

## **Contributing Factors and Challenges in Mastering Academic Writing Skills: Multiple Case Studies of Deaf Students in Inclusive Universities in Indonesia**

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*Received: 2 December 2022*

*Reviewed: 12 January 2024-12 February 2024*

*Accepted: 23 February 2024*

*Published: 30 March 2024*

### **Abstract**

The purpose of this research is to describe the challenges and factors causing difficulties of deaf students in mastering writing skills at inclusive universities in Indonesia. This research is focused in Central Java province because of the more universities are considered as inclusive universities. This research was conducted in September-December 2022. The subjects in this research were selected using the purposive sampling method. Based on these limits, 35 Deaf students from six inclusive universities were obtained as respondents. The data collection techniques used questionnaires, observations, interviews, and concentrated discussions. Furthermore, the data analysis steps undertaken consisted of: (a) data analysis, (b) data revision, and (c) data verification. The results of this research concluded that the challenges experienced by students were broadly related to: (a) difficulty in mastering vocabulary, (b) understanding punctuation, and (c) difficulty if mastering complex sentences. As for more specifically related to academic text writing skills, the obstacles experienced by students including: (a) composing effective sentences, (b) developing paragraphs, (c) paraphrasing techniques, (d) writing academic texts in accordance with linguistic rules, and (e) writing bibliography. Furthermore, factors causing the occurrence of the obstacles in the mastery of academic text writing skills including: (a) unaccessible learning resources, (b) less effectively interwoven communication during lectures, and (c) different sentence structure in Sign Language with Indonesian sentence structure.

**Keywords:** Academic writing skills; deaf students; general education; Indonesian language; inclusive universities

## Introduction

The Government of Indonesia through Law Number 8 of 2016 states that persons with disabilities have the right to obtain quality education in educational units at all types, paths, and levels of education in an inclusive and special manner, and the government is also obliged to provide education fees for persons with disabilities (Dianastiti et al., 2022). Therefore, since 2016 until today, the Indonesian government continues to promote inclusive education and accessibility of education for students with disabilities. In line with these regulations, universities in Indonesia are also starting to launch themselves as inclusive universities that are ready to accept students with disabilities.

Universities present as inclusive universities give a positive impact on the advancement of education for individuals with disabilities and increase the possibility of individuals with disabilities to live decent and independent lives. At the college level, students with disabilities are also equipped with general education subjects that become the foundation and supporters before the students take special courses according to the chosen study program. To gain access to general education, it is necessary to ensure that the learning process is able to demonstrate the ability to make decisions and choices that support their development, growth, and overall well-being. One of the general education that must exist in every country is language courses, including Indonesian language that becomes a compulsory subject in Indonesian universities.

Based on field studies at inclusive universities in Central Java, the highest percentage of students with disabilities are those with deafness. Those deaf students are classified into those with mild hearing impairment and moderate hearing impairment. In students with mild hearing impairment and moderate hearing impairment, they can still hear sounds even though for them they sound very low. Therefore, they also rely on lip movements to understand the meaning of speech partner if the speech partner cannot use sign language. A deaf disability is a disability that cannot be seen physically, so individuals with this disability are often not recognized as persons with disabilities until communication is needed. Deaf learning is not able to hide information completely in the form of sounds so this can affect their reading ability because of the lack of vocabulary words they can process (Musyoka et al., 2016). The biggest impact of these auditory constraints is related to the realm of speech and language which also has an effect on academic achievement, literacy performance, and the acquisition of skills that are appropriate for individual lives (Gargiulo & Metcalf, 2015).

The effect of the academic achievement is one of which can be seen in the Indonesian language lectures. Indonesian as a general course and a compulsory course in the higher education curriculum in accordance with the National Regulation Number 84/E/KPT/2020 aims to make students able to express their thoughts orally and in writing with excellent and correct Indonesian principles. For that reason, the Indonesian language is used as a carrier of science and become a unifying tool of the nation. One of the substances of Indonesian courses listed in the National Regulation Number 84/E/KPT/2020 is self-actualization in a scientific article. Scientific articles are one type of academic text closely related to the academic world. It is used as a means of communication to convey academic thinking in accordance with their expertise. Thus, academic writing is one of the crucial skills students master because writing remains the primary assessment method in education (Sumner & Connelly, 2020).

Writing skills are productive skills that facilitate communication and intellectual growth and it is expected that students have good performance in writing (Arindra & Ardi, 2020). Writing is a crucial skill and tertiary education students face difficulties in academic writing (Bram & Angelina, 2022). Seeing the urgency of writing skills for the work life of graduates later, it is then

correct to make writing skills as one of the materials of general education. As a basic skill and general education for students, deaf students also have the same achievement indicators in general Indonesian language subject at inclusive universities. Regarding the main topics of Indonesian courses' learning outcomes, writing and speaking skills are difficult for students to achieve (Pramesti & Effendi, 2018:3; Armariena, 2020:259). In general, written communication can be a meaningful way to communicate, exchange ideas, and experience, but the process of reading and writing in a deaf individual is usually lower than expected (Dostal & Wolbers, 2014; Herrera-Marmolejo et al., 2020). On the other side, research at Brawijaya University on deaf students concluded that most of them have low literacy skills; namely in terms of using inflection and derivation morphemes, while in the realm of syntax, both at the phrase and sentence levels, they tend to use inversion patterns. In addition to morphological and syntactic levels, they also have difficulties in the semantic realm (Lintangsari et al., 2019).

Although academic writing skills are pivotal for students, many studies have not examined the obstacles experienced by deaf students in understanding Indonesian course material at inclusive universities. This research is also motivated by the importance of *general education* for students with deafness. Therefore, this study was conducted to determine the challenges experienced by deaf students in learning academic writing skills. It is hoped that it can be used as a basis for further research and policy-making regarding the need for learning resources and learning models that suit the needs of deaf students in inclusive universities.

## Literature review

### Inclusive education in higher education

Inclusive education accommodates all children regardless of their physical, mental, intellectual, emotional, social, or other conditions (Triutari, 2014). Therefore, inclusive education is a combination of the implementation of extraordinary education with regular education in one education system. The implementation of inclusive education for all students is that they receive the same support. Then inclusive universities are universities that accept students with disabilities and conduct the educational process for students with special needs, which is carried out with students without disabilities.

Inclusive education views education at schools as part of the *long journey of humanlife, and humans learn throughout their lives (life-long learning)* (Diana et al., 2022). Inclusive education is launched as an effort to provide quality education for all individuals, both individuals with disabilities and non-disabilities without any discrimination (Hankebo, 2018). Various studies believe that in order to improve normality in life, all individuals with disabilities should learn with their non-disabled peers in an inclusive environment. Different definitions and complex understandings of inclusive education have actually made the research development of the field inherently problematic not only in practice but also from the methodological attitude (Hernández-Torrano et al., 2020). In addition, the gap problem between inclusive education policy theory and its application may be the cause of its lack of application in schools (Matolo & Rambuda, 2021).

Based on the concept of inclusive education, the inclusion of students with disabilities in the general and environmental education curriculum is a matter of equity and social justice (Frattura, E. M., & Capper, 2007). They argue that in order to develop an inclusive school where all students share and be part of the school community; administrators, teachers, and other professionals must engage in ongoing reflection to address the current state of school related to social justice for students with disabilities. Furthermore, inclusive education in Indonesia has principles that can be implemented, namely: (a) positive teacher attitudes towards diversity, (b)

positive interactions, (c) achievement of academic and social competencies, (d) adaptive learning, (e) collaborative consultation, (f) life and learning in the community, (g) partnership relationships between family and school, (h) learn to think independently, and (i) lifelong learning (Diana et al., 2022).

### Characteristics of deaf students in learning

Deafness means hearing loss so severe that the individual has difficulty in processing linguistic information through hearing, with or without amplification, which adversely affects his/her educational performance (Gargiulo & Metcalf, 2015). Another definition, deaf is a child who loses all or part of his/her hearing that experiencing verbal communication disorders (Garnida, 2018:7). Deaf children are individuals who experience hearing loss so that they cannot hear sounds or voices perfectly or cannot even hear anything at all. Deaf children are not able to interpret information completely in the form of sounds so this can affect their reading ability due to the lack of vocabulary they can process (Ahmad & Khasawneh, 2021). Deaf students are not able to interpret information completely in the form of sounds so this can affect their reading ability due to the lack of vocabulary they can process (Musyoka et al., 2016). Based on the three functions of the ear in hearing sounds, there are four categories of deafness, namely: (a) *mild hearing impairment*, (b) *moderate hearing impairment*, (c) *severe hearing impairment*, and (d) *profound hearing impairment* (Garnida, 2018).

Problems related to deaf students cover several issues including: concepts, knowledge, attitudes, and student values are among the most important factors affecting the progress of the educational process, and the density of the number of students in the classroom as well as the inability to follow learning and assignment are the most important problems faced by the students (Adi, S., Unsiyah, F., Fadhilah, D., 2017). The principles of learning in deaf children has seven fundamental things, namely: (1) facial directionality, (2) sound directionality, (3) individual principles, (4) modeling/concreteness, (5) simplification of concepts, (6) repetition, and (7) independent activities (Aini et al., 2022).

Deaf/hard of hearing individuals use various ways/languages to communicate and interact with the listening community and of course there may be gaps in the communication process (Chang, 2014). Therefore, to facilitate the communication process of people with deaf disabilities do so with sign language. Sign language is very important for the education and mental health of deaf individuals because sign language becomes one of the means for them to obtain adequate opportunities to communicate well at schools and express their feelings to others (Alawajee, 2023). In accordance with the development of the current era, integrating digital learning tools into the teaching and learning process is one of the most preferred or recommended methods in the process of educating deaf learners (Ahmed & Hasegawa, 2022). However, another study states that in using e-learning during distance learning at the time of Covid-19 pandemic, deaf and hearing impaired learners faced higher levels of fatigue and showed lower performance due to several dimensions of academic challenges leading to further inequality and obstacles that affect their participation opportunities (Rodrigues et al., 2022).

### Academic writing skills

Writing is considered as a tool or means to keep records and share knowledge (Howard, 2019). Many students state that writing is not always an easy task (Wonglakorn & Deerajviset, 2023). As a difficult task, writing requires a variety of cognitive skills such as prior knowledge gained from the author's interaction with various forms of text; affective include converting the

author's emotional state by using symbols and punctuation; and social with regard to the nature of the author's interaction with the surrounding environment (El-Freihat, S. & Al-Shbeil, 2020). Academic text writing is what learners do to communicate with other learners in their field of study, according to their disciplines (Greene & Lidinsky, 2018). This lends credence to the notion that writing is a communication analogous to spoken language (Mulyaningsih et al., 2022).

Within the discipline, the definition of an academic text includes: a well-defined and recognizable structure; a formal tone free of colloquial language; a factual perspective, usually centered on objective, often experimental evidence; a clear focus on the research question under study; an accurate word choice that avoids ambiguity; and an analytical approach (or deductive reasoning) that presents a logical and consequential stream of arguments. Thus, academic writing can be thought of as a kind of specialized language used by scholars to convey a set of information about a particular subject (Aliotta, 2018). Within its boundaries, academics choose various strategies and structure those strategies in the form of words, sentences, and paragraphs (Kane, 2000). Besides that, writing encourages the learners to use accurate part of grammar in expressing their ideas, feeling, and opinion (Sariani et al., 2021).

Various research data found that the demands of academic language are challenging and it affects the results of students' writing outputs (Jeyaraj, 2018). Writing becomes a challenging activity because the writing process involves the writer to map language into his own mind while at the same time the writer must also take into account the expectations of the reader (Kashiha, 2018). Academic writing is a productive skill that is essential to ensure academic success (Singh, 2016). The goals of academic writing carried out by academics range from proposing new projects to sharing their research findings with the wider research community (Chakma et al., 2021). In line with advances in technology and information, writing skills rank first among various skills that are considered necessary to be developed using technology (Zheltukhina et al., 2023).

## Research method

### Research design

This research applies a qualitative research design with a type of case study. A case study is conducted on Indonesian language lectures at inclusive universities in Central Java province, using unique material in academic writing skills. The relevant case study answers questions requiring intensive and in-depth descriptions of social phenomena (Yin, 2018). In this study, the researcher applied multiple case studies because the sites used several universities.

### Setting and participants

This research is focused in Central Java province because of the more universities are considered as inclusive universities. This research was conducted in September-December 2022. The subjects in this study were selected using the *purposive sampling* method, namely respondents were students from inclusive universities in Central Java and were students with deafness. *Purposive sampling* was chosen because the purpose of this research was not to manipulate, control, and generalize the findings of a random group of respondents, but to better understand the phenomenon of problem formulation in certain groups (Salarvand et al., 2023).

Based on these limits, 35 students from six inclusive universities in Central Java were obtained, they are: Universitas Sebelas Maret, UIN Raden Mas Said Surakarta, Universitas Tidar, Universitas Muhammadiyah Magelang, Universitas Sahid Surakarta, and UIN Walisongo. The distribution of deaf students in inclusive universities at Central Java province is the Faculty of Fine Arts and Design; Faculty of Social, Humanities, and Arts; and Faculty of Teacher Training and Education. Other deaf students came from Vocational Schools; Faculty of Psychology and

Humanities; Faculty of Agriculture; Faculty of Economics and Business; and Faculty of Social and Political Sciences.

#### Data collection instruments and procedures

The data collection techniques used here were questionnaires, observations, interviews, and concentrated discussions (Creswell, 2012:217). Data collection was carried out through questionnaires and interviews in focus group discussions with the help of a sign language interpreter. During the interview process, sign interpreters were assisted so that communication in the data collection process can run well and does not produce ambiguous meanings caused by communication constraints. Data collection was carried out in September to Desember 2022. The research instruments used in this research are questionnaires and open interviews with questions about what, why, and how. This question is a justifiable reason for conducting exploratory studies to develop related hypotheses and propositions for further investigation (Yin, 2018). The research instruments in the form of interview guidelines, closed questionnaires, and open questionnaires that have been validated by inclusive education experts, so that the instruments used have been confirmed to be valid and can be used for this research. The question grids in the instrument used are as follows.

Table 1. Research instrument grid

No.	Questions
1	How do deaf students perceive the material when writing academic texts in Indonesian lectures?
2	What obstacles are experienced by deaf students in Indonesian lectures, specifically in academic writing?
3	What are the factors that cause difficulties in mastering academic writing?
4	What learning resources are often used by deaf students to understand the material and practice writing academic texts in Indonesian lectures?
5	What are the obstacles experienced by deaf students when accessing these learning resources?
6	What is the advice of deaf students regarding their needs in Indonesian lectures, specifically on academic writing?

#### Data analysis approach

The data analysis steps undertaken consisted of: (a) *data analysis*, (b) *data revision*, and (c) data verification with peer-debriefing techniques to test the credibility of data findings (Cohen, Manion, & Keith, 2007:108). The research data processing was also carried out using the NVivo application to map student obstacles and conclude through data mapping, tables, or wordcloud. The following steps carried out data analysis with the NVivo application: (a) importing research data in the form of interview transcripts from interviewees, (b) coding research data in the form of the same keyword points regarding the obstacles experienced by deaf students in writing academic texts in Indonesian courses, (c) visualizing the data, and (d) presenting data and drawing data conclusion. Data from the interview transcripts are also presented in the interview field notes (IFN). To determine the validity of research data, data triangulation was carried out on the lecturers and students of respondents. The results of data analysis were presented through charts, tables, and figures which were then discussed with various relevant theories.

## Results

The results of this research are described in two components, namely: (a) Difficulties encountered by deaf students and (b) factors causing difficulties in mastering writing skills.

### Difficulties encountered by deaf students

This research began with a closed-ended question regarding the perceptions of deaf students on Academic Text Writing materials in general Indonesian courses at inclusive universities. Based on the question, 82.9% of respondents stated that they had difficulty when understanding Academic Text Writing materials and only 17.1% of respondents who answered did not have difficulty. Based on these results, it can be concluded that many deaf students still struggle to understand the material and practice writing academic texts. In contrast, academic text-writing skills are one of the basic language skills that all students must master. To explore further the difficulties experienced by deaf students, the questionnaire continued with an open questionnaire about what obstacles they faced when writing academic texts and the learning process of general Indonesian courses. Clustering of obstacles experienced by deaf students in Indonesian language lectures, namely: (a) difficulty in mastering vocabulary, (b) understanding punctuation, and (c) difficulty in mastering complex sentences.

### Vocabulary mastery

The mastery of vocabulary is related to the choice of diction used by deaf students in the process of writing academic texts. The mastery of this vocabulary starts from the learning process from a young age which is closely related to the phoneme. From the field notes of the interview results there are similarities in the factors behind this, namely "new vocabulary" which is still foreign to them.

#### Data 1.

Honestly there is but a little in this process, *not yet familiar with the new vocabulary* which is the high language and explaining examples that make me not really understand (IFN/11/02)

The mastery of vocabulary is related to different levels of reading literacy in each deaf student and different social experience activities. In the results of data triangulation with deaf activists who have graduated as students, it is known that one of the factors that causes vocabulary constraints that often arise in deaf students is the complexity of Indonesian grammar and spelling and the lack of accessibility regarding literacy.

#### Data 2.

Indonesian language has complex grammar and spelling rules. This can make it difficult to develop language that is easily understood by deaf people. *I realize that there are still a lot of vocabulary that I have not developed so I always read a lot of new vocabulary, readings, and watch movies to enrich my vocabulary.* (IFN/05/02)

Based on data 2, it can be concluded that the mastery of new vocabulary is indeed closely related to another level of literacy ability, reading literacy. Obstacles related to vocabulary and the level of literacy will further correlate with the academic writing ability of deaf students, because with the minimal information from the reading process and minimal vocabulary comprehension, then deaf students will have difficulty in developing academic texts.

### *Punctuation and hyphenation*

In Indonesia, two sign language systems are known, namely the Indonesian Sign Language System (*Sistem Isyarat Bahasa Indonesia-SIBI*) and the Indonesian Sign Language (*Bahasa Isyarat Indonesia-Bisindo*). SIBI is an official sign language created by the Indonesian government with a sign system that follows the rules of spoken and written Indonesian language in the academic realm. Unlike SIBI, Bisindo comes from non-formal communication and even adapts to their respective regional languages. This difference in sign language makes people with disabilities unable to accept the existence of SIBI as a national sign language and Bisindo, which is the natural language of Indonesian sign language, not acknowledged as a national language (Pratomo et al., 2019). Another difference, SIBI recognize the presence of conjunctions or conjunctions while Bisindo does not recognize the conjunction pattern. It is because Bisindo is used for generations as the initial language of deaf individuals, then to adulthood will affect the language skills of the individuals. One of them is observable in the mastery of punctuation and hyphens.

#### Data 3.

I was confused to write any title for fear of being wrong because *I had difficulty understanding the formal language that used the conjunction*. My weakness is language because I sometimes make sentences that are inverted, *sometimes there are no conjunctions*. (IFN/23/03).

Based on the data of interview results from the field records, respondents admitted that they had difficulty understanding the standard language (formal domain) by using conjunctions because respondents were not used to using conjunctions in Bisindo. When looking at the basic principles of deaf individuals, the transfer of language skills they experience is from sign language to written language, in contrast to hearing individuals who experience the transfer of skills from spoken speaking to writing. This principle is in line with the fact that the first language of deaf children is a sign language that relies on visual and has different grammatical characters from written language, especially in Bisindo.

### *Effective sentence mastery and complex sentences comprehension*

Based on the overall answer, the most widely experienced obstacle by respondents is in terms of making effective sentences. In Indonesian grammar, effective sentences are closely related to sentence structure. Based on field notes from interviews, it is also known that deaf students not only have difficulty when writing effective sentences, but they also have difficulty understanding complex sentences. The complex sentences here are compound sentences with two or more interconnected clauses. In addition to effective sentences and complex sentences, the process of writing academic texts turns out to be a challenge for deaf students. After understanding the obstacles of deaf students on academic text writing materials in general Indonesian courses at inclusive universities, questions were continued with what materials are needed and desired by respondents to improve their academic text writing skills. The results of respondents' choice data are presented in Table 2.

Table 2. Academic text writing course material requirement

No.	Answer	Percentage
1	Effective sentences	25.6
2	Definition of academic text	22.8
3	Academic text type	8.6



4	General Guidelines for Indonesian Spelling ( <i>Ejaan yang Disempurnakan - EYD</i> )	8.6
5	Tips for developing paragraphs	8.6

Regarding the need for learning materials for academic text writing skills, the highest answer according to the perceptions of deaf students (in Table 2) is about effective sentences. According to deaf students, they have difficulty in writing effective sentences because the sentence structure is different from the Indonesian sign language (Bisindo) that they are using. In line with these data, other research states that deaf individuals face difficulties in their linguistic development due to hearing loss or damage to part or all of their hearing aids, or because these hearing aids cannot function properly so that as they get older it causes difficulties for these children in their ability to communicate verbally (Khasawneh, 2023). Although they have grown up and become students, communication barriers that cause them to have difficulty receiving information verbally are still experienced by deaf students. Therefore, when learning in inclusive classes, either offline or online, they need assistive technology and longer time in digesting the learning materials.

#### Factors causing difficulty mastering academic writing skills

In addition to student obstacles in understanding materials and writing academic texts, this research is also carried out to determine the factors causing these obstacles based on the perceptions of deaf students. The results of research data are visualized in the forms of tables.

#### *Inaccessible learning resources*

The first causative factor for deaf student respondents is the accessibility of learning resources in Indonesian courses and other lecture materials relevant to academic text writing skills. The question is continued with what learning resources they have been using in Indonesian language lectures.

Table 3. Recapitulation of learning resource data used by deaf students

Word	Weighted Percentage
website	25.71
YouTube	17.14
books	14.29
Powerpoint	14.29
lesson material	11.43
Instagram	5.71
article	2.86
google	2.86
journal	2.86
Twitter	2.86

The most widely used learning resource by respondents is website with random address according to the needs of the material they want to learn. They utilize the Google search engine with certain keywords. In addition, respondents used Youtube and books suggested by lecturers who lectured on Indonesian language courses. In accordance with Table 2, the use of audio video learning resources from YouTube as well as using written learning resources have their own advantages and disadvantages according to the point of view of deaf students. Similar to the

website, when using YouTube they search for YouTube accounts by typing down keywords in accordance with the material they want to learn. For videos on YouTube, deaf students look for videos that are accompanied by subtitles if possible, or use a transcription application (webcaptioner) to help them understand the oral material of the video. The next question is about what applications are used by deaf students in supporting their lectures.

Table 4. Learning support applications used

Word	Weighted Percentage
Transcription	45.45
Webcaptioner	33.33
Google	9.09
Indonesia Dictionary (KBBI)	6.06
Google Translate	3.03
Sign Language Interpreter	3.03

Based on table 4, the most quantity of answers are in the forms of transcription applications and webcaptioners. Each deaf student generally has an instant transcription application (from oral to written) in their respective devices, such as *Speech to Text* and *Speech Notes* applications that can be downloaded through Play Store or App Store. The webcaptioner app is in reality also a transcription app. Other answers from respondents are Google, Google Translate, Indonesian Dictionary (KBBI), and sign language interpreter. KBBI, deaf students use to find the meaning of certain words or technical terms that are still unfamiliar to them. However, the disadvantage of transcription technology is that the voice of the teacher or other colleagues is not too audible and is instead captured by transcription applications with different meanings.

#### *Communication in lectures is not effectively intertwined*

Deaf students are constrained about communication in the lecture process. This communication obstacle is not only for fellow students but also for lecturers in the course. Although it is within the scope of inclusive universities, but not all lecturers can communicate using sign language. When looking at the answers of respondents, there is a possibility that not all educators at the inclusive universities understand the learning strategies that pay attention to the needs of the students. In the respondent data, it is found that deaf students in inclusive universities at Central Java are in the category of mild and moderate deafness, so basically they can still hear sounds even though they are limited and can rely on the lip movements of speech partners to understand the meaning of the speech.

#### Data 4.

Translate webcaptioner often does not connect *because of the voice of lecturers or anyone a little difficult to enter Web Captioner, sometimes Web Captioner error due to weak signal so I have difficulty understanding what is said.* (IFN/23/02).

In data 4, it is known that to support a more effective communication process, they rely on transcription applications (from oral to written) if they want to communicate with lecturers or friends who do not understand sign language. However, such transcription applications often do not work optimally when the voice of the speaker is not heard clearly. This of course allows for misunderstandings in the process of receiving the information.

### *Differences in sentence structure in Indonesian sign language (bisindo) with Indonesian sentence structure*

As previously reviewed, there are 2 types of sign language used by deaf individuals in Indonesia, namely SIBI and Bisindo. The origin of Bisindo is the mother tongue or natural language of the deaf, while SIBI comes from the regulation made by the government. However, most deaf individuals master and use Bisindo more in daily communication even though they are taking the education level. The pattern of Bisindo sentences is Subject-Object-Predicate-Adverb (SOPAdv) (Pratomo et al., 2019). It is not natural that the arrangement of the sentence pattern is the natural language of the Bisindo sign language which does not recognize the presence of conjunctions. The use of Bisindo sign language which then affects the ability of deaf students in mastering academic text writing skills, especially in terms of composing effective sentences in accordance with Indonesian grammar consisting of Subjects-Predicates-Objects-Adverb.

### **Discussion**

The results of the study concluded that deaf students at inclusive universities in Central Java province had obstacles in mastering academic text writing skills during the lecture of general Indonesian language courses. According to students' perceptions, various obstacles are caused by three main factors. The first factor is learning resources that are not yet accessible. Lack of awareness regarding accessibility can lead to inattention and provision of materials accessible to deaf people. The inequality of learning resources is certainly not in accordance with the concept of inclusive education which in principle aims to eliminate student marginalization in the classroom (Jothinathan et al., 2021). Therefore, learning resources that also meet the needs and are accessible for students with deaf disabilities in inclusive universities are needed.

Looking more closely to the choice of learning resources that are often used by deaf students, then learning resources in the form of audiovisual videos and textbooks can be tailored to their needs, one of which is the need for sign language translation and/or *subtitles*. Learning resources that are suitable according to the characteristics and needs of deaf students are certainly technology-based learning resources. The results of the research also state that learning with technology that matches the learning goals can be a major driving force behind whether students feel confident or not with the technology (Staddon, 2023). The availability of technology-based learning resources is certainly a homework for all lecturers at inclusive universities in Central Java province. In addition, it is important to understand that the motivation of writing and the quality of writing are characteristics that relate to the goals and needs of learners (Parra & Calero, 2019). Therefore, it is important for lecturers to meet the needs of deaf students in the form of accessible learning resources in order to increase the motivation and quality of their writing skills.

In essence, the characteristics of deaf learners are that they need the consideration or assistance of teachers in the learning process (Basonbul, 2023), this also includes deaf students in universities. In line with this, in the era of digital learning, one of the most significant problems faced by teachers of deaf students in schools and universities is the need for new learning strategies that specialize in software that allows them to create and deliver learning content to deaf students remotely (Ahmed & Hasegawa, 2022). This problem also occurs from the side of deaf learners. In the context of universities, deaf students need accessible learning media and make it easier for them to understand lecture material even if the lecture is delivered online or remotely.

The second causal factor is that communication during lectures is not effectively intertwined. Whereas effective communication helps participants overcome depression and anxiety in writing (Wu & Buripakdi, 2022). The ineffectiveness of this communication is due to

not all lecturers who lecture in general Indonesian courses can use sign language and understand the special needs of deaf students in communicating. In addition, of the six inclusive universities in Central Java under this research, there are no universities in lectures with deaf students providing sign interpreters. Sign interpreters are people (both hearing and deaf people) who have the ability to interpret Sign Language directly, precisely, and accurately. The basic concept of the fully inclusive education model is the placement of deaf and hearing impaired students in general education classrooms in the entire academic process with interactions made by deaf and non-disabled persons (Murray et al., 2020). However, this communication gap between the deaf and the non-deaf has arisen naturally since the two communities use different mother tongues, sign language and spoken language. Sign language and spoken language differ from each other in their dimensions, from phonology and morphology to vocabulary and syntax (Escudeiro et al., 2022).

The third causative factor is the difference in sentence structure in Sign Language (Bisindo) with Indonesian sentence structure. Looking at various studies in other countries related to this, it is found that not only Indonesian students have this particular problem, similar situation also happens to deaf individuals in USA. Like many other native languages, sign language has no written form making it impossible for students to develop print literacy in that sign language (American Sign Language), even though it is the first language (Dostal & Wolbers, 2014). The study examined the language skills of deaf children who use American Sign Language (ASL). The results of the study concluded that basic reading skills play a significant role in writing skills with writing facilities and developing sign language at an advanced level. The research also confirms that good reading ability is an absolute prerequisite for deaf children to be fluent in writing and sign language skills (Chamberlain & Mayberry, 2008). Another study concluded that one of the effective inclusive education strategies is with a consistent policy that equalizes sign language status (Silvestri & Hartman, 2022). The results of these studies support the data of this research in the form of constraints on the mastery of vocabulary and effective sentence structure, one of which is caused by poor reading literacy skills and differences in sign language status used by deaf students.

## **Conclusion**

The results of this research concluded that the challenges experienced by students were broadly related to: (a) difficulty in mastery of vocabulary, (b) mastery of punctuation and hyphenation, and (c) mastery of effective sentences and understanding complex sentences. As for more specifically related to academic text writing skills, the obstacles experienced by students including: (a) composing effective sentences, (b) developing paragraphs, (c) paraphrasing techniques, (d) writing academic texts in accordance with linguistic rules, and (e) writing bibliography. Furthermore, factors causing the occurrence of the obstacles in the mastery of academic text writing skills including: (a) inaccessible learning resources, (b) less effectively interwoven communication during lectures, and (c) different sentence structure in Indonesian Sign Language (Bisindo) with Indonesian sentence structure. Based on the results of the research, future study is suggested to be able to analyze in more depth the language error analysis of deaf students in academic text writing with inclusive university settings in Indonesia and other countries. In addition, future study can also be carried out on the development of accessible learning resources for deaf students at inclusive universities to minimize obstacles and factors that cause the mastery of academic writing skills.

### Declaration of conflicting interest

The authors declare that there is no conflict of interest in this work.

### Funding acknowledgements

This research was supported by the the Center for Education Financial Services (Puslapdik) and Indonesia Endowment Funds for Education (LPDP) through the Indonesian Education Scholarship (Beasiswa Pendidikan Indonesia – BPI), Ministry of Education, Culture, Research and Technology (Kemdikbudristek), Indonesia (grant number 1004/J5.2.3/BPI.10/06/2021).

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