Indonesian Braille: Its Development and Form
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The Development of Braille in Indonesia

Indonesia is an archipelago consisting of over 17,000 islands large and small with the population of about 230 million people. The Indonesian Ministry of Health estimates that the population with visual impairment constitutes 1.5% of the whole population, i.e. over three million people. However, the Ministry of National Education records that only less than 10% of the school-aged people with visual impairment and other disabilities are in school; most of them go to special schools and many go to regular schools in inclusive setting. At least ten Braille printing houses serve to meet the need of blind people all over Indonesia for Braille reading materials. Because of the small production scale of these Braille printing houses, most Braille literate blind people in Indonesia still lack access to the Braille materials they need.

The development of Braille in Indonesia proceeded in tandem with the growth of education for the blind in this country. The first institution for the blind was established in 1901 in Bandung, West Java, by Dr. Westhoff, a Dutch eye doctor. (This was during the time when Indonesia was still under the Dutch colonial government). It was in this institution that Braille was first introduced to people with visual impairment in Indonesia, making use of the Braille system brought over from the Netherlands.

After Indonesian independence (1945) the Indonesian government established more schools for the blind, and Braille system from other countries (mainly from UK and USA) also began to be introduced.

During early 1960's, teachers in special schools for the blind began to realize the importance of a uniform Braille system for Indonesia, and the government, i.e. the Special Education Service, responded by setting up a task force for this purpose. The task force was chaired by Suharto (1926-), one of the

teachers with visual impairment. The work of this task force was published by the Ministry of Education and Culture in 1972. The Braille system included literary code (including contracted Indonesian Braille), and mathematical signs.

Despite the achievement, criticism of this uniformed Braille code remained. The contracted Indonesian Braille was difficult to learn, and many scientific codes were not included. Thus, in 1998-2000, in response to pressure from blindness organizations, the Directorate of Special Education, the Ministry of National Education, organized seminars and workshops to improve the Braille system. This had led to the renewal of the Indonesian Braille system, and the outcome was officially recognized by the Minister of National Education in the year 2000. While the literary Braille code has satisfied stakeholders and users, many parties still express their concern against the mathematical and scientific code.

The Indonesian Braille System

The Indonesian language uses the phonemic spelling system (i.e., one sound is more or less represented by one character) with the Latin alphabet. This was just the fact when Braille was originally developed in French, and thus no systemic adaptation was necessary when it was applied to Indonesian. Thus, the Indonesian Braille sticks to the original six-dot pattern. However, as variations among countries exist, mostly in punctuation and mathematical signs, and naturally in contractions, it is necessary to highlight the Indonesian Braille system as follows. As many mathematical and scientific codes are still in controversy, only the basic mathematical signs are included here. Also, for music notation, because we have agreed to use the New International Manual of Braille Music Notation, by the Braille Music Subcommittee, the World Blind Union (1996), the Braille music signs are not included either.

- The alphabet is the same as its original (see Table 1).
- Capital letter is indicated by dot 6 preceding it.

- Punctuations make use of lower signs – except for the *I* symbol (see Table 2).
- Numbers are formed by the first ten letters of the alphabet preceded by the number sign (see Table 3 and Table 4).
- Composition signs are shown in Table 5.
- Basic mathematical operation signs are shown in Table 6.
- Measurement signs are shown in Table 7.

Regarding contracted Indonesian Braille, contractions are formed with the following principles:

1) Association. The character and the word or part of word it represents is alphabetically associated.
2) Consistency. When the association principle cannot be applied, arbitrary signs must be consistent. That is, the same sign must represent the same word or part of word no matter it is positioned (front, middle or back).
3) High frequency. Only words or parts of word that are most frequently found in Indonesian text are contracted.
4) Legibility. Better legibility is more prioritized than shorter form of contraction.

The complete list of Indonesian Braille contractions are shown in Table 8.

The Indonesian Braille Code

Note: In order that your computer displays the Braille characters, please make sure that you have the Braille font in the fonts folder in the Control Panel.

Table 1: The Braille Alphabet

a	b	C	D	E	F	G	H	i	j
a	b	c	D	e	F	g	H	i	j
k	l	m	n	O	p	Q	R	s	t

k	l	m	n	o	p	q	R	s	t
u	v	W	x	y	Z				
u	v	W	x	y	z				

Table 2: Punctuations

4	1	2	3	8	6	8	0	7	7	–	/	`	59	99	`''
.	,	;	:	?	!	"	"	(	)	-	/	'	±	*	…

Table 3: Numbers of One Digit

#a	#b	#c	#d	#e	#f	#g	#h	#i	#j
1	2	3	4	5	6	7	8	9	0

Table 4: Examples of Writing Numbers of Multiple Digits

#aj	10
#bj	20
#aa	11
#bb	22
#ajj	100
#abc	123
#bej	250
#ajjj	1000
#aeej	1550
#ihgf	9876

Table 5: Composition Signs

,	.	#	;

4

Capital Sign	Italics indicator	Number sign	Letter sign

Table 6: Basic Mathematical Operation Signs and Example of Usage

Braille	Print	Braille Example	Print Example
`33`	=		
`*`	×	`#c*#d33#ab`	3 x 4 = 12
`//`	÷	`#aj//#b33#e`	10 : 2 = 5
`5`	+	`#e5#h33#ab`	5 + 7 = 12
`9`	-	`#bj9#f33#ad`	20 - 6 = 14
`{`	(		
`o`	)	`{#b5#co*#b33#aj`	(2+3)×2=10
`<`	^{2}	`#e<33#be`	$5^2 = 25$
`%`	^{3}	`#e%33#abe`	$5^3 = 125$

Table 7: Measurement Signs and Examples of Usage

Measurement	Print Sign	Braille Sign	Print Example	Braille Example
Length	M Km	`M` `km`	10 m 5 km	`M#aj` `km#e`
Area	M² km²	`m<` `km<`	50 m² 2 km²	`m<#ej` `km<#2`
Weight	Kg	`Kg`	1 kg	`Kg#a`
Volume	M³	`m%`	1 m³	`m%#a`
Temperature	º	`Dr`	40º	`Dr#dj`
Percent	%	`Ps`	50%	`Ps#ej`
Rupiah	rp.	`Rp`	rp.500	`Rp#ejj`

Table 8: List of Contraction Symbols

Note:

- Some symbols represent words and others represent parts of words, and some can function both as words and parts of words.
- Word symbols consisting of one Braille cell can function as parts of words when they are preceded by dots 4-5-6.
- Symbols preceded by dot 4, dot 5, dots 4-5, or dots 3-4-5-6, can function both as words and parts of words.
- As parts of words, certain symbols can be used in any position, some can only be used at the beginning, in the middle, or at the end of a word.
- In the following table, "+ dot 5", for example, means that dot 5 precedes the symbol.

Symbol	Word	Part of Word	+ Dot 4	+ Dot 5	+ Dots 4-5	+ Dots 3-4-5-6
A	Anda		atas		Atur	
B	Bagi			baik	buka	
C	cara			capai	cukup	
D	dari			dalam	duduk	
E	emas		aneh	erat	engkau	
F	faktor			fakta	fungsi	
G	lagi			ganti	guna	
H	harus			hari	hubung	
I	itu		arti	ikat	ikut	
J	jadi			jalan	juru	
K	kita			kali	kurang	sekali
L	lalu			lain	luar	selalu
M	mereka			mana	mungkin	sebelum
N	ini			naik	nurani	senang
O	oleh		abnormal	orang		
P	pada			pakai	punya	seperti
Q	kualitas			kuantitas	khusus	
R	karena			rakyat	rupa	sekarang
S	saya			sangat	sudah	sesuai
T	tak			tahu	tuju	
U	untuk		arus	ubah	umum	
V	vitamin			variasi	volume	
W	waktu			walau	wujud	
X	aksi			laksana	maksud	
Y	yang			yakin		
Z	zat			zakat		

Symbol	Word	Part of Word	+ Dot 4	+ Dot 5	+ Dots 4-5	+ Dots 3-4-5-6
%	kamu	mu		muka		
?	ke	ke		kerja	kemudian	
:	satu	st		sama	tunanetra	
*	sampai	ai				selesai
&	serta	se		sebab	seluruh	
(	akan	kan/kam				sedangkan
=	hingga	ngg		tinggal	ganggu	sehingga
]	jangan	ng				sedang
\	telah	te		terang	terus	setelah
$	bukan	ny		nyanyi		
<	tanda ulang					
)	aku	ku		kuasa	kuitansi	sekunder
!	nyata	nya				
[	atau	au				
/	di	di		diri		sendiri
>	Dan	an/am		antara	anjur	
#	sebagai					
+	buat	ua		suara	suatu	semua
1		aa				
2	bahwa	be				
3		pe				
4	dengan	per				
5	memang	me				
6	maka	ber				
7	agar	in/im				
8	masih	un/um				
9	ia	ia				
0	supaya	ter				
~		pun				
.		kah				
—		lah				