

# Development of Indonesian Association of People with Disabilities (PPDI) Volunteers Based on Digital Applications to Increase Deaf Interaction

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## ARTICLE INFO

## ABSTRACT

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**Background:** Effective communication is essential for everyone, but it can be especially difficult for those who are deaf or hard of hearing. This can lead to isolation and hinder their ability to express themselves. Unfortunately, many people, including volunteers from PPDI North Sumatra, lack sign language skills, creating a communication barrier with the deaf community.

**Contribution:** This activity aims to develop and assist Regional Representative Council PPDI North Sumatra volunteers to increase interaction with the deaf at Regional Representative Council PPDI North Sumatra

**Method:** PPDI volunteers participated in program socialization, learned PIKU application features, and received training on its use.

**Results:** The PIKU program yielded positive outcomes. Volunteer participation was enthusiastic, and interaction with the deaf community increased. The app's free accessibility, user-friendly interface, and clear visuals facilitated communication.

**Conclusion:** The PIKU program, with its communication-assistive technology, effectively improved interaction between PPDI volunteers and the deaf community in North Sumatra. This highlights the potential of technology to break down communication barriers and foster inclusivity.

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## 1. Introduction

Humans will really need communication in every activity to provide convenience in life which includes thoughts and feelings [1]. However, there are obstacles between volunteers and deaf people, namely the difficulty of interaction between deaf people and

non-disabled volunteers, there are obstacles in communication in the form of volunteers misunderstanding the words spoken by deaf people, and the sign language used by deaf people is not understood by deaf people. volunteers, volunteers find it difficult to communicate with deaf people [2]. Apart from that, physical obstacles, including limited sense of hearing and language, are one of the factors that hinder communication carried out by volunteers, causing a chaotic effect on both of them [3].

A condition or state of a person who experiences a deficiency or loss of the sense of hearing as a result of the inability to perceive sound or voice stimuli. This causes speech and language skills to be hampered, slowness and even difficulty in communicating [4]. A person who has hearing loss requires special services and communication strategies to develop language and communication skills and reduce the impact of hearing loss [5]. The difficulty of translating the contents of messages experienced by deaf people from other people causes the communication process to fail [6]. Apart from that, the failure to fulfill the rights of the deaf in using sign language in several media such as television has resulted in inequality in the fulfillment of the right to life [7]. Even though deaf people need learning materials in the form of educational materials to enrich their language vocabulary [8]. Even though deaf people need learning materials in the form of educational materials to enrich their language vocabulary [8]. Social support including informational, emotional and instrumental support for deaf people is very much needed in order to improve their physical, mental and social abilities [9]. Inclusive education as an education provider allows all people with disabilities to participate in learning carried out together [10]. This is done so that they can use sign language, although this is the reason volunteers experience difficulties in communicating with them, their lack of knowledge in sign language means that using the services of a Juru Bahasa Isyarat (JBI) will be very expensive and time consuming. The presence of a sign language interpreter can help effective communication in order to build mutually supportive, open and good social relationships [11]. Social relationships carried out by volunteers through situation management and stress management will be faced because this is the environmental and interpersonal demands of volunteers in establishing communication with the deaf [12].

People with disabilities have their own shortcomings, especially deaf people who have hearing impairments and cannot speak due to not being able to recognize sounds. Based on this, it can be seen that it is very rare for someone to be able to communicate with the deaf because communicating with the deaf must be able to use sign language, including PPDI North Sumatra volunteers who also still lack understanding and use of sign language, this is certainly one of the concerns for the activity program This. Even though people with disabilities have the same rights as normal people, especially deaf people, of course they have administrators or can be called volunteers who contribute to making an impact on the sustainability of society in the organization, both directly and indirectly, of course through smooth communication [13]. Sign language recognition is not only done directly but can be controlled by human interaction with applications and other electronic devices [14]. The information message feature in the application can be made according to gestures, converting speech into sign language [15]. The introduction of sign language at low cost using media for volunteers is a real task to help the deaf in communicating and solving their problems [16].

Despite efforts to improve communication between the Indonesian Association of People with Disabilities (PPDI) North Sumatra branch and deaf individuals through friendly meetings and in-depth information gathering, significant research gaps remain. One major gap is the lack of sign language proficiency among volunteers at PPDI North Sumatra, which severely hampers the effective interaction and inclusion of deaf individuals within the organization. Current literature and existing solutions inadequately address the specific needs of regional volunteer organizations to master sign language for better communication with the deaf community.

Therefore, this research is to develop the PIKU Digital Application (Understanding Communication Signs for the Deaf), tailored specifically for the Regional Representative Council PPDI North Sumatra. This app aims to bridge the communication gap by providing a user-friendly platform for volunteers to learn and use sign language, thereby enhancing interaction and inclusion. The contributions of this research not only offer a practical tool for improving communication within the PPDI but also add to the body of knowledge on digital applications as a means to facilitate sign language learning in regional volunteer contexts.

## 2. Method

The teaching method implementation method focuses on skill development. Training is provided on an ongoing basis by inviting people directly to the training location by visualizing the process and related goals, and the benefits of action plans [17]. The implementation method is carried out as strategic steps in realizing this activity can run smoothly and aims to ensure that the team can understand the problems and needs of partners so that the solutions the team implements can run as they should. The designs that have been carried out in this activity include:

### 2.1. Pre-Activity

There are several steps that the team plans in this activity, namely:

- a. During the first visit, the team coordinated with the Chair of the North Sumatra PPDI Regional Representative Council, volunteers, administrators, and the deaf community. The meeting included the team, accompanying lecturers, the daily chairman of the North Sumatra PPDI DPD, and several volunteers. They discussed the technical activities, necessary equipment and supplies, and target participants to ensure the program ran optimally can see in [Figure 1](#).



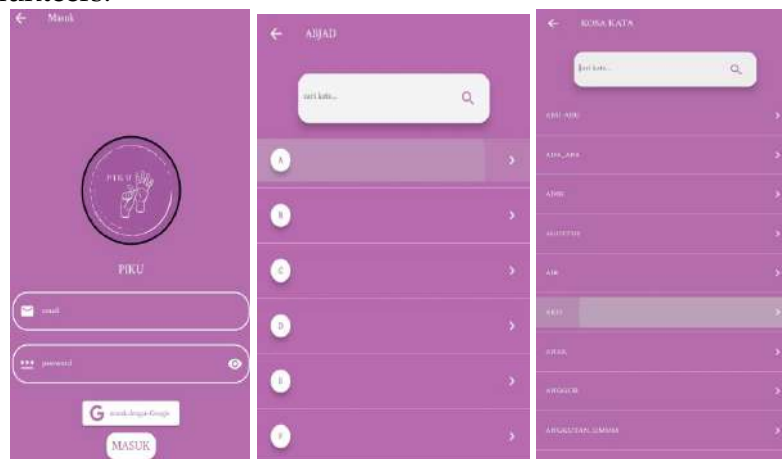
**Figure 1.** Program Consolidation with DPD PPDI North Sumatra Activity Partners

- b. Digging deeper for information with volunteers or administrators as well as blind people at Regional Representative Council PPDI North Sumatra to find out what features will be designed can see in [Figure 2](#). Gathering information for the team is very important to identify the needs experienced by partners who can produce programs that are considered right on target in terms of increasing interaction between volunteers and the deaf.



**Figure 2.** Team Coordination with North Sumatra PPDI DPD Volunteers

- c. Introducing volunteers or administrators as well as the deaf community in DPD PPDI North Sumatra to the functions and benefits of the PIKU digital application which can be accessed easily and for free as a translation tool that can help and improve interaction between volunteers or administrators and the existing deaf community at PPDI North Sumatra Province. This stage is carried out offline while still complying with applicable health protocols. At this stage, volunteers are taught by the team how this application can be used, starting from the registration stage to logging in via email address. The display of this application has an image of a hand which means the hand is a symbol of gesture that can be moved easily by volunteers when communicating with the deaf so that communication runs effectively and efficiently. [Figure 3](#) this application can be downloaded via Playstore easily and is free for volunteers.



**Figure 3.** Display of PIKU Application Features

## 2.2. Program Implementation

At the implementation stage of the digital application creation program as a translation tool, the team created application functions based on agreements with partners and created features that were efficient and needed by volunteers to carry out the interaction process well with the deaf community at PPDI North Sumatra. The stages of program implementation that have been carried out are as follows:

- a. Carry out permission to implement the program on the first visit, in this case, the team also coordinates with the Chair of the North Sumatra PPDI DPD, volunteers, and the deaf community in the North Sumatra PPDI Regional Representative Council can see in [Figure 4](#).
- b. Creating application concepts by discussing directly with partners to find out the features needed and adapting them to partner problems so that the team designs them.
- c. Create Alphabet and Sign Vocabulary videos to be uploaded to the application data base as a video display for the PIKU Application. The alphabet and vocabulary video like the picture below were made using hand movements that illustrate the meaning of words and letters which can make it easier for PPDI North Sumatra volunteers to interact with deaf people. The display of very bright lights and mouth movements can make it easier for volunteers to see and interpret images when interacting with the deaf.



**Figure 4.** Alphabetical Symbols, Sign Vocabulary for PIKU Application Video Display

## 2.3. Monitoring and Assistance

At this stage the team provides assistance to partners, guiding partners on how to access and apply the application that the team has created easily and for free. The assistance provided aims to provide information and information to volunteers on how to use applications that can help Regional Representative Council PPDI North Sumatra volunteers communicate with the deaf. Assistance is carried out in stages to measure the program's

achievements by conducting direct visits to partner location Regional Representative Council PPDI North Sumatra. Monitoring can see in [Figure 5](#).



**Figure 5.** Team Monitoring and Assistance to Volunteers

## 2.4. Evaluation

Evaluation activities are activities that the team carries out at the end of the activity, the aim is to see to what extent the application concept that has been designed has been achieved, as well as correcting the shortcomings that exist in the activity. The solution proposed by the team is the Development of PPDI Volunteers Based on the PIKU Digital Application (Understanding Communication Signs for the Deaf) as a Communication Media in Increasing Deaf Interaction in the North Sumatra PPDI Regional Representative Council. The existence of this application is a medium for direct interaction between volunteers and the deaf. The interactions that are carried out basically occur through direct social contact by providing messages that produce a response [18]. Through this program, we are trying to overcome the problems that occur among volunteers at the North Sumatra PPDI Regional Representative Council who cannot use sign language, so this becomes one of the problems where interactions between volunteers and deaf people are difficult, with coaching as well as technology through applications that can be used by volunteers in learning sign language, this is one program that can accommodate the hope of interaction between volunteers and the Deaf in the North Sumatra PPDI Regional Representative Council and of course this is very effective to carry out in a long-term program.

## 3. Results and Discussion

Basically, the use of technology can help humans carry out and establish wider social interactions in improving skills and knowledge [19]. Technology has become a tool that can help people to make it easier for them to provide information and teach in order to change expected behavior [20]. Providing information for individuals, especially deaf people, can be done by creating sustainable programs in order to make a positive contribution to them. The PIKU (Paham Isyarat Komunikasi Tunarungu) program implemented at Regional Representative Council PPDI North Sumatra can be considered to have run well because all activities were carried out in accordance with the scheduled timeline. The first step in

this program is an initial location survey whose aim is to identify existing problems and potential. After these problems and potential can really be exploited, the next step is to carry out permits and consultations with the various parties involved, especially the Chairman of the North Sumatra PPDI Regional Representative Council. The response from these parties was very good and supported the program which is expected to develop.

In this implementation program, partners participate in providing rooms, sound systems, tables, chairs and play an active role in every activity. Apart from that, partners also participated as audiences when the team carried out socialization and launched the PIKU application, then partners also participated in learning sign language through the application. This strategy is the most important part in developing interaction between North Sumatra PPDI volunteers and deaf people in developing effective communication. Effective educational efforts can be carried out by utilizing technology that can be adapted to their conditions to prevent the various risks of communication problems they face [21]. After conducting an initial survey, the team implemented the program by inviting Regional Representative Council PPDI North Sumatra volunteers.

The implementation of community service activities carried out by the team in collaboration with DPD PPDI North Sumatra by inviting volunteers is intended to ensure that volunteers are able to use the PIKU application with deaf people in order to improve effective communication and help deaf people fulfill their daily needs. Socialization activities basically aim to increase knowledge and develop abilities for a person so as to provide an overview of the required activity program [22]. This activity begins with socialization of the program by informing about the PIKU application (Understanding Communication Signs for the Deaf) which can be accessed via Playstore, then volunteers register by entering an active email address with an easy-to-remember password can see in Figure 6. After the volunteer registers, the team guides the volunteer to log in by entering the registered email address and password. Accounts that have been logged in will appear on the home page which contains the alphabet feature in sign language by clicking on the available alphabet display, vocabulary by clicking on the word that the volunteer wants to know and translation by using typing or voice to search for words or sentences that the volunteer will know. Volunteers. In this program, the team also provides a guidebook/ instruction containing how to use the PIKU application to make it easier for volunteers to interact with the deaf.



Figure 6. PIKU Application Guidebook and Implementation of Activity Programs

The results that have been achieved in implementing community service through developing PPDI volunteers based on digital applications as a communication medium in increasing interaction for the deaf in the North Sumatra PPDI Regional Representative Council have resulted in several benefits from various aspects, namely:

1. Environmental aspects include increasing environmental awareness. Through this program we can see an increase in environmental awareness, which means that North Sumatra PPDI Regional Representative Council volunteers need to learn sign language so that we can help deaf people if they want to communicate with third parties. Furthermore, in this environmental aspect, it also becomes a collaborative problem solver to overcome current environmental problems.
2. The economic aspect includes wider employment opportunities. In this program, North Sumatra Regional Representative Council PPDI volunteers certainly open themselves up through diversifying an organization's workforce to create diversity and increase the creativity and productivity of North Sumatra Regional Representative Council PPDI volunteers. Apart from that, volunteers also have innovation and creativity. When volunteers are able to master sign language well, this will indirectly increase their innovation and creativity.
3. Social aspects include better social inclusion. Through this program we can strive to ensure that all individuals, identities and have equal opportunities in society. Through this program, volunteers and others will certainly understand diversity in communicating through symbols and sign language. Sign language management has benefits for hearing impaired people and bridges social gaps [23]. The existence of micro volunteer-based applications can generally provide benefits for partners, including partner security, comfort, freedom and time efficiency [24]. Apart from that, developing social skills, volunteers certainly have new social skills by being able to interact and communicate directly without the help of other people or other media. Social equality, through this program, provides the next benefit that partners get, namely social equality obtained by deaf people with disabilities.

#### **4. Conclusion**

The development of PPDI Volunteers Based on the PIKU Digital Application (Understanding Communication Signs for the Deaf) as a Communication Media in Increasing Deaf Interaction in the North Sumatra DPD-PPDI was carried out as expected. The various features in this application really help partners in interacting with the deaf. The effectiveness of this activity, starting from pre-activity, including exploring problems in the field to monitoring, provides a positive contribution and effect for North Sumatra PPDI volunteers in helping them interact with deaf people. PPDI Volunteer Development Activities Based on Digital Applications to Increase Deaf Interaction in DPD-PPDI North



Sumatra using the PIKU (Understanding Communication Signs for the Deaf) application is considered effective and can have a positive impact. This is because this application can be easily accessed by everyone for free. Apart from that, the existence of this application is very supportive for new volunteers as a guide who still do not have much experience in interacting with deaf people because DPD PPDI North Sumatra volunteers do not come from formal schools or courses. The volunteers were only provided with informal discussion provisions by the North Sumatra PPDI DPD to assist with work programs in order to increase the spirit of self-confidence for deaf people.

### Acknowledgement

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