. A questionnaire comprising four readiness domains–motivation to learn sign language and social, personal, and kinetic aspects–was used in this study. Participants were 72 female pre-service teachers enrolled in a special education bachelor's program at a university in Saudi Arabia. No statistically significant differences were observed in participants' readiness to learn sign language based on their academic paths or academic grade point averages. This result indicates that the pre-service special education teachers possessed the necessary social, personal, and kinetic aspects of readiness to learn sign language and were highly motivated to learn sign language. The findings help advance the current literature on pre-service preparation programs. Recommendations for future practice are discussed.

Keywords: sign language, teacher preparation programs, hearing loss, competence, communication, learning readiness

INTRODUCTION

Human communication is key from birth to death; the continuous process of communication involves several strategies and techniques to send and receive messages (Delafield-Butt & Trevarthen, 2013). There are many forms of communication, including verbal (hearing sounds or spoken words) and visual (seeing signs or gestures or reading written words) communication. To understand the role of communication in society, Dewey (1960/2004) illustrated how a single individual navigates a community, stating that people do not compose a social group unless they work toward cooperativeness for an expected result. This requires communication to inform each other of their purpose and progress; thus, consensus demands effective communication (Dewey, 1960/2004). Furthermore, communication is an essential aspect of mental health and relationships with others, and it helps children understand social and cultural values and rules (Trevarthen & Delafield-Butt, 2013).

Communication is a major and continuous part of a person's life, regardless of how messages are sent or received. Communication occurs in different world languages and among different peoples through spoken words, gestures, or written words (Hewes et al., 1973). In the earliest times in history, the process of communication was very primitive; it then continued to develop in its comprehensiveness and depth to contain different levels and components. In the present era, technology has a significant impact on the process of communication (Fromm, 2004). Several researchers have pointed out that human communication in prehistoric times relied on sight; then, it developed into gestures and a basic level of sign language before transforming into a verbal language (Goldin-Meadow, 2005).

Language is learned through interacting with others and exchanging ideas, information, and knowledge. Abstract spoken language is the advanced use of pictures, graphics, and drawings, which used to be an easy way to communicate, as represented in cave drawings and abstract symbols (Robinson, 1995). Sign language is defined as the natural and native language of deaf individuals (although other groups, such as children with autism, also use it for several purposes). It relies on hand movements, facial expressions, and bodily gestures (Wilcox & Occhino, 2016) to convey meaning and messages to others. Sign language can be divided into three primary levels: descriptive, nondescriptive, and alphabetical signs (Altakhyneh, 2020). Descriptive signs describe shapes and meanings by themselves (e.g., the *eating* sign in Saudi sign language [SSL]), while nondescriptive signs include signs that do not form a meaning, include metaphors, and require a teacher or interpreter of sign language to describe and clarify their meaning (e.g., the *teacher* sign in SSL). Thus, sign language is not a collection of gestures but a language with linguistic structuration (Wilcox, 2009). It is also not an international language; rather, similar to spoken language, its vocabulary and dialects differ from place to place. For example, American sign language (ASL) is different from British sign language, although the two regions speak the same spoken language (Wilcox & Occhino, 2016).

ASL began to be used officially in the United States in 1816 after the first school for deaf students was opened by a French sign language teacher, Laurent Clerc, and an American teacher, Thomas Gallaudet, who graduated from school in Paris. They worked together to adapt French signs to the American context (Frishberg, 1975). In the Arab world, interest in studying and teaching sign language began around the 1980s after the initiation of the Arab Federation of Organizations of the Deaf in 1972 in Damascus (Syrian). In Saudi Arabia, sign language was officially used in 1964 after the first two institutes for deaf individuals were opened in Riyadh (i.e., one for boys and the other for girls; Alzahrani, 2005).

Being ready to learn sign language effectively is one of the essential parts of pre-service teacher preparation programs. Future teachers who plan to work with deaf and hard-of-hearing children must learn sign language, as most deaf people prefer to communicate through sign language (Middleton et al., 2010). The theoretical framework explaining why pre-service teachers should be able to communicate well with their students using their shared language is driven by two fundamental perspectives. First, sociocultural theory highlights the importance of the interaction between teachers' and learners' cultures. The second is that the essential aspects of active learning, including allowing students to think, talk, and process course materials and produce work together, cannot be achieved without communicating well. Therefore, this study examined the level of readiness to learn sign language among pre-service special education teachers. However, the researcher could not find any study that specifically discusses readiness to learn sign language. Therefore, this study aimed to identify the level of readiness to learn any language (e.g., Arabic or English) and then present how these competencies may be applied to learning sign language. It should be noted that the term *competence* differs from the term *readiness*. Readiness is defined as the state of being fully prepared for something, whereas competence means the ability to do something successfully or efficiently. Therefore, the researcher uses the term *readiness*, as this study examined whether pre-service teachers are prepared to learn sign language and did not consider their ability to perform sign language.

Syuhada (2014) presented three main competencies of learning the Arabic language of nonspeakers, and as this study concerns Arabic sign language, it may be helpful to present this language first. The first competency is linguistic competence, which includes learners' abilities to control the Arabic language's phonemic system in distinction and production, their knowledge of the language's basic rules in theory and function, and their familiarity with an appropriate amount and use of language vocabulary. The second competency is communicative sufficiency, which is the learner's ability to use the Arabic language, express fluent ideas, and experiences, and easily comprehend the messages received from the language. The third is cultural competence, which includes learners' ability to understand the Arabic language's culture and use language to express ideas, experiences, values, customs, and manners in that culture. The stronger a person's competencies are in the three domains (i.e., linguistic, communicative, and cultural), the more easily they will be able to learn the Arabic language. Therefore, these may be theoretical aspects of the readiness to learn SSL due to the originality of SSL.

Since this study aimed to determine the aspects of readiness to learn sign language, it may be helpful to effectively review English teachers' second language competence to effectively build the study tool (i.e., the survey). Previous studies have reported different standards due to several communities' diverse goals and

expectations of English teachers' second language competence (Richards, 2008). However, most research (e.g., Ellis, 2012; Gay, 2010; Horwitz, 2013; Johnson, 2009; Richards & Rodgers, 2001; Yueqin, 2013) has discussed similar competencies, which can be combined under five main domains: language, culture, instruction, assessment, and professionalism. The first domain includes language background, knowledge, and skills regarding linguistic acquisition theories. The culture domain includes knowing and dealing with learners' sociocultural characteristics and engaging in culturally responsive education. The instruction domain includes pedagogical aspects, such as the background, knowledge, and skills related to the curriculum; methods; learning environment; and instructional materials for teaching English as a second language. The assessment domain covers the ability to evaluate the development of second language learners effectively and efficiently. The fifth domain is professionalism, highlighting the development of knowledge related to the latest and current research on teaching English as a second language and developing partnerships with parents, colleagues, outside resource centres, and other professional communities. However, these aspects of readiness are related to language teachers in general, not to pre-service teachers who will work with deaf and hard of hearing students. These teachers are required to have a basic level of sign language to communicate with their deaf students. In addition, they must have adequate fine motor skills to be able to perform a set of subtle and complex movements, must be able to make the required hand motions (e.g., moving the hand down and up) using the same palm with their fingers and arms, and must have the ability to send and receive facial expressions.

The Questions Addressed by This Study

This study addressed the questions of what aspects of readiness are required to learn sign language and whether pre-service special education teachers possess the necessary level of readiness to learn sign language. On this basis, the main research question was:

1. To what extent do students in pre-service special education teacher programs possess the essential aspects of readiness to learn sign language?

The sub-questions were formulated, as follows:

a. Are there statistically significant differences between readiness levels to learn sign language based on the academic path variable (i.e., hearing loss or other paths)?

b. Are there statistically significant differences in readiness to learn sign language based on pre-service teachers' academic achievement (e.g., grade point average [GPA])?

METHODOLOGY

This study used an exploratory research design. The primary purpose of this study was to formulate the issue of learning sign language for more detailed future investigations, and the study tested hypotheses from an operational point of view. This study used quantitative research to include a more formal, objective, systematic data collection process to assess the relations among the variables (Creswell & Creswell, 2018). Data were collected using a self-report questionnaire to extract information, which has some limitations; however, it is the best available research tool due to the social distance restrictions placed by COVID-19 and the cultural limitation of interaction between a male researcher and female participants. The self-report questionnaire ensured a high response rate with low time and effort to administer, and it provided high confidentiality and anonymity (Johnson & Christensen, 2012). This would help researcher utilizes a specific criterion to select the sample.

Table 1. Percentages & frequencies of responses of pre-service teachers who completed research questionnaire

Variable		Participants (n=77)	
		Frequency	Percentage (%)
Age	20-21 years old	22	28.6
	22 years old	35	45.4
	23 years old	13	16.9
	24 or over	7	9.1
Gender	Female	77	100
Academic path	Hearing loss	36	46.8
	Intellectual disability	19	24.7
	Visual disability	19	24.7
	Other	3	3.9
Academic level	Sixth	15	19.5
	Seventh	56	72.7
	Eighth	6	7.8
GPA	2.00-2.74	1	1.3
	2.75-3.74	12	15.6
	3.75-4.49	31	40.3
	4.50-5.00	33	42.9

Study Sample

Participants in this study were 72 female pre-service teachers enrolled in a special education bachelor's program (from all paths in the special education department) at a university in Saudi Arabia. The participants were only females due to gender segregation implemented in higher education institutes in Saudi Arabia (Alwedinani, 2016). Participants in this quantitative study were recruited through purposeful sampling, as the researcher intentionally selected them; this is common practice for quantitative studies (Johnson & Christensen, 2012). **Table 1** shows the percentages and frequencies of responses of pre-service teachers who completed the research questionnaire.

Research Instrument

The researcher prepared a questionnaire consisting of two parts. One part collected participants' demographic data, and the other part presented 51 statements divided into four axes or domains. The researcher chose a five-point Likert scale (*strongly agree–agree–neutral–disagree–strongly disagree*) to predict the extent to which pre-service teachers in special education possessed the aspects of readiness to learn sign language. The main objective of this questionnaire was to obtain a general indication of the extent to which pre-service teachers possess the necessary aspects of readiness to learn sign language, and it assumes that individuals who possess these aspects of readiness will be able to learn sign language faster and more effectively. Previous studies related to pre-service teacher preparation programs in special education, sign language, and some aspects of readiness and competence to learn other languages (e.g., Arabic and English) were used to build the questionnaire, in addition to the researcher's experience in the field (**Appendix A**).

The final version of the scale consisted of two parts. The first section collected demographic information about the respondent, including gender (i.e., male or female), age, academic path (hearing loss or other paths), and GPA. The second section consisted of questions assessing aspects of readiness, divided into four domains. The first domain included 11 statements related to the motivation to learn sign language. It captured the tendency of pre-service teachers to learn sign language. The second domain had 14 statements related to social aspects, including basic skills that pre-service teachers need to learn sign language easily. This axis's dimensions contained seven main points: competition, cooperation (i.e., helping others), teamwork, body language, listening skills, and empathy. The third domain was related to personal aspects and included 17 statements. This domain refers to the basic skills package that pre-service teachers should acquire to learn sign language effectively. This axis's dimensions included six main points: self-confidence, attractiveness, problem-solving skills (i.e., time management, organisation, flexibility, and leadership), the ability to draw conclusions, positivity, and the ability to focus on receiving and processing details in information. Finally, the fourth domain concerned the kinetic aspect and included nine statements. This domain focused on a package of fine motor skills that pre-service teachers need in order to be able to perform a set of subtle and complex

Table 2. Cronbach's alpha for the questionnaire parts

Domains of readiness to learn sign language	Cronbach's alpha
Motivation	.836
Social	.832
Personal	.876
Kinetic	.878

movements, to make the required hand motions (e.g., moving the hand down and up) using the same palm with their fingers and arms, and to send and receive facial expressions.

The questionnaire was validated in terms of face and content validity. Then, it was presented to 11 specialists in psychology and special education to elicit their opinions on the statements' validity and truthfulness. The percentage of agreement on the statements among the arbitrators was approximately 90%; thus, the number of statements became 51. After that, the scale was presented to a pilot sample (n=23) of the whole sample's pre-service teachers. Next, the reliability of the questionnaire was measured using Cronbach's coefficient to determine internal consistency, aiming to determine whether all statements in the questionnaire measured the same concept or construct and the interrelatedness of the items within the questionnaire (Tavakol & Dennick, 2011). Finally, an exploratory sample (n=23) was taken from the study sample to calculate the coefficient of stability based on an internal consistency method (i.e., half segmentation) between the statements of the axes of the questionnaire via the statistical package for the social sciences SPSS-25 program. Cronbach's alpha for the whole questionnaire, which comprised 51 items, was α=.93; thus, it was sufficiently reliable, as presented in **Table 2**.

Data Collection

The data were collected using a questionnaire, and participants were asked to fill out the questionnaire within two months. The questions focused only on aspects of readiness to learn sign language. The questionnaire was available through an online survey tool due to the distance restrictions caused by COVID-19 on academic research and social life. The online questionnaire format allowed participants to take part in the survey in restful environments. The questionnaire link was sent to their university email addresses and was available for two months. A reminder email was sent to pre-service teachers in the middle of the data collection period. The questionnaires took between four to nine minutes to complete. This investigation met their criteria, given that participants had the developmental and legal capacity to consent for themselves. The informed consent form was submitted electronically at the beginning of the survey and was written in Arabic, the participants' first language. Participants were free to withdraw as they wished without being asked for a reason, so their continued participation in the study was upon their consent. The participants were informed of their right to withdraw from the study at any point and were told that their data would be completely anonymous, so it would be impossible to identify their data. All methods were performed in accordance with the relevant guidelines and regulations provided by the Permanent Committee on the Ethics of Scientific Research.

Data Analysis

This study provides a descriptive analysis of pre-service special education teachers who possess the necessary readiness to learn sign language. Data were downloaded into SPSS-25 for analysis, and standard descriptive analyses were conducted for all variables. Simple frequencies and percentages were used in the description of the research outcomes. The data analysis process was performed in accordance with the research questions. **Table 1** presents the percentages and frequencies of the pre-service teachers' responses to the questionnaire.

As the total readiness scores constituted the sum of ordinal ratings and all four aspects of readiness scores were not normally distributed, nonparametric procedures were used to analyse this variable. The total readiness to learn sign language was examined in relation to academic achievement (i.e., GPA) and study branch (i.e., academic path). Differences between the respondent groups in demographics and other variables were tested using standard descriptive analyses.

Table 3. Means & standard deviations of pre-service special education teachers' required competencies to learn sign language

Rank	Domain of readiness to learn sign language	Mean	Standard deviation	Level
1	Personal aspects	66.85	17.640	High
2	Social aspects	57.31	11.211	High
3	Motivation	46.96	7.841	High
4	Kinetic aspects	32.97	9.846	High
	All	51.02	9.988	High

RESULTS AND DISCUSSION

The first question addressed by this research was the extent to which pre-service special education teachers possess the required level of readiness to learn sign language. The means, standard deviations, and levels of teachers' readiness were extracted to answer this question, as **Table 3** illustrates.

Table 3 shows that the means ranged between 32.97 and 66.85. The domain of personal aspects of readiness for learning sign language had the highest means, followed by the domain of social aspects, and then the domain of motivation to learn sign language. The domain of the kinetic aspect of readiness for learning sign language had the lowest means. All of the domains showed high levels of readiness. The mean questionnaire score regarding the required level of readiness to learn sign language was 51.02, which was high.

This result indicates that these pre-service special education teachers possessed the required level of readiness to learn sign language from a social perspective. They had a high level of skill in cooperating with others in different situations, responding to others' advice, working on teams, forming various friendships, being tactful in speaking, engaging in meaningful dialogues, and interacting positively with other individuals of all kinds and skill levels. In terms of the personal aspect of readiness, they accepted criticism from others, controlled their emotions, relied on themselves in all required tasks, completed required tasks on time, and focused for a sufficient period of time on receiving information details. They also continuously developed their self-confidence skills and performed required tasks without boredom or distress. Regarding the kinetic and motivational aspects of readiness, the scores were high. Participants were able to make precise facial movements using different parts of their faces and make precise movements with their fingers and hands simultaneously without nervous or muscular fatigue. They also had a high desire or motivation to learn sign language and use it to communicate with individuals with hearing loss.

This result may be attributed to the fact that these pre-service teachers had acquired the required level of readiness through their academic courses in the special education department, which contains practical training. However, in light of the COVID-19 pandemic, the students were enrolled in distance education. Thus, their training may have been less effective and comprehensive, which may have affected their acquisition of adequate skills to learn sign language (Alawajee, 2021, 2022). Likewise, evaluation methods for students' achievement in sign language may not include sign language performance or skill evaluation.

The second research question was whether there are statistically significant differences among the levels of pre-service special education teachers' readiness to learn sign language based on the variable of academic specialisation. To answer this question, the means, standard deviations, and the Kruskal–Wallis H coefficients were extracted for special education pre-service teachers who possessed a fundamental level of readiness to learn sign language according to the variable academic specialisation, as illustrated in **Table 4**.

It is evident from **Table 4** that there are no statistically significant differences in the level of readiness necessary to learn sign language among pre-service special education teachers based on their specialisation in hearing loss, intellectual disability, visual disability, or other disciplines. The significance level of differences between groups based on the Kruskal-Wallis H coefficient was 0.062.

The researcher attributes this result to the fact that not only the sample but also many members of society in general possess the necessary personal, social, and kinetic aspects of readiness as well as the motivation to learn sign language at a high level, as evidenced by the result regarding the first research question. Individuals with disabilities or hearing loss are part of society and are integrated into societal events. Thus,

Table 4. Means, standard deviations, & Kruskal-Wallis H coefficients for special education teachers' levels of readiness to learn sign language on academic specialization variable

Variables	Means & standard deviations		Kruskal-Wallis H	df	Asymptotic significance
Hearing loss	Mean	51.28	7.325	3	0.062
	Standard deviation	9.91			
Intellectual disability	Mean	51.97			
	Standard deviation	5.72			
Visual disability	Mean	50.43			
	Standard deviation	7.38			
Other	Mean	25.58			
	Standard deviation	25.50			

Table 5. Means, standard deviations, & Kruskal-Wallis H coefficients for special education teachers' levels of readiness to learn sign language on GPA variable

GPA	Means & standard deviations		Kruskal-Wallis H	df	Asymptotic significance
Acceptable	Mean	206.00	1.722	3	0.632
	Standard deviation	26.98			
Good	Mean	178.66			
	Standard deviation	74.85			
Very good	Mean	211.00			
	Standard deviation	28.94			
Excellent	Mean	206.81			
	Standard deviation	206.00			

people around them, whether specialists or otherwise, may be motivated and able to communicate well in sign language with sign language speakers to complete the processes of social interaction and integration among all members of society. The mean values appear higher for pre-service teachers enrolled in the hearing loss and visual disability academic pathways than for those enrolled in the intellectual disability pathway. The researcher attributes this slight difference to some students' willingness to learn sensory languages such as sign language and Braille.

The third research question was whether there are statistically significant differences between pre-service special education teachers' readiness to learn sign language based on their academic GPA. To answer this question, the means, standard deviations, and Kruskal-Wallis H coefficients were extracted for special education teachers' level of readiness to learn sign language based on the GPA variable, as illustrated in **Table 5**. It is evident from **Table 5** that there are no statistically significant differences in the level of readiness required to learn sign language among pre-service special education teachers based on GPA (i.e., acceptable, good, very good, and excellent GPAs), as the level of significance of the differences between groups based on the Kruskal-Wallis H coefficient was .632.

The researcher attributes this finding to the fact that all participants' GPAs were affected by their enrollment in academic courses related to teaching and interacting with people with sensory disabilities in general and those with hearing loss specifically. These courses were communication methods (1) and (2), oral communication methods, and bilingual and bicultural courses. These courses were taught for three hours per week per course. Thus, participants acquired basic theoretical knowledge related to sign language, different methods of communication, and the importance of sign language to individuals or students with hearing loss. Hence, participants had developed a level of readiness in terms of social, personal, and kinetic aspects and were motivated at a high level, as evidenced by the results of the first research question. They thus may have been ready to receive training for basic skills in and performance of sign language and the science of sign language phonemes (regarding the shape of the hand, the position of the hand in performing sign language, and movement) in addition to training on the Saudi sign language dictionary. However, they had not received such training sufficiently during their academic studies. Future studies are recommended to examine this issue more deeply.

CONCLUSION AND RECOMMENDATION

The findings indicate that pre-service special education teachers have the necessary social, personal, and movement aspects of the readiness to learn sign language. They have a high desire or motivation to learn sign language and communicate with individuals with hearing loss. However, the results show no statistically significant differences in the required level of readiness to learn sign language among participants based on their academic paths (i.e., studying hearing loss, intellectual disability, visual impairment, or other specialisations) or based on their academic GPA (i.e., acceptable, good, very good, and excellent GPAs).

Since all pre-service teachers participating in this research possessed a high level of readiness required to learn sign language, the researcher recommends that all educational institutions, including those in the private education sector, provide online platforms for people to learn sign language and practice it with deaf individuals. The researcher also stresses the need to provide continuous (recovery) training courses for students interested in sign language to raise their readiness levels and improve the quality of services provided to deaf individuals. Additionally, there is a need to involve deaf communities in rehabilitation courses related to learning sign language. Some researchers (e.g., Codina et al., 2011) have indicated that learning sign language can also be beneficial for hearing adults; it allows them to react more quickly in their social interactions within the surrounding environments; thus, universities are recommended to provide to all students majoring in special education ongoing opportunities to practice sign language.

Study Limitation

This paper is useful in setting the initiation for future research and practice in readiness to learn sign language; however, the generalizability of the readiness to learn sign language outcomes may be limited due to three reasons. Firstly, data were collected just after COVID-19 restrictions on attending the university, so learning sign language during may be affected due to not being able to attend the university in person. Secondly, the sample was females recruited from one local university; thus, including male correspondents from within national level using a random sample is recommended. Further robust study could include pre-service teachers who are not studying special needs education to compare and contrast readiness to learn sign language, as learning sign language may be essential to other disciplines, such as in marketing or providing legal and health services. Thirdly, data were collected using a self-report questionnaire to extract information, which has some limitations. Some participants may be biased when they rate their skills, either consciously or unconsciously influenced by social desirability. Others may not be able to rate their skills accurately. This type of self-report questionnaire limitation was taken into consideration during designing the research and data collection and analysing as discussed earlier in the ethical consideration. Therefore, qualitative research would provide a deeper thought of whether pre-service special education teachers have the necessary social, personal, and movement readiness to learn sign language. Thus, preparations to obviate similar limitations in future studies are highly recommended.

Recommendation

Since pre-service special education teachers seem to be ready enough to learn sign language, the researcher provides several recommendations in teaching and learning sign language to maximise the benefits of learning. When teaching sign language to future teachers of students with hearing loss, several things must be considered. First, learners must have the required level of readiness to learn sign language. Courses should start with simple signs, and students must have a desire to learn them. Second, sign language teachers must engage in repetition for the signs to take root, consider individual differences, and teach signs along with the spoken language.

Specialists and academics should pay attention to deaf individuals in all aspects, especially communication. This category is considered the central axis for their integration into society and for the development and utilisation of the services provided to them. Sign language is the first and natural language of deaf individuals, and there is great controversy among academics and researchers concerning whether spoken language should be imposed on them. The history of sign language dates back to ancient times; for example, French sign language spread to America. The researcher stresses the urgency of learning sign language to communicate well with deaf people, as this allows them psychological stability and strength.

Additionally, the ability of teachers and educators in education centres should be improved so they can teach deaf students in a better, more effective, and more powerful way.

Funding: The author received no financial support for the research and/or authorship of this article.

Acknowledgements: The author would like to thank the Deanship of Scientific Research, Qassim University, for the support of this project.

Ethics declaration: Ethics approval was granted by Qassim Permanent Committee on the Ethics of Scientific Research.

Declaration of interest: The author declares no competing interest.

Data availability: The data that support the findings of this study are available from the researcher but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the author upon reasonable request and with permission of Permanent Committee on the Ethics of Scientific Research at Qassim University.

REFERENCES

Alawajee, O. (2021). Influence of COVID-19 on students' sign language learning in a teacher-preparation program in Saudi Arabia: Moving to e-learning. *Contemporary Educational Technology, 13*(3), ep308. https://doi.org/10.30935/cedtech/10886

Alawajee, O. (2022). Exploring the sign language proficiency of university undergraduate students in a preservices preparation program for teachers of deaf students. *Higher Education Pedagogies, 7*(1), 65-87. https://doi.org/10.1080/23752696.2022.2092882

Altakhyneh, B. (2020). The impact of using Bruner's approach, supported by total communication, on the mathematics achievement of students with hearing disabilities in Amman schools. *International Journal of Learning, Teaching and Educational Research, 18*(12), 63-78. https://doi.org/10.26803/ijlter.18.12.5

Alwedinani, J. (2016). *Gender and subject choice in higher education in Saudi Arabia* [Unpublished doctoral dissertation]. University of York.

Alzahrani, A. H. (2005). *An investigation of the social development of students with hearing impairment in the special schools for the deaf and public schools in Riyadh City in the Kingdom of Saudi Arabia* [Doctoral dissertation, The University of Kansas].

Codina, C., Buckley, D., Port, M., & Pascalis, O. (2011). Deaf and hearing children: A comparison of peripheral vision development. *Developmental Science, 14*(4), 725-737. https://doi.org/10.1111/j.1467-7687.2010.01017.x

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE.

Delafield-Butt, J., & Trevarthen, C. (2013). Theories of the development of human communication. In P. Cobley, & P. Schultz (Eds.), *Theories and models of communication: Handbooks of communication science* (pp. 199-222). De Gruyter Mouton. https://doi.org/10.1515/9783110240450.199

Dewey, J. (1960/2004). *Democracy and education*. Aakar Books (Original work published in 1960).

Ellis, R. (2012). *Language teaching research and language pedagogy*. Wiley-Blackwell. https://doi.org/10.1002/9781118271643

Frishberg, N. (1975). Arbitrariness and iconicity: Historical change in American sign language. *Language, 51*(3), 696-719. https://doi.org/10.2307/412894

Fromm, J. (2004). *The emergence of complexity*. Kassel University Press.

Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice*. Teachers College Press.

Goldin-Meadow, S. (2005). *Hearing gesture: How our hands help us think*. Harvard University Press. https://doi.org/10.2307/j.ctv1w9m9ds

Hewes, G. W., Andrew, R. J., Carini, L., Choe, H., Gardner, R. A., Kortlandt, A., Krantz, G. S., McBride, G., Nottebohm, F., Pfeiffer J., Rumbaugh, D. G., Steklis, H. D., Raleigh, M. J., Stopa, R., Susuki, A., Washburn, S. L., & Wescott, R. W. (1973). Primate communication and the gestural origin of language. *Current Anthropology, 14*(1/2), 5-24. https://doi.org/10.1086/204019

Horwitz, E. K. (2013). *Becoming a language teacher: A practical guide to second language learning and teaching*. Pearson.

Johnson, B., & Christensen, L. (2012). *Educational research*. SAGE.

Johnson, K. E. (2009). *Second language teacher education: A sociocultural perspective*. Routledge. https://doi.org/10.4324/9780203878033

Middleton, A., Niruban, A., Girling, G., & Myint, P. K. (2010). Communicating in healthcare setting with people who have hearing loss. *BMJ: British Medical Journal, 341,* 726-729. https://doi.org/10.1136/bmj.c4672

Richards, J. C. (2008). Second language teacher education today. *RELC Journal, 39*(2), 158-177. https://doi.org/10.1177/0033688208092182

Richards, J., & Rodgers, T. (2001). *Approaches and methods in language teaching*. Cambridge University Press. https://doi.org/10.1017/CBO9780511667305

Robinson, A. (1995). *The story of writing*. Thames & Hudson.

Syuhada, M. I. (2014). Culture and teaching Arabic to non-speakers of other languages. *Lisanudhad* [*Additions*]*, 1*(2).

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. https://doi.org/10.5116/ijme.4dfb.8dfd

Trevarthen, C., & Delafield-Butt, J. (2013). Biology of shared experience and language development: Regulations for the inter-subjective life of narratives. In M. Legerstee, D. Haley, & M. Bornstein (Eds.), *The infant mind: Origins of the social brain* (pp. 167-199). Guilford Press.

Wilcox, S. (2009). Symbol and symptom: Routes from gesture to signed language. *Annual Review of Cognitive Linguistics, 7*, 89-110. https://doi.org/10.1075/arcl.7.04wil

Wilcox, S., & Occhino, C. (2016). *Historical change in signed languages*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199935345.013.24

Yueqin, H. A. N. (2013). Research on fostering intercultural communication competence of foreign language learners. *Cross-Cultural Communication, 9*(1), 5-12. https://doi.org/10.3968/j.ccc.1923670020130901.2890

APPENDIX A

Responses to the Competencies to Learn Sign Language Questionnaire

Table A1. Motivation to learn sign language

#	Question	Percentage (%)					M	SD
		SA	A	N	D	STD		
1	I rely on myself to learn sign language.	26.32	42.11	19.74	7.89	3.95	2.21	1.04
2	I consider sign language as essential in all aspects of our lives.	68.42	25.00	5.26	1.32	0.00	1.39	0.65
3	I feel happy when I learn something new in sign language.	64.47	31.58	3.95	0.00	0.00	1.39	0.56
4	I prefer to learn all subjects of sign language deeply.	30.26	23.68	36.84	9.21	0.00	2.25	0.99
5	(I am trying to learn a new language to communicate.	40.79	32.89	21.05	3.95	1.32	1.92	0.94
6	I like to learn sign language for effective communication with my deaf friends.	50.00	30.26	17.11	2.63	0.00	1.72	0.84
7	It is preferable to adopt sign language within the school curricula.	59.21	28.95	9.21	2.63	0.00	1.55	0.77
8	A sign language speaker attracts me when I see him.	75.00	22.37	1.32	0.00	1.32	1.30	0.63
9	Learning sign language for all achieves the concept of total inclusion of deaf individuals into society.	75.00	19.74	2.63	1.32	1.32	1.34	0.72
10	I love volunteering in the field of learning sign language.	52.63	31.58	9.21	3.95	2.63	1.72	0.97
11	I need to learn sign language to interact with my deaf friends.	57.89	28.95	9.21	2.63	1.32	1.61	0.86

Note. SA: Strongly agree; A: Agree; N: Neutral; D: Disagree; STD: Strongly disagree; M: Mean; & SD: Standard deviation

Table A2. Social readiness for learning sign language

#	Question	Percentage (%)					M	SD
		SA	A	N	D	STD		
1	I cooperate with others in different situations.	56.00	42.67	1.33	0.00	0.00	1.45	0.52
2	I respond to the advice of others and take them into account.	38.67	53.33	6.67	1.33	0.00	1.71	0.65
3	I do not hesitate to ask for help from others.	30.67	45.33	17.33	5.33	1.33	2.01	0.90
4	I work to strengthen the relationship between my colleagues in teamwork.	52.00	38.67	8.00	1.33	0.00	1.59	0.69
5	I am interested in making a variety of friendships with hearing & deaf people.	42.67	37.33	17.33	2.67	0.00	1.80	0.82
6	Others want to interact with me.	24.00	50.67	21.33	2.67	1.33	2.07	0.82
7	I value others and respect their feelings.	69.33	29.33	0.00	1.33	0.00	1.33	0.55
8	I interact positively with others in some situations.	56.00	37.33	5.33	1.33	0.00	1.52	0.66
9	I initiate conversation and dialogue during social interactions.	29.33	42.67	21.33	6.67	0.00	2.05	0.88
10	I understand the feelings of others in different situations.	49.33	44.00	6.67	0.00	0.00	1.57	0.61
11	I can express my feelings nonverbally.	28.00	38.67	16.00	16.00	1.33	2.24	1.07
12	I understand other people's signals and body language during social interaction.	36.00	41.33	17.33	5.33	0.00	1.92	0.86
13	I listen well to others in various situations.	46.67	48.00	4.00	1.33	0.00	1.60	0.63
14	I master role-playing properly.	21.33	44.00	21.33	10.67	2.67	2.29	1.00

Note. SA: Strongly agree; A: Agree; N: Neutral; D: Disagree; STD: Strongly disagree; M: Mean; & SD: Standard deviation

Table A3. Personal readiness for learning sign language

#	Question	Percentage (%)					M	SD
		SA	A	N	D	STD		
1	I have the ability to solve problems calmly and patiently.	21.92	38.36	32.88	5.48	1.37	2.26	0.91
2	I control my emotions when I get angry.	17.81	36.99	24.66	19.18	1.37	2.49	1.04
3	I accept criticism from others.	19.18	50.68	24.66	4.11	1.37	2.18	0.83
4	I rely on myself to accomplish my tasks.	64.38	26.03	8.22	1.37	0.00	1.47	0.70
5	I am good at managing and organizing time.	27.40	45.21	12.33	9.59	5.48	2.21	1.11
6	I complete my tasks on time.	42.47	38.36	13.70	4.11	1.37	1.84	0.91
7	I can concentrate on receiving details of information long enough.	27.40	57.53	10.96	4.11	0.00	1.92	0.74
8	I am constantly improving my abilities and skills.	31.51	43.84	24.66	0.00	0.00	1.93	0.75
9	I master the work and tasks that I was asked to do.	52.05	43.84	4.11	0.00	0.00	1.52	0.58
10	I trust myself, my abilities, and my various skills.	60.27	36.99	2.74	0.00	0.00	1.42	0.55
11	I continue to perform the task required of me without getting bored.	36.99	38.36	19.18	4.11	1.37	1.95	0.92
12	I know my strengths and weaknesses.	39.73	35.62	23.29	0.00	1.37	1.88	0.86
13	My failure in some tasks does not make me frustrated.	28.77	31.51	15.07	20.55	4.11	2.40	1.21
14	I feel happy when I learn something new.	76.71	20.55	2.74	0.00	0.00	1.26	0.50
15	I complete my work and tasks until I reach my goal.	61.64	31.51	6.85	0.00	0.00	1.45	0.62
16	I use the principle of flexibility in accomplishing my various tasks.	45.21	43.84	10.96	0.00	0.00	1.66	0.67
17	I react positively to different situations.	47.95	38.36	13.70	0.00	0.00	1.66	0.71

Note. SA: Strongly agree; A: Agree; N: Neutral; D: Disagree; STD: Strongly disagree; M: Mean; & SD: Standard deviation

Table A4. Kinetic readiness for learning sign language

#	Question	Percentage (%)					M	SD
		SA	A	N	D	STD		
1	I can make precise facial expressions using different parts of my face.	32.88	42.47	19.18	4.11	1.37%	1.99	0.90
2	I can make precise movements with my fingers.	34.25	35.62	21.92	8.22	0.00%	2.04	0.94
3	I can make quick and precise movements with the palm of my hand.	23.29	28.77	36.99	8.22	2.74%	2.38	1.02
4	I can use many fingers at the same time without nervous or muscle fatigue.	20.55	28.77	35.62	10.96	4.11%	2.49	1.06
5	I can turn my palm in any direction I want.	38.36	35.62	17.81	6.85	1.37%	1.97	0.98
6	I have the ability to control the movements of my hands.	35.62	43.84	13.70	6.85	0.00%	1.92	0.87
7	I can use my fingers curved and straight or down and up at the same time.	30.14	39.73	19.18	8.22	2.74%	2.14	1.02
8	Those around me praise me when I make eye-catching, exciting, or expressive hand movements.	20.55	19.18	41.10	13.70	5.48%	2.64	1.11
9	I use gestures in my interaction with others in some situations.	46.58	45.21%	5.48%	2.74%	0.00%	1.64	0.71

Note. SA: Strongly agree; A: Agree; N: Neutral; D: Disagree; STD: Strongly disagree; M: Mean; & SD: Standard deviation