

Academic Performance and Sign Language Readiness Among Pre-Service Special Education Teachers

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Abstract

Sign language (SL) is an essential communication tool for learners with hearing impairments in promoting inclusive education. However, many institutions do not fully utilize SL that hinder deaf individuals' access to educational services. This study employed descriptive-correlational research design to describe the academic performance of pre-service special education teachers and their level of sign language readiness, as well as to examine the relationship between these variables. Thirty-six out of 45 fourth year pre-service special education teachers willingly and completely responded the Google form with a response rate of 80%. Findings revealed that respondents demonstrated very good academic performance ($M=90.28\%$, $SD=2.54$) in their sign language-related course and perceived a high level of sign language readiness ($M=4.20$, $SD=0.82$) across motivational, social, personal, and kinetic domains. However, results also indicated that there is no significant relationship between pre-service teachers' academic performance and sign language readiness with p-value of .519, implying that their readiness is not directly influenced by their academic performance. It is recommended that teacher education institution may provide hands-on practice and enrichment program that further strengthen both the academic learning and practical application of sign language to ensure that future special education teachers are fully equipped to meet the needs of diverse learners.

Keywords: Sign Language, Academic Performance, Readiness, Inclusive Education, Special Education

1. Introduction

Sign language is not only a system of communication but also a critical vehicle for accessibility, participation, and educational equity for deaf and hard-of-hearing individuals. According to the World Health Organization (WHO) report in 2025, there are at least 430 million people with hearing impairment in the world. WHO also estimated that by 2050, more than 700 million people will have disabling hearing loss. With this, sign language plays an important role between the hearing-impaired and hearing individuals for a clear and mutual communication. Rastgoo et al. (2021) highlighted that there are various forms of sign languages employed by different nationalities such as the United States of America, Spain, Iran, Korea, and China. Wilcox and Occhino (2016) as cited by Alawajee (2023) noted that sign language is a natural and native language which relies on deaf individuals' hand movements, facial expressions, and bodily gestures to communicate to others.

In the context of education, Vijayalakshmi (2020) emphasized that effective sign language curriculum dramatically enhances visual-gestural learning, contributing to greater linguistic competence and academic engagement. For pre-service special education teachers, achieving proficiency in sign language is indispensable as they are future teachers who will work with deaf and hard-of-hearing learners. In Saudi Arabia, 72 female pre-service special educators have the necessary motivational, social, personal, and kinetic aspects of the readiness to learn sign language (Alawajee, 2023). However, the study of Pirone et al. (2023) and Guynes (2021) noted that classroom confidence remains low for students even after completion of formal coursework. During the pandemic, Lieberman and Hauser (2021) outlined that remote delivery hindered practical skill acquisition in which students lacked real-time facial feedback and guided correction to master expressive signs. Gournaris (2022) added that online American Sign Language (ASL) learning often substitutes high-quality interaction with one-way video lessons, ineffective for nuanced gestural learning. In addition, Guynes et al. (2024) and Pomeroy (2024) showed that online ASL programs, though structured, do not replicate the hands-on practice necessary for fluency. Moreover, many teacher preparation programs emphasize theory over community engagement and real-world practice, resulting in insufficient readiness among graduates (O'Donnell, 2024; Singh & Dubey, 2025). Furthermore, empirical studies of Lieberman and Hauser (2021) and McKee and Pivac (2024) underscored how asynchronous video-based learning, when compounded by limited access to technology, significantly impeded both sign accuracy and learner engagement. Similarly, Gournaris (2022) and Pomeroy (2024) identified persistent connectivity issues and insufficient device availability as critical barriers that eroded learner confidence and instructional competence. These challenges were magnified in remote learning contexts, where the absence of real-time interaction hindered timely feedback and the development of fluency.

McKee and Pivac (2024) further documented the difficulties educators encountered in adapting sign language instruction to digital platforms, while Haug et al. (2024) revealed that remote assessment formats compromised the reliability of sign language proficiency evaluations, ultimately affecting accurate measurement of student readiness. Adding a technological layer to these discussions, Wen et al. (2024) proposed mixed reality as a solution to the lack of immersive feedback in sign language learning. Their findings suggested that multi-dimensional tools can bridge the gap between static instruction and interactive mastery, enhancing students' kinetic and spatial awareness.

In the context of the Philippine educational landscape, the Filipino Sign Language (FSL) has been officially recognized as the national language for the deaf community under Republic Act No. 11106 or the Filipino Sign Language Act. Lao (2023) highlighted that FSL in education is important for empowering the deaf community and fostering collaboration between hearing-impaired and hearing individuals. However, Silva-dela Cruz and Calimpusan (2018) as cited by Quinan et al. (2025) highlighted that despite legislative progress mandating Filipino Sign Language (FSL) instruction, challenges still remain such as lack of educational programs and support system for deaf individuals. Diaz (2014) added academic challenges for hard-of-hearing individuals like difficulty in understanding lessons without a translator. Furthermore, Quinan et al. (2025) emphasized that many institutions in the Philippines do not fully utilize FSL that hinder deaf individuals' access to services. In addition, the study of Panimbatan et al. (2023) emphasized that there is a need for the higher education institution in Makati City to have adequate number of training sessions and seminars on Sign Language to enhance the preparedness of both faculty and students. Furthermore, only few studies focus on academic performance, measured by grades, and multi-dimensional sign language readiness.

Hence, the present study describes and examines the relationship between the academic performance and sign language readiness of fourth year pre-service special education teachers for School Year 2025-2026. Since this study also examines the level of sign language readiness, the researcher employed the Alawajee's readiness framework (2023) which includes four domains namely the motivation, social confidence, personal stance, and kinetic ability. Specifically, this study sought to answer the following research questions:

1. What is the academic performance of pre-service special education teachers in sign language-related course?
2. What is the level of readiness of pre-service special education teachers in sign language learning across domains: motivational, social, personal, and kinetic?
3. Is there a significant relationship between academic performance and sign language readiness among pre-service special education teachers?

2. Methodology

2.1. Research Design

This study employed a descriptive-correlational research design to describe the academic performance and the level of sign language readiness among fourth year pre-service special education teachers. In addition, the study investigated the relationship between pre-service special education teachers' academic performance in sign language-related course, and their sign language readiness across four domains: motivational, social, personal, and kinetic. According to McBurney and White (2009), "Descriptive correlational design is used in research studies that aim to provide static pictures of situations as well as establish the relationship between different variables". For this study, it is descriptive in nature as it describes the pre-service special education teachers' academic performance in terms of their "Total Communication" course final rating, and their level of sign language readiness. Moreover, to find out the relationship between pre-service teachers' academic performance and their level of readiness, a correlational research design is appropriate since it allows testing of expected relationships between and among variables.

2.2. Respondents

The respondents of this study were all fourth-year pre-service special education teachers who were officially enrolled at Leyte Normal University during the School Year 2025–2026. According to the program coordinator, the population of all fourth-year pre-service special education teachers is 45 and the researcher employed total enumeration. To be eligible, these students had already taken in a "Total Communication" course (a sign language related-course) last School Year 2024 2025, and had a final rating or grade in the said course. Only those fourth-year pre-service special education teachers who are 18 years old and above were included to ensure the participants can legally provide informed consent. The study was also open to individuals of all gender identities, as no gender-based restrictions were applied. Moreover, only those who voluntarily agreed to participate and completed the consent form through the provided Google Form were included. Respondents had also access to a stable internet connection and a digital device, as the survey was administered online and they had completed the Google Form within the designated period.

As for the exclusion criteria, all first year to third year pre-service special education teachers were not included in the study as they did not meet the academic requirement of having completed in a sign language-related course. Those who were not part of the pre-service special education program or were enrolled in other academic tracks were also be excluded. In addition, fourth year pre-service special education teachers under the age of 18 were not allowed to participate, as they cannot legally provide consent without parental approval. Respondents who submitted incomplete survey forms, skipped essential items on the readiness scale, or withdrew from the study at any point were not considered in the final analysis. Additionally, students who did not have access to a stable internet connection or appropriate device to complete the online form within the specified timeframe were excluded to maintain the reliability and validity of the data collected.

2.3. Research Instrument

This study adopted the 51-item Sign Language Readiness Scale developed by Alawajee (2023), which is specifically designed to assess the multidimensional readiness of pre-service special education teachers in learning sign language. The instrument is structured around four key domains: motivational, social, personal, and kinetic readiness. The motivational domain evaluates the learner's internal drive, interest, and commitment to acquiring sign language skills, while the social domain assesses the respondent's confidence and ease in communicating with members of the Deaf community. The personal readiness component examines the individual's adaptability, resilience, and openness toward culturally diverse modes of communication. Lastly, the kinetic domain measures physical coordination, hand dexterity, and the ability to accurately produce manual signs, which are essential for effective expressive communication in sign language. Each item on the scale is rated using a five-point Likert scale, ranging from "1=Strongly Disagree" to "5=Strongly Agree", allowing for nuanced assessment across the readiness dimensions. According to Alawajee (2023), the instrument demonstrates high reliability, with internal consistency coefficients (Cronbach's alpha) exceeding 0.80 for all four domains. Given its psychometric strength and direct alignment with the objectives of this study, the instrument is deemed both appropriate and effective for measuring the sign language learning readiness of pre-service special education teachers.

2.4. Data Collection

The data collection process for this study followed a systematic and ethical approach to ensure the integrity and validity of the responses gathered. Upon approval of the research proposal and obtaining the ethical clearance, the researcher prepared all necessary attachments for the permission letter in relation to data collection. Then, the researcher coordinated with the academic department chair in elementary education and program coordinator of special education. With the help of the program coordinator, the researcher prepared and gave the link of the Google Form, which includes the Informed Consent, 51-item Likert scale instrument and student's demographic profile, to the group chat of the fourth-year pre-service special education teachers. Respondents were given assurance that their participation was voluntary as indicated in the Informed Consent of the Google Form, and that they might withdraw at any time without consequence. This Google Form was remained open for one week so that respondents had enough time to answer the survey questionnaire at their preferred and convenient time. The entire process—from coordination and orientation to questionnaire administration and retrieval—was carried out within 3 weeks window to ensure timeliness and data relevance. All collected data were stored securely and anonymized prior to analysis to uphold the ethical standards of research.

2.5. Data Analysis

All data were downloaded from the Google Form and were saved in Microsoft Excel. Then, these data were analyzed in Jamovi software. Moreover, appropriate statistical measures were employed to quantify the data and answer the statement of the problem in the study. Specifically, for sub-problems 1 and 2, which seek to determine the academic performance of pre-service special education teachers and their level of sign language readiness across four domains (motivational, social, personal, and kinetic), descriptive statistics was utilized. The mean and standard deviation were computed to provide a clear summary of the central tendency and variability in the data. These measures are widely used in educational research to understand general trends and group performance (Gravetter & Wallnau, 2020). Moreover, the corresponding equivalent grades (75% to 100%) of the "Total Communication" final rating (3.0 to 1.0) were used for describing the academic performance of preservice teachers. In addition, the level of readiness was based on the following mean score range: "1.00–1.80= Very Low", "1.81–2.60= Low", "2.61–3.40= Moderate", "3.41–4.20= High", and "4.21–5.00=Very High".

For sub-problem 3, which explores the possible relationship between academic performance and the level of sign language readiness, Pearson's product-moment correlation coefficient was used because the data of the said

variables were both continuous. This inferential statistical test is appropriate for examining the strength and direction of linear relationships between two continuous variables and is commonly used in behavioral and educational studies (Schober, Boer, & Schwarte, 2018). A significance level of 0.05 was set to determine whether the correlation is statistically meaningful. For the level of correlation, this study used the guidelines that Dancy and Reidy (2007) suggested when interpreting the value of the correlation r : “0 for none”, “0.10–0.30 for weak”, “0.40–0.60 for moderate”, “0.70–0.90 for strong”, and “1 for perfect relationship”.

2.6. Ethical Considerations

This study upheld the highest ethical standards. Initially, ethical clearance was secured from the Leyte Normal University Research Ethics Committee. Subsequently, a formal permission letter was sent to the concerned department head and program coordinator. Thereafter, all respondents received an informed consent form via Google Form explaining the study’s purpose, voluntary nature, benefits, risks, confidentiality, and respondents’ right to withdraw at any time. Moreover, the researcher considered the minimal risk from the respondents as they were asked to answer a survey questionnaire about their academic final rating in a sign language–related course and their self-reported sign language readiness. Also, the researcher considered potential disruption of respondents’ daily routine as they were filling out the Google Form for approximately 10 minutes. In addition, academic records and readiness scale responses were anonymized. Identifiable information was not linked to dataset entries. Furthermore, the survey did not ask for respondents’ names, student IDs, or any other personally identifying information. Instead, their responses were recorded anonymously and assigned a code number for research purposes. Data were stored securely in an encrypted file accessible only to the researcher and were deleted after the completion of the analysis. During reporting, the results were presented in aggregate form, ensuring that no individual respondent could be identified. Finally, the researcher also committed to honesty, objectivity, and accuracy throughout data analysis and dissemination, following professional standards of research ethics and integrity.

3. Results and Discussion

In this study, 36 out of 45 fourth-year pre-service special education teachers officially enrolled in the School Year 2025–2026 voluntarily and completely responded to the Google Form, resulting in an 80% response rate. In terms of gender, only five (11.11%) were male respondents while 31 (68.89%) of them were female.

To answer the research questions of the study, three tables were presented accordingly. Table 1 focused on pre-service teachers’ academic performance while Table 2 illustrated their level of sign language readiness. Table 3 depicted the relationship between pre-service teachers’ academic performance and their level of sign language readiness.

Table 1. *Academic Performance of Pre-service Special Education Teachers in Sign Language-related Course (n=36)*

Academic Equivalent Grades	Frequency	Percentage
Excellent (95% – 100%)	3	8.33%
Very Good (90% – 94%)	22	61.11%
Good (80% – 89%)	11	30.56%
Total	36	100.00%

Note. Overall academic performance: $M=90.28\%$, $SD=2.54$, which falls under the “very good” category.

As shown in Table 1, majority of pre-service teachers obtained grades within the “Very Good” range (90% to 94%), while eleven (30.56%) of them achieved a “Good” rating (80% to 89%). It can also be noted in the table that only three respondents (8.33%) attained an “Excellent” rating (95% to 100%). The overall mean grade was 90.28% ($SD=2.54$) which corresponds to the “Very Good” category. This result implies that the overall academic performance of the pre-service teachers in the sign language-related course is generally high, with most pre-service special education teachers demonstrating very good proficiency.

Table 2. *Level of Sign Language Readiness of Pre-service Special Education Teachers*

Domains of Sign Language Readiness	Mean	Standard Deviation	Level of Readiness
Motivation	4.41	0.81	Very High
Social Aspect	4.30	0.76	Very High
Personal Aspect	4.14	0.80	High
Kinetic Aspect	3.96	0.89	High
Overall	4.20	0.82	High

Table 2 reveals that motivation ($M=4.41$, $SD=0.81$) and social aspect ($M=4.30$, $SD=0.76$) were rated “very high”, illustrating that the pre-service special education teachers are strongly motivated to learn sign language and are socially prepared to use it in communicative contexts. On the other hand, the personal aspect ($M=4.14$, $SD=0.80$) and the kinetic aspect ($M=3.96$, $SD=0.89$) were rated “high”, suggesting that although respondents demonstrate readiness in terms of personal confidence and physical execution of sign language, there is still room for improvement. Overall, the mean score of 4.20 with standard deviation of 0.82 corresponds to a high level of readiness. This implies that pre-service special education teachers are generally well-prepared to engage with sign language, but further training and practice may improve their proficiency specifically in the personal and kinetic domains.

Table 3. *Significant Relationship Between Pre-service Special Education Teachers’ Academic Performance and Their Sign Language Readiness*

Domains of Sign Language Readiness	r-value	Interpretation	p-value	Interpretation
Motivation	.020	None	.906	Not Significantly Related
Social Aspect	-.014	None	.936	Not Significantly Related
Personal Aspect	.060	None	.730	Not Significantly Related
Kinetic Aspect	.248	Weak	.145	Not Significantly Related
Overall Sign Language Readiness	.111	Weak	.519	Not Significantly Related

As shown in Table 3, the correlation coefficient values of motivation ($r=.020$), social aspect ($r=-.014$), and personal aspect ($r=.060$) indicate no relationships to pre-service special education teachers’ academic performance. In addition, only kinetic aspect of sign language readiness has relationship to academic performance but its strength and direction is positively weak ($r=.248$). Importantly, all p-values are greater than the 0.05 significance level, indicating that none of these domains have significant relationships to academic performance. This means that pre-service teachers’ academic performance in sign language-related course does not significantly influence, nor is it influenced by, their readiness across motivational, social, personal, and kinetic domains. This result supports to the study of Alawajee (2023) that pre-service special education teachers possessed necessary social, kinetic, and personal aspects of sign language readiness and were highly motivated to learn sign language, but their level of readiness have no significant differences with respect to their academic grade point averages. The result of the study also highlights the distinction between pre-service teachers’ theoretical knowledge and their practical readiness. For example, a student may perform well in written assessments but they may still lack of confidence, motivation or fluency in actual sign language use. Conversely, a highly motivated and socially prepared education student may not always achieve the highest academic grades.

4. Conclusion and Recommendation

The findings of the study indicate that fourth year pre-service special education teachers demonstrated “very good” academic performance in their sign language-related course and perceived a high overall level of sign language readiness, with particularly strong motivation and social preparedness. However, personal and kinetic domains were comparatively lower, indicating areas that require further development. The findings also revealed no significant

relationship between pre-service special education teachers' academic performance and their level of sign language readiness, suggesting that theoretical achievement does not necessarily equate to practical readiness in sign language use. From a teacher education perspective, it is recommended to have a balance between academic instruction and experiential learning opportunities. While the academic performance reflects mastery of content, the readiness to use sign language in real life contexts requires hands-on practices, exposures and contextualized immersions. Hence, training institution may not solely rely on academic performance as a measure of preparedness but also incorporate activities like community engagement with the Deaf community and teaching internship opportunities where students can apply their skills in authentic settings.

References

- 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/ojcm/12922>
- Diaz, J. (2014). The Lived Experiences of the Deaf and Hard of Hearing Students in a Mainstream Education System. 30-31.
- Gournaris, Kara (2022) "Adjusting to Change: Learning American Sign Language Online During A Global Pandemic," *Northwest Journal of Teacher Education*: Vol. 17 : Iss. 2 , Article 6. <https://doi.org/10.15760/nwjte.2022.17.2.6>
- Gravetter, F. J., & Wallnau, L. B. (2020). *Statistics for the Behavioral Sciences* (11th ed.). Cengage Learning. <https://www.cengage.com/c/statistics-for-the-behavioral-sciences-11e-gravetter>
- Guynes, C. W. (2021). Exploring practices in virtual American Sign Language education (Doctoral dissertation). <https://tutl.org/server/api/core/bitstreams/7db1ff78-7f97-4138-a907-edef78f2e1e2/content>
- Guynes, C. W., Griffin-Shirley, N., Guynes, K., & Kackley, L. (2024). Insights from a Pre-Pandemic K-12 Virtual American Sign Language Program for a Post-Pandemic Online Era. *Education Sciences*, 14(8), 892. <https://www.mdpi.com/2227-7102/14/8/892>
- Haug, T., Holzknacht, F., & Mann, W. (2024). The impact of COVID-19 on sign language assessment. *Language Education & Assessment*, 7(1), 1316. <https://doi.org/10.29140/lea.v7n1.1316>
- Johnson, B. (2001). Toward a new classification of nonexperimental quantitative research. *Educational researcher*, 30(2), 3-13. <https://doi.org/10.3102/0013189X030002003>
- Lao, W. (2023). How the PH deaf community strives for inclusivity through Filipino Sign Language. *RAPPLER*. <https://www.rappler.com/moveph/filipino-deaf-community-strives-inclusivity-filipino-sign-language/>
- Lieberman, A. M., & Hauser, P. C. (2021). Remote instruction and its impact on sign language acquisition during COVID-19. *American Annals of the Deaf*, 166(1), 23–42. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7837603/>
- McKee, R., & Pivac Alexander, S. (2024). Teaching sign language remotely in the COVID-19 pandemic. *The Language Learning Journal*, 52(5), 597-613. <https://doi.org/10.1080/09571736.2023.2293010>
- O'Donnell, S. (2024). Sign language in the mainstream curriculum in six jurisdictions. <https://ncca.ie/media/n24j4shx/sign-language-research-report.pdf>
- Panimbatan, A. M. V., Santiago, F. F., Rañosa, V. V., Nicole, P., Salcedo, M. G. D., & Esquivel, L. (2023). The Readiness of a Higher Education Institution in Offering Sign Language as an Elective Course. *UNIVERSITAS-The Official Journal of University of Makati*, 11(2), 89-109.
- Pirone, J. S., Pudans-Smith, K. K., Ivy, T., & Listman, J. D. (2023). The landscape of American Sign Language education. *Foreign Language Annals*, 56, 238–258. <https://doi.org/10.1111/flan.12679>
- Pomeroy, C. L. (2024). Enhancing Learning Through Sign Language [Master's thesis, Bethel University]. Spark Repository. <https://spark.bethel.edu/etd/1107>
- Quinan, P. N. S., Dador, C., Gangangan, C. M. D., Mahinay, F. L. L., Nadonga, A. M., Pacibe, M. E. A., ... & Clavero Jr, A. B. Deafening Silence: Addressing the Challenges Faced by the Genz Deaf Community and Filipino Sign Language (FSL) In Today's Education.
- Rastgoo, R., Kiani, K., Escalera, S., & Sabokrou, M. (2021). Sign language production: A review. In *Proceedings of the IEEE/CVF conference on computer vision and pattern recognition* (pp. 3451-3461).
- Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia*, 126(5), 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>

- Singh, B., & Dubey, A. K. (2025). Deaf Education and Sign Language: Strategies, Challenges, and Benefits. Naveen International Journal of Multidisciplinary Sciences (NIJMS), 1(3), 75-82. <https://doi.org/10.71126/nijms.v1i3.26>
- Urbann, K., Gross, K., Gervers, A., and Kellner, M. (2024) "Language means freedom to me" perspectives of Deaf and hard-of-hearing students on their experiences in the English as a foreign language classroom. Front. Educ. 9:1447191. <https://doi.org/10.3389/feduc.2024.1447191>
- Vijayalakshmi, R. (2020). Efficacy of sign language as in education curriculum and learning outcomes. SSRN Working Paper. <https://ssrn.com/abstract=5042420>
- Wen, H., Xu, Y., Li, L., Ru, X., Wu, Z., Fu, Y., ... & Wang, X. (2024, October). Enhancing Sign Language Teaching: A Mixed Reality Approach for Immersive Learning and Multi-Dimensional Feedback. In 2024 IEEE International Conference on Systems, Man, and Cybernetics (SMC) (pp. 740-745). IEEE. <https://ieeexplore.ieee.org/abstract/document/10831092/metrics#metrics>
- Wilcox, S., & Occhino, C. (2016). Historical change in signed languages. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199935345.013.24>
- World Health Organization (2025). Deafness and Hearing Loss. <https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss>