

Sign Language Is Not Just Hand Gestures: The Linguistic Complexity of BISINDO and Its Role in Deaf Inclusion

Muhammad Nur Iman¹, Nurasia Natsir^{2*}

¹ Universitas Hasanuddin Makassar, Indonesia

² Institut Ilmu Kesehatan Pelamonia, Makassar, Indonesia

* Corresponding Author: e-nurasianatsir87@iikpelamonia.ac.id

Abstract: Indonesian Sign Language (Bahasa Isyarat Indonesia, BISINDO) is often misunderstood as merely a gestural or simplified form of communication, undermining its linguistic sophistication and contributing to barriers to deaf inclusion in Indonesia. Approximately 2.6 million deaf individuals in the country rely on BISINDO as their primary language. This study explores the linguistic complexity of BISINDO, documenting its phonological, morphological, syntactic, and semantic systems. Using a mixed-methods approach, we analyzed 150 hours of BISINDO conversations from 80 deaf signers, conducted experimental studies on phonological distinctions and syntactic complexity, and performed ethnographic fieldwork in deaf communities and schools. Comparative analysis with American Sign Language (ASL) was also conducted. Our findings demonstrate that BISINDO is a fully developed natural language, with 45 handshapes, 18 locations, 23 movements, and 4 orientations in its phonological system. It shows productive morphological processes, flexible word order, and rich semantics, including idioms and metaphors. However, there are significant barriers to inclusion: 68% of deaf students lack qualified BISINDO teachers, and 84% of public services lack sign language interpreters. Furthermore, 72% of hearing Indonesians still do not recognize BISINDO as a legitimate language. Deaf community organizations, however, report BISINDO as central to their identity. The study highlights the need for policy reforms, including BISINDO recognition as an official language, qualified interpreters, bilingual deaf education, and public awareness campaigns to combat misconceptions.

Keywords: BISINDO; Deaf Community; Language Rights; Linguistic Complexity; Sign Language.

1. Introduction

Background

Sign languages challenge fundamental assumptions about human language. Despite operating in a visual-gestural rather than auditory-vocal modality, sign languages exhibit the full structural complexity characteristic of natural languages (Sandler & Lillo-Martin, 2006). They possess phonology (though articulators are hands, face, and body rather than vocal tract), morphology, syntax, and semantics organized through linguistic principles similar to spoken languages while exploiting unique affordances of visual space (Emmorey, 2002).

Yet persistent misconceptions portray sign languages as mere gestural pantomime, "broken" versions of spoken languages, or universal communication systems. These myths perpetuate discrimination against deaf communities worldwide, limiting educational opportunities, employment access, and full societal participation (De Meulder, 2015; Kusters et al., 2017).

In Indonesia, Bahasa Isyarat Indonesia (BISINDO) serves as the primary language for an estimated 2.6 million deaf individuals (World Federation of the Deaf, 2019). Despite this substantial population, BISINDO lacks official recognition, research documentation remains limited, and deaf individuals face pervasive barriers to education, employment, and public services (Palfreyman, 2019). The COVID-19 pandemic further exposed these inequities when government health announcements lacked sign language interpretation, effectively excluding deaf citizens from vital information (Kusters & Sahasrabudhe, 2021).

This study addresses the dual goals of documenting BISINDO's linguistic complexity and examining barriers to deaf inclusion in Indonesia. Understanding BISINDO as a

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complete natural language is foundational to advocating for linguistic rights and meaningful inclusion.

Theoretical Framework

This research draws on several theoretical frameworks. First, sign language linguistics (Stokoe, 1960; Sandler & Lillo-Martin, 2006) provides methodological and analytical tools for documenting visual-gestural languages. Stokoe's revolutionary insight that signs decompose into sublexical parameters (handshape, location, movement) parallel to spoken language phonemes established sign languages as legitimate linguistic objects.

Second, linguistic anthropology (Eckert, 2000; Silverstein, 2003) informs our ethnographic approach, examining how language practices construct social identity and community belonging within deaf social worlds.

Third, disability studies perspectives (Bauman & Murray, 2014; Kusters et al., 2017) challenge medical models treating deafness as deficit, instead adopting sociocultural models recognizing deaf communities as linguistic minorities with distinct cultural practices. This "Deaf-gain" perspective (Bauman & Murray, 2009) reframes deafness not as hearing loss but as visual-spatial language gain.

Finally, language rights frameworks (Skutnabb-Kangas & Phillipson, 1994; De Varennes, 2012) provide normative grounding for arguing that deaf individuals possess fundamental rights to use, learn, and develop their natural languages.

Literature Review

Sign language linguistics has established that sign languages are natural languages with full structural complexity (Sandler & Lillo-Martin, 2006). Cross-linguistic research documents phonological systems (Brentari, 1998), morphological processes including classifier predicates unique to sign languages (Zwitserlood, 2012), and syntactic structures utilizing both manual and non-manual articulators (Pfau et al., 2012).

Specifically regarding Southeast Asian sign languages, documentation remains limited compared to Western sign languages like ASL or British Sign Language (BSL). Palfreyman (2019) provides the most comprehensive study of BISINDO, documenting basic vocabulary and grammatical structures. Isma & Kusters (2021) examine deaf education in Indonesia, revealing widespread oralist policies that suppress sign language use. Wijaya (2018) analyzes the emergence of regional BISINDO varieties, identifying dialectal variation across Indonesian islands.

Research on deaf inclusion demonstrates persistent barriers worldwide. Murray et al. (2018) document how lack of sign language recognition impedes educational access, employment, and civic participation. De Meulder (2015) analyzes language policy, showing that sign language recognition requires not merely symbolic acknowledgment but concrete implementation through interpreter services, bilingual education, and community language planning.

The Indonesian context presents unique challenges. As a developing nation with extreme linguistic diversity (over 700 spoken languages), Indonesia lacks infrastructure for sign language support available in many Western nations. Deaf individuals face intersecting marginalization based on disability, socioeconomic status, and often rural residence (Kusters & Sahasrabudhe, 2021).

2. Materials and Method

Research Design

This study employed a convergent mixed-methods design integrating linguistic documentation, experimental psycholinguistics, comparative analysis, ethnographic fieldwork, and policy analysis. This multi-method approach provides comprehensive understanding of BISINDO as both a linguistic system and a socially-situated practice.

Participants

We worked with 200 participants across multiple study components: (1) Video corpus contributors: 80 deaf native BISINDO signers (ages 18-65, $M = 34.2$, $SD = 12.1$, 42 female, 38 male) from urban and rural communities across Java (45%), Sumatra (30%), and Sulawesi (25%); (2) Experimental study participants: 120 deaf native BISINDO signers (ages 18-45, $M = 28.7$, $SD = 7.3$, 64 female, 56 male); (3) Ethnographic consultants: 50 deaf community members including students, teachers, activists, and elders (ages 16-72).

Native signer status required: (1) deafness from birth or before age 3, (2) acquisition of BISINDO from deaf parents or peers before age 7, and (3) self-identification as a BISINDO user. All participants provided informed consent with interpreter assistance. Deaf research assistants (all native BISINDO users) facilitated recruitment and data collection.

Linguistic Documentation

Video Corpus Construction

We compiled a 150-hour video corpus of naturalistic BISINDO conversation representing diverse registers: informal conversation (60 hours), narrative storytelling (30 hours), formal presentations (25 hours), educational discourse (20 hours), and ceremonial events (15 hours). Videos were recorded in HD with multiple camera angles capturing manual and non-manual articulators.

Annotation and Analysis

Sixty hours of video underwent detailed annotation using ELAN software following conventions from Crasborn & Sloetjes (2008). Five trained deaf annotators (all linguistics graduates) coded for: handshape, location, movement, palm orientation, non-manual markers (facial expressions, head movements, body shifts), and glosses. Inter-annotator reliability achieved Cohen's kappa = 0.84 for manual parameters and 0.79 for non-manual features.

Experimental Studies

We conducted three experimental studies: (1) Phonological Minimal Pairs: Participants distinguished sign pairs differing only in handshape, location, or movement, establishing phonological inventory; (2) Morphological Productivity: Participants produced and comprehended novel classifier constructions, testing morphological generativity; (3) Syntactic Complexity: Participants interpreted sentences varying in word order and non-manual marking, revealing syntactic constraints.

Comparative Analysis

We compared BISINDO structures with American Sign Language (ASL), the most extensively documented sign language, and emerging descriptions of other Asian sign languages (Indonesian Sign Language variants, Thai Sign Language, Philippine Sign Language). Comparison focused on typological features: basic word order, classifier systems, agreement mechanisms, and non-manual grammar.

Ethnographic Fieldwork

First author conducted 18 months of participant observation in deaf communities in Jakarta, Yogyakarta, and Makassar, participating in deaf school classes, community events, and activist meetings. Fieldwork included 75 semi-structured interviews with deaf individuals, families, educators, and interpreters exploring language attitudes, identity, education experiences, and inclusion barriers.

Policy Analysis

We analyzed Indonesian legal frameworks relevant to deaf rights: disability law (UU No. 8/2016), education law, and ratification of the UN Convention on the Rights of Persons with Disabilities (CRPD). Analysis examined gaps between legal provisions and implementation, comparing with international best practices.

Ethical Considerations

Research followed ethical principles for deaf community research (Harris et al., 2009). Deaf community members participated as co-researchers throughout the project. All findings underwent community review before publication. Participants received compensation for time. Research received approval from institutional ethics boards and deaf community organizations.

3. Results

Phonological System

BISINDO possesses a complex phonological system with four primary parameters that combine to form signs, analogous to consonants and vowels in spoken languages.

Phonological Inventory

Analysis identified: (1) 45 distinct handshapes ranging from simple closed fist to complex extended-finger configurations; (2) 18 major body locations (head, face, torso, arm, neutral space); (3) 23 movement types (straight, arc, circular, repeated, etc.); (4) 4 palm orientations (up, down, toward signer, away from signer).

Parameter	Number of Contrasts	Examples
Handshape	45	Fist, flat hand, index, etc.
Location	18	Forehead, chest, neutral space
Movement	23	Straight, circular, repeated
Orientation	4	Palm up/down/in/out

Minimal Pairs

Experimental studies confirmed these parameters function phonologically through minimal pair contrasts. For example, signs differing only in handshape: THINK (index finger at temple) vs. KNOW (flat hand at temple); signs differing only in location: MOTHER (thumb at chin) vs. FATHER (thumb at forehead); signs differing only in movement: CHAIR (straight downward) vs. SIT (bent downward).

Participants achieved 94.7% accuracy in distinguishing minimal pairs, significantly above chance ($\chi^2 = 847.3, p < .001$), confirming these parameters carry linguistic contrast rather than free variation.

Morphological System

Classifier Predicates

BISINDO employs productive classifier constructions where handshape morphologically represents semantic classes of referents. Analysis identified 12 classifier handshapes encoding: humans (upright index), vehicles (flat hand), small objects (curved hand), cylindrical objects (C-hand), etc. These classifiers combine with movement to predicate location, motion, and spatial relations.

Classifiers appeared in 87% of spatial descriptions in the corpus. Productivity tests showed signers readily produced novel classifier combinations for unfamiliar objects (e.g., describing drone movement using vehicle classifier with aerial trajectory), demonstrating morphological generativity characteristic of natural language.

Aspectual Inflection

BISINDO marks aspectual distinctions through movement modifications: iterative aspect (repeated movement), continuous aspect (elongated movement), perfective aspect (abrupt ending). These modifications apply productively to verb roots, e.g., WORK (citation form) vs. WORK[iterative] (repeated work) vs. WORK[continuous] (working continuously).

Compounding

BISINDO forms compounds by sequential combination of lexical signs, often with phonological reduction: EAT + MORNING → BREAKFAST, STUDY + PLACE → SCHOOL. Corpus analysis identified 342 established compounds, with evidence for ongoing productive compounding.

Syntactic System

Word Order

BISINDO exhibits flexible word order with SOV as the most frequent (52.3%), followed by SVO (31.2%), and topicalized structures where topics front-shift with non-manual marking (16.5%). Statistical analysis revealed that word order correlates with information structure: SOV for neutral assertions, SVO for focused verb phrases, topic-fronting for contrast.

Word Order	Frequency	Percentage (%)
SOV (Subject-Object-Verb)	1,247	52.3
SVO (Subject-Verb-Object)	744	31.2
Topic-Comment	394	16.5
Total	2,385	100.0

Non-Manual Grammatical Markers

Non-manual articulators (facial expressions, head movements, body posture) carry essential grammatical functions in BISINDO: yes-no questions marked by raised eyebrows and forward head tilt (96.8% of corpus yes-no questions), wh-questions marked by furrowed brows and slight head shake (92.3%), negation marked by head shake (88.4%), and conditionals marked by raised eyebrows on condition clause (79.2%).

Experimental studies confirmed these non-manual markers as grammatical rather than affective. Sentences with inappropriate non-manual marking were judged ungrammatical by 89% of participants, demonstrating obligatory status.

Semantic System

BISINDO possesses rich semantic resources for expressing abstract concepts, metaphor, and subtle meanings. Analysis revealed: (1) systematic metaphorical mappings (e.g., IDEAS ARE OBJECTS, evident in signs for "share idea" literally showing object transfer); (2) 186 conventionalized idioms recorded (e.g., "strong heart" = brave, produced with emphatic movement); (3) semantic fields with fine-grained lexical distinctions (e.g., 14 distinct kinship terms, 23 emotion terms).

Contrary to misconceptions that sign languages lack abstractness, BISINDO readily expresses philosophical, scientific, and legal concepts through combination of core vocabulary, productive morphology, and metaphorical extension.

Comparative Analysis with Other Sign Languages

BISINDO shares typological features common to sign languages cross-linguistically: productive classifier systems (present in 95% of documented sign languages), simultaneous morphology exploiting spatial modality (universal), and grammatical use of non-manual markers (universal). However, BISINDO shows language-specific features: relatively flexible word order compared to rigidly SOV American Sign Language, extensive use of mouthing (silent articulation of Indonesian words) as phonological feature (72.3% of content words), and particular classifier inventory reflecting cultural categories.

Ethnographic Findings: Language and Identity

Interviews and observations revealed BISINDO as central to deaf identity. 91% of deaf adults reported BISINDO as essential to their sense of self, describing it as "my real language" and "where I can fully express myself." Deaf community spaces (deaf schools, deaf clubs, deaf churches) function as sites of BISINDO transmission and cultural maintenance.

Language ideology analysis revealed contrasting perspectives. Deaf community members viewed BISINDO as a complete language equal to Indonesian, expressing pride in visual-gestural communication. However, hearing educators and parents often held deficit views, describing BISINDO as "limited," "concrete," or acceptable only as "bridge to Indonesian."

Barriers to Inclusion

Educational Access

Survey of 45 deaf schools revealed severe shortages: 68% lacked teachers fluent in BISINDO, 77% employed oralist methods suppressing sign language, 89% lacked BISINDO-Indonesian bilingual curricula. Educational outcomes reflected these barriers: average literacy levels 3-4 grades below hearing peers, high dropout rates (42% before completing junior high school).

Service Access

Deaf individuals reported profound barriers accessing public services: 84% of government offices lacked interpreter services, 91% of hospitals had no communication accommodations, 96% of legal proceedings excluded deaf participation due to interpreter absence. COVID-19 exposed these gaps dramatically when 87% of government health announcements lacked sign language interpretation.

Language Attitudes

Survey of 500 hearing Indonesians revealed pervasive misconceptions: 72% believed sign language was "not a real language," 68% thought sign languages were universal, 81% assumed sign language was "just gesturing," 59% believed deaf people could not achieve higher education. These attitudes perpetuate discrimination and justify exclusion.

Policy Analysis

Indonesia's Disability Law (UU No. 8/2016) nominally recognizes sign language rights, stating deaf persons have rights to "language and communication access." However, implementation remains minimal: BISINDO lacks official language status, no national interpreter certification system exists, and deaf education remains predominantly oralist despite legal requirements for "accessible education." Comparison with international best practices (Sweden, New Zealand, Uganda) reveals that effective deaf inclusion requires: explicit constitutional or statutory recognition of sign language as official language, mandatory interpreter provision in education, healthcare, and legal settings, bilingual deaf education with

deaf teachers, public awareness campaigns, and deaf community participation in policy-making.

4. Results and Discussion

Interpretation of Main Findings

This study comprehensively documents BISINDO's linguistic complexity across all grammatical domains. The findings unequivocally demonstrate that BISINDO is a complete natural language, not a simplified communication system or gestural pantomime.

Linguistic Complexity

BISINDO's phonological system, with 45 handshapes, 18 locations, 23 movements, and 4 orientations combining in minimal pair contrasts, rivals the phonological complexity of spoken languages. The existence of minimal pairs—signs differing in only one parameter—conclusively demonstrates that these parameters function as phonological primes, not holistic gestures.

Morphologically, classifier constructions and aspectual inflections demonstrate productivity—the hallmark of natural language. The ability of signers to create novel combinations for unfamiliar contexts (e.g., describing new technologies) proves these are not fixed gestures but generative morphological systems.

Syntactically, the systematic use of word order variation and obligatory non-manual grammatical marking demonstrates that BISINDO possesses abstract syntactic constraints. The ungrammaticality judgments for sentences with inappropriate non-manual markers prove these are not optional emotional expressions but grammatical requirements.

Modality Effects

While BISINDO shares universal linguistic properties with spoken languages, it also exploits unique affordances of visual-spatial modality. Simultaneous morphology—expressing multiple meanings simultaneously through different articulators—has no direct spoken language parallel. Iconic motivation—where sign forms transparently relate to meanings—is more prevalent than in spoken languages, though BISINDO includes abundant arbitrary signs.

These modality effects demonstrate that while linguistic universals constrain all languages, individual languages exploit modality-specific resources. Visual-spatial languages are not inferior to auditory-vocal languages; they are alternative instantiations of human linguistic capacity.

Comparison with Previous Research

Our findings extend Palfreyman's (2019) foundational BISINDO work, providing the first comprehensive grammatical documentation across all linguistic levels. The phonological inventory we identify exceeds previous estimates, likely reflecting our broader geographic sampling.

Cross-linguistic comparison reveals BISINDO patterns consistently with sign language typology. Like most documented sign languages, BISINDO employs productive classifiers, simultaneous morphology, and non-manual grammar (Sandler & Lillo-Martin, 2006). This consistency supports theories of sign language universals constrained by visual-gestural modality (Meier, 2012).

Theoretical Implications

Linguistic Theory

BISINDO challenges modality-biased linguistic theories. Phonological theories based exclusively on auditory-vocal articulation must expand to accommodate visual-gestural parameters. Morphological theories must account for simultaneous as well as sequential processes. These expansions enrich linguistic theory by revealing human language capacity unconstrained by specific modality.

Cognitive Implications

The existence of fully complex sign languages demonstrates that the human language capacity is amodal—capable of operating through any sensory-motor channel. This has profound implications for understanding language evolution and neural organization. Language areas in deaf signers' brains activate for sign language just as hearing speakers' language areas activate for speech, suggesting abstract linguistic representation independent of modality (MacSweeney et al., 2008).

Sociocultural Implications

The ethnographic findings reveal BISINDO as central to deaf identity and community. This aligns with sociolinguistic research showing language as fundamental to group identity (Eckert, 2000). For deaf Indonesians, BISINDO is not merely a communication tool but a marker of community membership, cultural heritage, and collective identity.

The contrast between deaf community linguistic pride and widespread societal devaluation reflects broader patterns of minority language marginalization. Dominant groups often dismiss minority languages as "dialects," "slang," or "broken language" to justify linguistic and social subordination (Lippi-Green, 2012). Challenging these deficit ideologies requires not only linguistic documentation but also political advocacy.

Inclusion Barriers and Policy Implications

The documented barriers—lack of BISINDO-fluent teachers, absent interpreter services, negative language attitudes—systematically exclude deaf Indonesians from educational, economic, and civic participation. These barriers violate Indonesia's obligations under the UN Convention on the Rights of Persons with Disabilities, which guarantees language rights for deaf individuals (Article 21, 24).

Meaningful inclusion requires comprehensive policy reforms:

Official Recognition: Designate BISINDO as an official language of Indonesia, legally protected and promoted.

Interpreter Services: Mandate certified interpreter provision in education, healthcare, legal proceedings, and public services.

Bilingual Education: Implement BISINDO-Indonesian bilingual education with deaf teachers and culturally appropriate curricula.

Teacher Training: Require BISINDO fluency for all deaf education teachers, with training provided by deaf community.

Public Awareness: Launch campaigns educating hearing Indonesians about sign language as complete natural language.

Community Participation: Include deaf community organizations in all policy-making affecting deaf individuals.

Limitations

Several limitations merit acknowledgment. First, regional variation in BISINDO likely exceeds what our sampling captured; more comprehensive dialectology is needed. Second, while our corpus is substantial by sign language standards, it remains modest compared to spoken language corpora. Third, experimental studies tested competence in controlled contexts; naturalistic processing studies would complement these findings. Fourth, the ethnographic component focused primarily on urban communities; rural deaf experiences require additional research.

Future Research Directions

Future research should explore:

Regional dialectology documenting BISINDO variation across Indonesian archipelago

Historical linguistics reconstructing BISINDO development and contact with Indonesian and other sign languages

Child language acquisition studying how deaf children acquire BISINDO from parents and peers

Neurolinguistics using neuroimaging to investigate neural processing of BISINDO

Applied linguistics developing BISINDO teaching materials and assessment tools

Comparative Southeast Asian sign language studies documenting Thai, Vietnamese, Filipino sign languages

Longitudinal studies tracking policy implementation effects on deaf inclusion outcomes

5. Conclusion

This comprehensive study conclusively demonstrates that BISINDO is a complete, fully complex natural language operating through visual-gestural rather than auditory-vocal modality. Across phonological, morphological, syntactic, and semantic domains, BISINDO exhibits the structural sophistication characteristic of all natural languages.

The phonological system with 45 handshapes, 18 locations, 23 movements, and 4 orientations forming minimal pair contrasts parallels consonant-vowel systems of spoken

languages. Productive morphology through classifier constructions and aspectual inflections demonstrates generativity beyond memorized gestures. Flexible syntax utilizing both manual and non-manual articulators shows abstract grammatical organization. Rich semantics including metaphor, idioms, and abstract concepts proves equal expressiveness to spoken languages.

Comparison with other sign languages reveals BISINDO as typologically consistent with cross-linguistic sign language patterns while exhibiting language-specific features. The visual-gestural modality enables unique structures—simultaneous morphology, spatial syntax—unavailable to spoken languages, demonstrating that modality shapes but does not limit linguistic expression.

Ethnographically, BISINDO serves as the cornerstone of deaf community identity, cultural transmission, and social organization. Deaf Indonesians express linguistic pride and community belonging through BISINDO use, constructing alternative cultural spaces within predominantly hearing society.

However, persistent barriers—educational exclusion, service inaccessibility, language ideologies devaluing sign language—systematically marginalize deaf BISINDO users. These barriers violate fundamental human rights and perpetuate cycles of poverty, limited education, and social exclusion.

Addressing these barriers requires comprehensive policy reform grounded in recognition of BISINDO as a complete natural language. Official language recognition, interpreter provision, bilingual education, and public awareness campaigns are not optional accommodations but essential implementations of linguistic and human rights.

This research contributes to multiple scholarly domains: sign language linguistics through comprehensive BISINDO documentation, linguistic theory through examination of modality effects, disability studies through analysis of inclusion barriers, and applied linguistics through policy recommendations.

Most importantly, this research serves advocacy goals. By documenting BISINDO's linguistic sophistication, we provide empirical evidence challenging deficit ideologies and supporting deaf community demands for linguistic rights. Deaf Indonesians are not disabled individuals lacking language; they are a linguistic minority possessing a complete visual-gestural language deserving recognition, respect, and protection.

As Indonesia moves toward greater inclusion and equality, recognizing BISINDO as a complete natural language—not just hand gestures—is essential. Only through this recognition can the 2.6 million deaf Indonesians achieve full participation in educational, economic, and civic life, contributing their unique perspectives and capabilities to Indonesian society

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