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Teachers' attitudes to signing for children with severe learning disabilities in Indonesia

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Abstract.

The Indonesian education system is striving for an inclusive approach and techniques are needed which can support children with severe learning disabilities and their peers in this context. Manually signed language has proved useful both in supporting the development and empowerment of children with severe learning disabilities and supporting inclusive educational practices. The development of an Indonesian signed language approach for this purpose is therefore argued to be an appropriate goal. There is evidence that the use of signed language within classrooms is significantly influenced by teacher attitudes and beliefs. This paper examines the attitudes towards such an approach based on semi-structured interviews with 20 teachers in seven schools in East Java and questionnaire responses from 69 teachers and educational professionals more widely located across Indonesia. The results suggest that teachers hold broadly positive attitudes to the possibility of signing. There is a complex relationship between social stigmatisation, the nature of signing and a possible classroom pedagogy. These issues need to be considered if the development of an Indonesian signed language approach for inclusive classrooms is to proceed successfully.

Keywords: sign language, teachers' attitudes, inclusive education, Indonesia, key word signing,

Introduction

Education for all is as a right which is being worked towards globally (Lindsay 2007), albeit inconsistently (Stangvik 2010), having been stated as part of the Universal Declaration of Human Rights (Lindahl 2006). Inclusive education has grown from the enactment these basic human rights and is explicitly advocated in Convention of the Rights of Persons with Disabilities (United Nations 2006). A key part of the inclusive education movement is a consensus that all children, including those with disabilities and impairments, should have the opportunity for an education and, furthermore, an education with their peers. The concept and challenges of educational inclusion have particular resonance in Indonesia whose national motto is *Bhinneka Tunggal Ika*, ('unity in diversity'). It is the most diverse multi-ethnic state in the world, with over 220 million people across the world's largest archipelagic country of more than 17, 524 islands (Direktorat Pembinaan Sekolloah 2008). The Indonesian government has stated its intention to implement inclusive education as a strategy to overcome educational barriers for all school age children, including those with special educational needs (Budiyanto 2011). Children with severe learning disabilities have historically been vulnerable to social exclusion and have faced particular challenges in relation to education. For example, researching the Bandung region in 2002-2003, Komardja (2005) found that people with intellectual disabilities were segregated and 'invisible' in public spaces and concluded

In a country where people with disabilities and their families are stigmatized, people with intellectual disabilities are the most stigmatized and the least likely to receive adequate services or funding. Accordingly, those with intellectual disabilities are doubly disabled by the social relations of ableism in Indonesia.

(Komardjaja 2005)p117

The Indonesian initiative for educational inclusion began in 2003, with the Minister of Education's directive for each region to have at least four inclusive schools and by 2008, supported by government funding, 925 inclusive 'pioneer' schools existed (Sunardi et al. 2011). This change was underpinned by the Education Law 2003 which mandated free basic education for all and devolved school management to a local community level (Direktorat Pembinaan Sekolloah 2008). This decentralisation of managerial and financial responsibilities has been seen as having potentially

negative effects, for example regarding rural school access rates (Kristiansen 2006). However, since this time the number of inclusive schools has grown, attended by previously excluded pupils.

Research which examined 186 of these inclusive schools found that approximately 12 % of the pupils could be classified as having special educational needs, with the largest group being those with intellectual disabilities (Sunardi et al. 2011).

Estimates of the number of children with learning disabilities vary. It has been estimated that there are approximately 1.5 million disabled children in Indonesia (International Labour Organization 2011), with other national data identifying approximately 83,000 children as having special educational needs (Direktorat Pembinaan Sekolah 2008). Of the latter group it is estimated that, at the very least, there are at least 40,000 children with severe learning disabilities in Indonesia (Direktorat Pembinaan Sekolah 2008). These children are likely to experience difficulties in many aspects of their development, particularly with language and cognition, and consequently may struggle to learn basic numeracy and literacy skills and access the standard school curriculum. Yet, relatively few schools modify their instructional approaches, or provide media or resources, for such children (Sunardi et al. 2011). A review of international practice recommended that Indonesian schools and regions should be supported in developing pedagogic approaches appropriate for the needs of pupils with severe learning disabilities to enhance their communication skills and engagement in school life (Budiyanto 2011). Therefore there is a need for a pedagogic method capable of supporting children with severe learning difficulties, which can readily be utilized within the classroom by teachers and pupils. One approach which has potential in this context is the use of manual signed language to support communication.

Internationally several types of manual signed language have been used to support children with severe learning difficulties. Some are derived from the language of the respective country's Deaf community, for example Signalong from British Sign Language (Signalong Group 2012) and Lamh from Irish Sign Language (Lámh 2008). Most of these approaches use a key word signing method, in which the words carrying the key information is signed alongside the spoken language, rather than having a sign for each spoken word (Vandereet et al. 2011). Unlike languages of Deaf communities

the signs therefore follow the sequence of speech. This key word approach is typified by the Makaton Vocabulary (The Makaton Charity 2012), which the most popular language and communication system for children with learning disabilities in the United Kingdom and has become used in over 40 countries worldwide. This type of signing is learned relatively easily and has been found to improve communication skills and support the language development of children with severe learning difficulties, including those with no spoken language (Dunst and Hamby 2011; Snell et al. 2010). For some children these signs are only a small part of their communication in particular situations, for others it is a step along the way to communication through spoken words alone and for others it becomes their primary means of communication (Vandereet et al. 2011). Good general classroom practice to develop the communication skills of all children also has positive outcomes for the inclusion of children experiencing barriers to communication (Roulstone and Lindsay 2012), with manual signs seen by teachers and teaching assistants as a tool that can support inclusive classroom practice (Sheehy and Duffy 2009).

Educational practices are culturally situated and a significant influence on whether such signed language approaches are taken up or disregarded by schools, or how they are used within individual classrooms, is the attitudes and beliefs of teachers towards the use of signing (Vandereet et al. 2011; Sheehy and Duffy 2009). In general terms an attitude can be defined as an expression of a tendency to evaluate something with a degree favour or disfavour and has a cognitive aspect concerning the persons person's beliefs and knowledge of an issue (de Laat, Freriksen, and Vervloed 2013). Sheehy and Duffy (2009) found that teachers, even within the same school, could hold conflicting views about the children for whom signing was suitable and its purpose. When translated into classroom practice these attitudes and beliefs significantly affected children's access to a communication approach that was likely to benefit them.

This research explores, for the first time, the attitudes of Indonesian teachers (from mainstream or inclusive primary schools -*Sekolah Dasar*) towards the use of signed language vocabulary for children who have learning difficulties. It aimed to elicit an understanding of issues that could be

relevant to consider in the development of a sign supported communication method for children with severe learning disabilities in Indonesian schools.

Method

A mixed methods approach was adopted that utilised qualitative semi-structured interviews and a subsequent quantitative questionnaire to different groups of participants. In order to improve the alignment between these two techniques, the interview prompts and the questionnaire items were similar and anchored in a common context (Harris and Brown 2010).

The research followed the ethical guidance of British Educational Research Association and was cleared by the respective University ethics committees (The Open University and University of Surabaya).

A 25 item questionnaire was derived from Sheehy and Duffy's (2009) research, one of the few studies to examine teachers attitudes to signing for children with severe learning difficulties. Each of the questions represented an issue which had been explicitly identified as important in Sheehy and Duffy's (2009) research.

In addition selected 'teacher variables' data (Avramidis and Norwich 2002) were collected. There has been extensive research on the variables which are significant with regard to teachers attitudes in the context of inclusive education. The evidence regarding teachers' gender, age and years of teaching experience, although numerous, is inconclusive and inconsistent (Avramidis and Norwich 2002; Elhoweris and Alsheikh 2006; Ahmmed, Sharma, and Deppeler 2012). The factors which emerge as the most influential are occupation, experience of teaching children with disabilities, contact with disabled people and relevant training (Avramidis and Norwich 2002; Elhoweris and Alsheikh 2006; Ahmmed, Sharma, and Deppeler 2012). Consequently 5 questions related to these factors were included in the questionnaire (Questions 1-4 and 'occupation').

Questionnaire Participants.

The questionnaire was completed by 69 teachers attending Pengembangan Kemampuan Komunikasi anak berkebutuhan khusus denga (Development of Communication Skills with Children conference, University of Surabaya). In terms of the 'teacher variables' The majority (71%) of the participants worked in mainstream settings, which included 6 teachers from inclusive schools. There were also 16 teachers from special schools, and 3 therapists and 1 teacher of the deaf, who together comprised a non-mainstream, special group containing 29 % of the participants.

The majority of the participants had no relevant training or experience: 65% had neither met a child who signed or had heard of signing being used by children with learning difficulties and 77% had received no training regarding signing. However a significant minority had such experience. 35 % had heard of signing being use in this way or had met a child who signed. One third (33%) of the participants indicated that they had used signing, with 23% having received some form of training in signing.

The questionnaire (see appendix 1) was made available to teachers from across Indonesia who were attending an education conference in Surabaya. Paper questionnaires were placed in a foyer, where teachers could choose to pick them up and then return them to a nearby collection box. Completed questionnaires were returned by 69 teachers, representing approximately 50% of the conference attendees. The responses were analysed using the software Statistical Package for the Social Sciences (SPSS v20).

Interview Participants.

20 teachers, 16 woman and 4 men, from seven inclusive schools took part in the interviews. Their ages ranged from 23 to 50 years of age. All were class teachers and trained to teach in mainstream schools. Their experience of children with severe learning disabilities had occurred within a mainstream setting.

Interview Method. The interview approach was qualitative in nature, and assumed that the content of the interviews represents meaning and experience (Braun and Clarke 2006). As in other qualitative research exploring attitudes the interviews were analysed using thematic analysis (McGillicuddy and O'Donnell 2013), based on an approach described by Braun and Clarke (2006). The interviews were transcribed and then repeatedly read to establish familiarisation with the data. Themes were identified through an inductive analysis, inferring interpretations from the data and also a deductive analysis, in which theme development is informed by previous research (Fereday and Muir-Cochrane 2008). Initial readings identified significant features across the transcriptions and repeated patterns, and points of particular relevance (McGillicuddy and O'Donnell 2013), were used to highlight key themes through manual coding. The emerging themes were reviewed to develop coherence with the data each represented, to critically consider their representation of the data as a whole and also their distinctiveness from one another (Braun and Clarke 2006).

The interview methodology therefore did not seek to count the occurrence of phrases, ideas or the number of particular words, as might be the case in content analysis (Hou, Chang, and Sung 2010). It reflected a view that "counting responses misses the point of qualitative research" (Pyett, 2003 p. 1174), and that the value of response are not necessarily determined by their frequency. Qualitative methodology may report that "many said" or that "the majority noted" (Zamorski and Haydn 2002) but does not typically report frequency counts as the interviews are interactive. Consequently one cannot infer what the absence of a statement means (Pyett 2003).

Semi-structured interviews were carried out with 20 teachers across 7 inclusive schools in East Java in November 2012. The questions for discussion were based on those used in Sheehy and Duffy's UK study, (Sheehy and Duffy 2009). The interviews were carried out by the researchers. The interviews were conducted in both Indonesian and English and a translator was present at all interviews to assist where further clarification or explanation was required.

These interviews began with two general questions:

Have you seen Indonesian sign language or any other sign language?

What are your feelings about children with learning disabilities using sign language?

The ensuing discussion was informal and issues raised were explored in keeping with a non-directive interview technique (Burman 2001). However the following issues (derived from Sheehy and Duffy, 2009) were considered, through prompting if necessary, at some point in each interview:

Signing is of limited use because it is not used in a wider environment.

Signing can encourage speech/ Signing is detrimental to speech

Signing stigmatises children

Interview times varied in length between 15 and 30 minutes. The interviews were recorded in situ and later transcribed and analysed thematically (Burman 2001).

Systematic reviews of mixed methods research , involving semi structured and questionnaire methods, support the view that qualitative data should be analysed first in their own terms rather than being drawn upon purely to illustrate quantitative findings (Harris and Brown 2010) The results from two methods were therefore analysed separately before being synthesised in the discussion.

Results.

Questionnaire Responses

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Participants Experience.

Previous research has suggested particular ‘teacher variables’ are important with regard to attitudes towards inclusive education issues. These are analysed here in relation to the use of signing.

Occupation.

An independent t test was conducted to examine the responses of the groups designed as mainstream and special. The response of the two groups did not appear to differ significantly for most of the questions. However three items where differences did occur and these were are summarised in Table 1.

Insert Table 1 about here

These findings, albeit from a small sample of ‘special’ educators, suggest that this group is less likely (than the mainstream group) to believe that signing encourages speech or is suitable for children with profound learning difficulties. They are also responded less positively to the statement that signing should be part of their in-service training. However, there appeared to be no difference regarding the likelihood of having receiving training between teachers in mainstream group and the small number of special educators.

Experience of teaching disabled children.

Three questionnaire items related to experience, ranging from least to great experience: I have heard of a signed language vocabulary for children with learning disabilities; I have met a child who uses signing and I have used this type of approach.

There was a large overlap between the first two groups as nearly all (78%) who had heard of the approach had also met a child who signed. Not surprisingly the two groups produced similar responses the questionnaire statements. The responses of participants who had heard, or not heard, of this approach (24 and 45 participants respectively) were compared using an independent samples t test. Five items produced significant differences in responses and these are summarised in Table 2.

Insert Table 2 about here

Those who have heard of signing being used for children with severe learning disabilities appeared more likely to agree that signing stigmatises children and that not all children in a class should sign. However, those who had *met* a child who signed were more likely to agree that all the class should sign ($M=2.13$, $SD=.89$) than those who had not ($M=2.67$, $SD = 1.09$); $t(67)=-2.87$, $p=.04$). Although there was an overlap between the ‘heard’ and ‘met’ group, this suggests that increased contact may be associated with a change in attitude to which children should sign. The group indicating that they had *used* a signed teaching approach were identical to the group who indicated they had met a child who signed. This suggests that their contact with signing was likely to be in an educational rather than a social context.

Training

23% of the participants indicated that they had been on a signing training course. However the only significant differences between those who attended such a course and those who had not were in response to ‘Signs are easier to learn than spoken words’ (‘trained’ group: $M = 1.9$, $SD=.85$; no training group: $M=2.7$, $SD=1.16$; $T(67)=-2.54$, $p=0.005$) and ‘Signing should form part of my In Service Training’ (‘trained’ group: $M = 1.8$, $SD=.77$; no training group: $M=2.3$, $SD=1.16$; $T(67)=-1.84$, $p=0.029$). Those with some training were more likely to agree that signing was easier to learn than speech and that in-service training was necessary

Response Analysis

The data was reviewed in terms of carrying out a principal component analysis (PCA) on the 20 scalar items. Although the sample size of 69 is relatively small, reviewing the data produced a Kaiser – Meyer-Olkin score of .751, a ‘good’ value (Field, Miles, and Field 2012), suggesting that distinct and reliable factors could be extracted from the data and this was supported by Bartlett’s test of sphericity ($p<.0001$). Furthermore, sample size is less important for the recovery of factors when communality levels are high (MacCallum and Widaman 1999), which is the case here.

A principal component analysis with Varimax rotation was carried out. Ideally this should link each variable with a single factor (de Laat, Freriksen, and Vervloed 2013), consequently values below 0.52

were omitted and 5 components emerged. Component 1 accounted for 29.9 % of the variance. Components 2, 3, 4 and 5 accounted for variances of 10.8%, 8.2%, 7.3% and 5.8% respectively.

As indicated in Table 3, the fifth component was comprised of a single item and suggests that the component was not well defined. This may be a consequence of the item itself being poorly constructed, containing two negatives with which to agree or disagree.

Table 3 about here.

Principal Component 1. *Signing for all the class but not all children.*

A belief that all members of the class should sign, which might be seen as an inclusive stance, is associated with beliefs that signing is very easy to learn: sign comprehension requires no training and that signs are learned more easily than speech. However, signing for all the class does not necessarily mean that teachers believe that the ‘all-signing class’ would be appropriate for all children as some children are felt to lack the minimum language or physical skills to participate in signing.

Looking at teachers’ responses to individual questionnaire items (see figure 1) illustrates very similar patterns of agreement for four items: all the class should sign, easier than speech, signing is obvious and whether a minimum level of comprehension was required. The majority of teachers agreed with these statements with, for example, 59% of the sample agreeing (responding agree or strongly agree) that signing was obvious.

Insert Figure 1 about here

The responses regarding the need of a minimum level of physical skill were more widely distributed, with 41% agreeing with this statement and 37% neither agreeing or disagreeing.

Principal Component 2 . *An enjoyable way to encourage speech, for now?*

This component reflects beliefs that signing is enjoyable and encourages speech, statements which were agreed with by 84% and 91% of the participants respectively. Both these beliefs were associated with a need for receiving in-service training, which might consequently be assumed to also be believed to be enjoyable and educationally useful. As figure 2 illustrates for some teachers signing is not believed to be as good as mobile technologies for communication.

Insert Figure 2 about here

This issue divided teachers opinions, with 26% agreeing and 35% disagreeing that this was the case and 39% neither agreeing or disagreeing. It would appear likely that those who agreed with this statement might be happy to see signing replaced by technology if the context allowed.

Principal Component 3. *Signing for the Stigmatised few.*

This component reveals the association between beliefs that signing stigmatises children and of restricting signing to particular groups of children. The belief in stigmatisation was expressed by 63% of the sample (see Figure 3)..

Insert Figure 3 about here

This association does not reveal the direction of this relationship. It may be that a belief that only a particular type of children needs signing results in a belief in stigmatisation, derived from the stigmatisation of this group of children. Alternatively it may be that teachers who feel signing is stigmatising would consequently wish to see its use prioritized only for those most in need of it. As figure x shows many of the teachers (45%) disagreed that signing was only for children who did not speak, either disagreeing or strongly disagreeing with this statement. However there were some (22%) who felt that it should be restricted to this group.

Principal Component 4. *Signing and Speech.*

This grouping reveals the association between a group of statements that are essentially negative about the use of and effects of signing. As Figure 4 illustrates, the majority (57%) of teachers felt that children who did not speak would not be helped to develop speech through signing. However, on the whole they disagreed with or were undecided about the other statements.

Insert Figure 4 about here

Only 7% of the participants felt that signing was detrimental to speech and a minority (16%) agreed that signing does not encourage speech. This suggests that, overall, whilst teachers felt there were limits to the effects of signing for non-verbal children, many felt there was a positive relationship between signing and speech with 70% and 59% of the participants respectively disagreeing that it is detrimental to, or does not encourage, speech.

Interview Results.

Three main themes emerged from the interviews. Where frequencies are indicated this is the number of teachers who expressed this opinion. As indicated in the methodology section, this does mean that these are exhaustive figures.

Others stigmatise.

Whilst most teachers (11) felt that signing would not stigmatise children, for themselves, there was a belief that others might not share this view. This was described in terms of community attitudes.

See it as very strange.

[*there is*] a pressure to look the same, not different. Sign language makes them look different

They don't understand they are cruel, they don't understand that they [*children who sign*] belong to a special [*group of*] people. Sign language is never used.

Stigmatisation was also commented on in relation to the status of signing for the Deaf, its presentation in the media and rarity in education.

Its [*status is*] not yet the same as spoken language, about 10 years ago national television used sign language [*translator in a 'bubble'*]. But now it is not used. Maybe if used again then a lot of people will learn about it and see OK. No one sees it. No one knows about it.

The television programme gives awareness, if [*used*] maybe nationally the acceptance will be more.

Basically in education sign language is not used, using lips is preferred, so sign language is not used, so the family also will not want to use it. So everyone will not use it due to that perception.

More commonly stigmatisation by society was commented on (by 8 teachers) in terms of parental behaviour..

Parents won't go to the teacher to them help them..the sign language. Because to will make them [*the child*] look different.

The parents will not learn about the sign language. At home the sign language will not be used in the family.

If there is a sign language [*used by*] kids in class, parents still cannot accept it.

Conversely some teachers felt that there would not be a problem or that parental beliefs could be changed through direct contact with the teachers.

Because parents whose children are special think sign language is .. not necessary. [*Yet*] They will accept it , when we teach them.

One factor raised in relation to parental attitudes concerned other children having to learn to sign and whether they perceived it creating a 'burden' for others in the class.

The parents, they are afraid to become the burden of children who aren't signing, afraid that children have to learn sign, .. will add to [*the*] burden of other children

This occurred within a context of teachers describing a heavily loaded curriculum and consequently feeling that signing would be best taught informally in the classroom (none advocated formal tuition) rather than there being dedicated time for learning signs.

What signing is and what signers need.

This theme reflects beliefs about the nature of signing and the impact this might have on how signing might be introduced and used within the classroom.

For some (9) teachers sign language was synonymous with everyday 'natural gestures', transparent to all and usually iconic representations of an action or object. This was found in accounts of using sign language to communicate with deaf people without knowledge of a 'formal' sign language, and children being able to mime or manually indicate what they wished to communicate.

Children with special needs have communication using gesturing, they understand what they mean.

Consequently teachers felt they could use signs informally, as and when needed by individual children, and their classmates would be able to pick up signing easily. For other teachers there was also a sense that signing did not need to be used all the time.

If someone wants to talk or ask something, I would stop and use the signs there in the process [*of teaching*]. I would not sign, not all the time, but when asked by the child for particular thing.

Because of its accessibility, the other children learn the signs informally

Children could use to it express themselves, but teachers did not need to use it throughout their teaching to support comprehension. Those that had more experience of sign language tended to be either older teachers who had seen signing used on the television, or younger teachers who had seen signing as part of their professional development. This group (6 teachers) were more likely to feel that although learnable informally, signs were not necessarily transparent.

Beliefs about the effects of signing on speech were mixed and reflected three broad positions: signing acted to promote speech; although not harmful, speech would not be promoted; signing would impede the development of speech. Different teachers commented:

Using sign language is useful to make clear communication. Both of them [*speech and signing*] are 'friends' they will develop together.

Yes if have learning difficulties, [*children*] using signing won't learn to speak.

Using sign language will make him stop speaking because using sign is easy to understand. As it is easier to do, so it will stop speaking.

For other teachers the most important factor was the social organisation of the class and having friends with whom children would be motivated to speak.

No [*won't stop speech*] when children are learning with somebody else. Their friends can speak, they try to open up and speak using sound

They are still using spoken language when communicating socially .. they are also using spoken language-so won't stop the children speaking.

Solving the problem of non-universality

A significant issue concerned the consequences of signing not being 'universal', i.e. being rarely used or seen in society. The rarity of encountering signing for the Deaf in the community was agreed by all the interviewees.

Here at school signing ok, if no other way. But sign is not yet strong outside.

Special education uses sign. Use is not common, .. better if spoken language is used

As the second teacher's quote (above) illustrates, the consequence of this rarity could be a belief that therefore spoken language was a more pragmatic educational choice. A similar situation would exist for children with learning disabilities and this stimulated a range of often divergent responses.

Technology was raised as a possible solution by some (6 teachers). It might enable children to communicate via picture icons or icons linked to speech generation.

Yes [*signing*] could be replaced by technology. Until now we use the real object which they teach in class. Then it will help [*via photos*] and will replace the signs.

It is better using technology because it is more interactive [*allows interactions outside school*]

However, for 5 teachers although the accessibility of technology was acknowledged, signing had particular features which could not be replaced.

Technology will not make the use of sign language disappear. Because signing is natural and human communication [*therefore*] includes sign language.

It will still be used and needed because ..sign language of a more social nature, and more direct.

Sign language is more important... [with] technology the people will be more and more passive, with sign language [*children are*] involved in the real speech.

Those who felt this, and others who had not raised the issue of technology, believed that the consequence of signing's inherent value was that therefore a social change was required to accommodate and promote signing, beginning from within the schools and supported by the media.

Useful long term to plan to make it [*begin*] in school and maybe society can then implement it. Sometimes children will suffer, meet difficulty,....a barrier to live in the society. The change is needed by society too.

The television programme is access [*to signing*], if maybe nationally the acceptance will be more

Discussion

The two sets of data give useful insights into the complexity of teachers' attitudes towards the potential use of signing for children with severe learning disabilities.

In a context in which signing is rarely seen in the media, community or schools it is perhaps not surprising that there are different views on the nature of signing. There was a consensus that signing is relatively easy to learn, and there is evidence to support this view (Dunst and Hamby 2011).

Exploring this issue in the interviews suggests that for some teachers this ease is because signing is seen as no more than 'natural gestures' and 59% of the questionnaire responses agreed that signing was 'obvious to the untrained eye'. This belief in the transparency of signing has been noted elsewhere, even in situations where people have some experience of sign language (Salzmann, Sutton-Spence, and Woll 2000) A belief in transparency is likely to increase the frequency of the belief that all children in class should sign, given the stigmatisation issues of 'burden' and stigmatisation. If signing is simply natural gestures then this barrier is greatly lessened, but this is not the case.

Although manual signs may have a degree of iconicity and are sometimes considered less cognitively less demanding than speech (Vandereet et al. 2011), they are largely not transparent. To create a sign vocabulary for children with learning difficulties it is usual to draw upon the language for the country's Deaf community. The Sign System of the Indonesian Language (SIBI), launched in 1994, was intended be taught nationwide as the 'official' (deaf) language, (Palfreyman 2011) but has been criticised for a lack of natural gestures (Winarti 2012) and although Indonesia has other sign languages, which might act as a 'donor' vocabulary, the issue regarding a lack of transparency remains. It may be that teachers attitudes regarding 'all should sign' will change with knowledge of

this. In contrast mobile technology potentially offers children a transparent and ‘universal’ method of communication (Sadao and Robinson 2010). Many teachers (39% of the questionnaire responses) were undecided if technology might replace signing, with the rest being approximately divided between agree/disagree. In the interviews stigmatisation was not associated with mobile devices but this was not explicitly asked about in the questionnaire. This raises an issue for future research as the use of mobile technologies becomes more ubiquitous in schools and society.

Teachers’ questionnaire responses suggested a strong belief that signing would encourage speech (91% agreed), whereas the responses in the interviews were more mixed and teachers within the same school could express markedly different beliefs about the effect of signing. This is likely to have significant impact on the experience of different children within a school. For example those who believed that it hampers speech would presumably be less likely to encourage all their class to sign, and target signing for a particular child. Indeed, a sizable minority of questionnaire respondents (47%) agreed ‘Not all children should learn to sign in a class, just the ones who need to’. Consequently a child’s experience of signing could change as they transfer between teachers and classes. However this type of response is more likely to be associated with a view that signing stigmatises children, rather than signing’s inherent usefulness or effect on speech (see Principal Component 1). As these responses are from schools which have not yet used signing for children with learning difficulties, it might be argued that these attitudes would change following its introduction. This is a key issue.

Previous research has suggested that occupation, experience and training are the personal factors likely to influence attitudes in relation to inclusive education (Avramidis and Norwich 2002). Our findings provide limited support for this argument in that teachers who had met children who signed were more likely to agree that all the class should sign and those who worked with in special education were more likely to disagree that signing encouraged speech. However there appeared to be few differences in responses between participants who had received training and those who had not. One might have expected a significant difference regarding the issue of stigmatisation as there is evidence to suggest that training is associated with more positive beliefs in the context of inclusive education (Avramidis and Norwich 2002). However, the interviews suggested that teachers may have

responded with regard to the attitudes of society, rather than their own attitudes. There is agreement from both sets of data that the use of signing is believed to stigmatise children, which concurs with previous research findings (Komardjaja 2005).

Whilst positive attitudes towards disabled children increase with familiarity (de Laat, Freriksen, and Vervloed 2013) attitudes towards signing remain strongly influenced by perceptions of social stigma, even in schools committed to its use (Sheehy and Duffy 2009). Sheehy and Duffy (2009) suggested that a reduction in stigmatisation might be associated with changes in attitudes to signing in the Deaf community following greater public awareness through increased media exposure. This specific aspect was raised by Indonesian teachers as a factor to address in tackling the social barriers experienced by children with severe learning disabilities.

Indonesia is exceptionally diverse, with many cultures, languages and indeed dialects of sign language (Branson and Miller 2004) and it could be misleading to see these research findings as representative of teachers attitudes across the entire nation. With this caveat, there is some evidence that the issues emerging here relate to those found in other research and their generalizability across Indonesia might be explored further.

Teachers' overall responses to the potential use of signing with children with learning disabilities were essentially positive. Signing was seen as an enjoyable communication tool to use in school and teachers would like to be trained in how to use it. However, future research will need to explore the type of pedagogy that might be appropriate for Indonesian classrooms, the extent to which teachers' desired informal classroom pedagogy is possible and how to address the issue of stigmatisation which is felt to exist outside the classroom but impacts upon attitudes within it.

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Table 1. Responses of mainstream and special groups of participant to selected questionnaire statements. (arithmetic means and standard deviations in brackets).

Statement	Mainstream group	Special Group	Level of significance
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			(2 tailed)
Signing would encourage speech	1.7 (.85)	2.3 (1.2)	t(67) = -2.74 , p=0.016
Signing is suitable for children with profound learning difficulties	2.1 (.89)	2.9 (1.3)	t(67) = -2.53, p=0.018
Signing should form part of my In Service Training	1.9 (.88)	2.8, (1.4)	t(67) = -2.84, p=0.025

Table 2. Responses of participants, who had heard or not heard of a signed language vocabulary for children with learning disabilities, to selected questionnaire statements. (arithmetic means and standard deviations in brackets).

Statement	Have heard of this approach	Have not heard of this approach	Level of significance (2 tailed)
Signing stigmatises children who use it.	2.08 (.83)	2.78 (1.15)	t(67)=-2.89, p =0.005
Signs are easily understood, obvious to the untrained eye	2.13 (.89)	2.73 (1.07)	t(67)=-2.36, p =0.021
Signing requires certain minimum physical skills	2.37 (.97)	3.04 (.98)	t(67)=-2.72, p= 0.008

Not all children should learn to sign in a class, just the ones who need to.	2.42 (.93)	3.0 (1.11)	t(67)=-2.2, p=0.032
Signing should form part of my In-Service Training	1.75 (.68)	2.43 (1.22)	t(67)=-2.95, p = 0.004

	Component				
	1	2	3	4	5
Signing requires certain minimum physical skills	.742				
Signs are easier to learn than spoken words	.701				
All members of a class should learn to sign	.636				
A minimum level of language comprehension is required	.586				
Signs are easily understood, obvious to the untrained eye	.559				
Signing would encourage speech		.831			
Signing would be enjoyable		.746			
Talking.. mobiles are better than signing for communication		.547			
Signing should form part of my In Service Training		.543			
Not all children should learn.., just the ones who need to			.739		
Signing is suitable for “non-speakers” only			.645		
Signing stigmatises children who use it.			.572		
Signing does not encourage speech				.743	
Signing is detrimental to speech				.691	
It is difficult to do two things at once e.g. sign and speak.				.665	
Non-speakers do not learn to speak using signing					.835

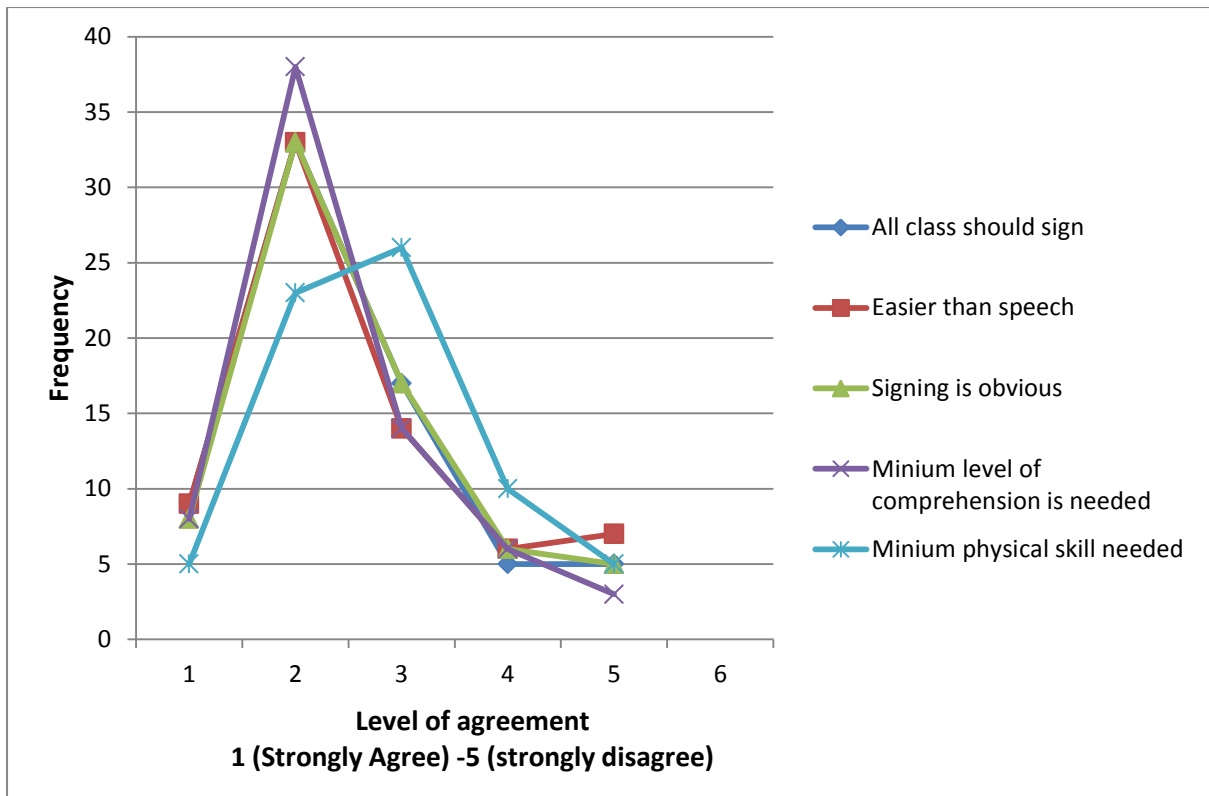


Figure 1. Teachers responses to individual questions in Principal Component 1: *Signing for all the class but not all children.*

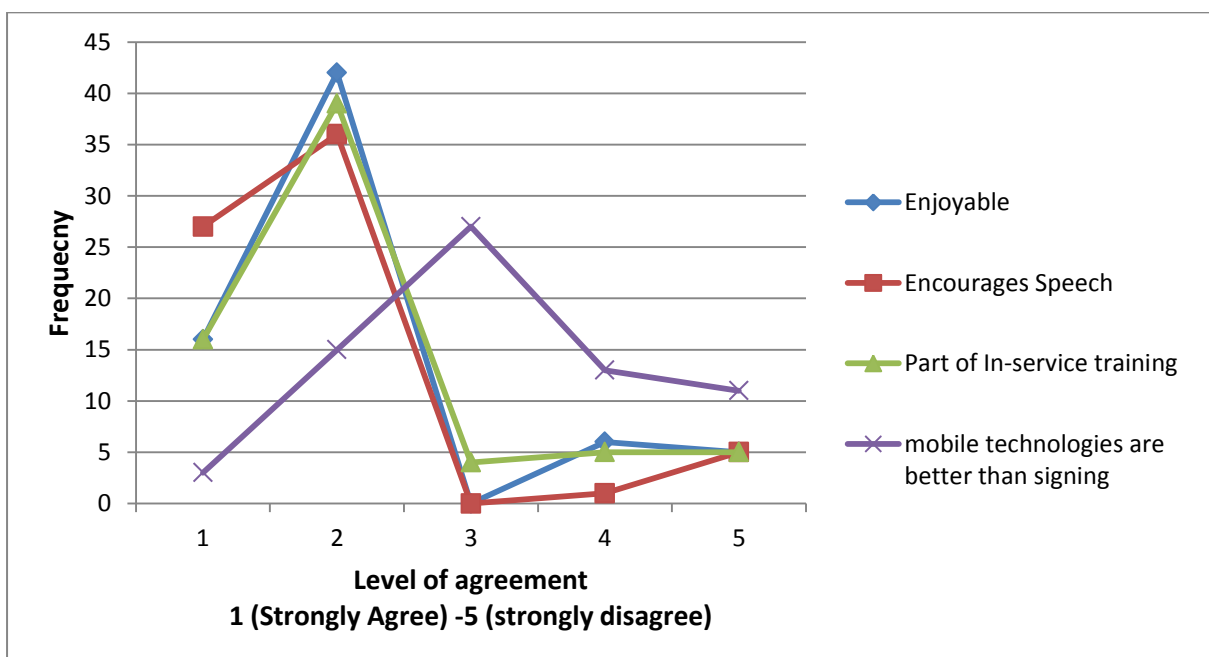


Figure 2. Teachers responses to individual questions in Principal Component 2: *An enjoyable way to encourage speech, for now?*

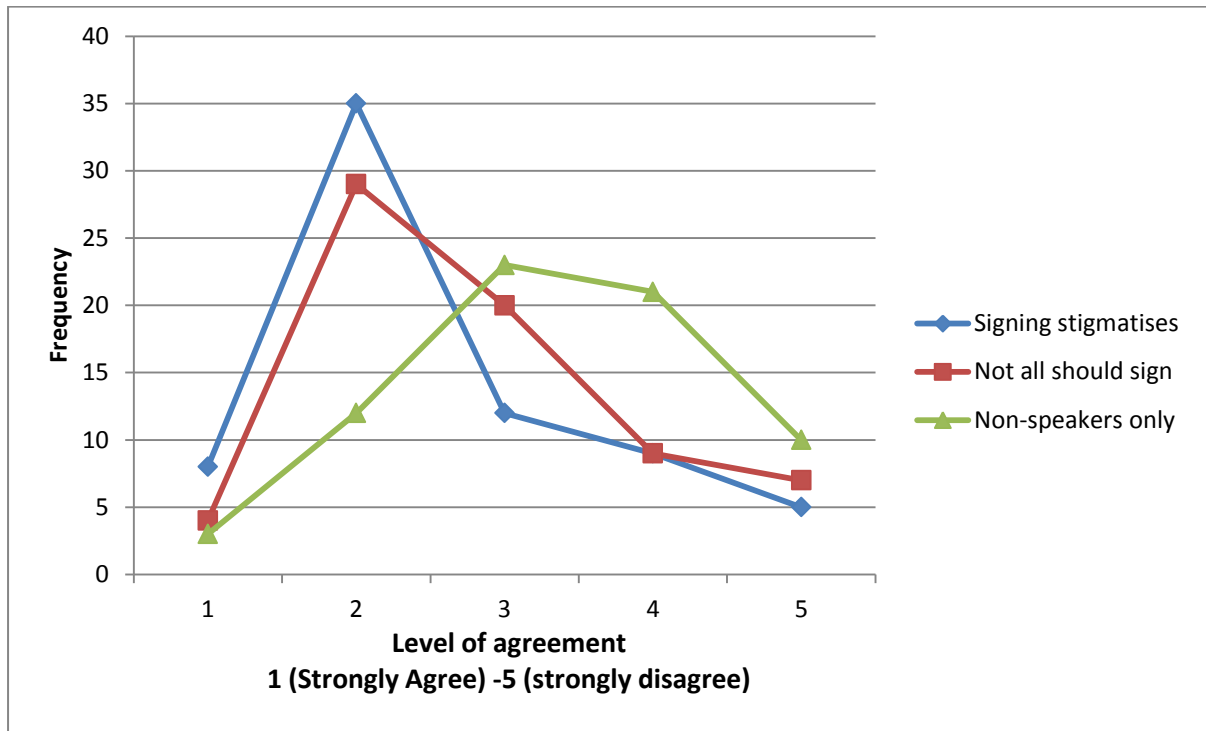


Figure 3. Teachers responses to individual questions in Principal Component 3. *Signing for the Stigmatised few*

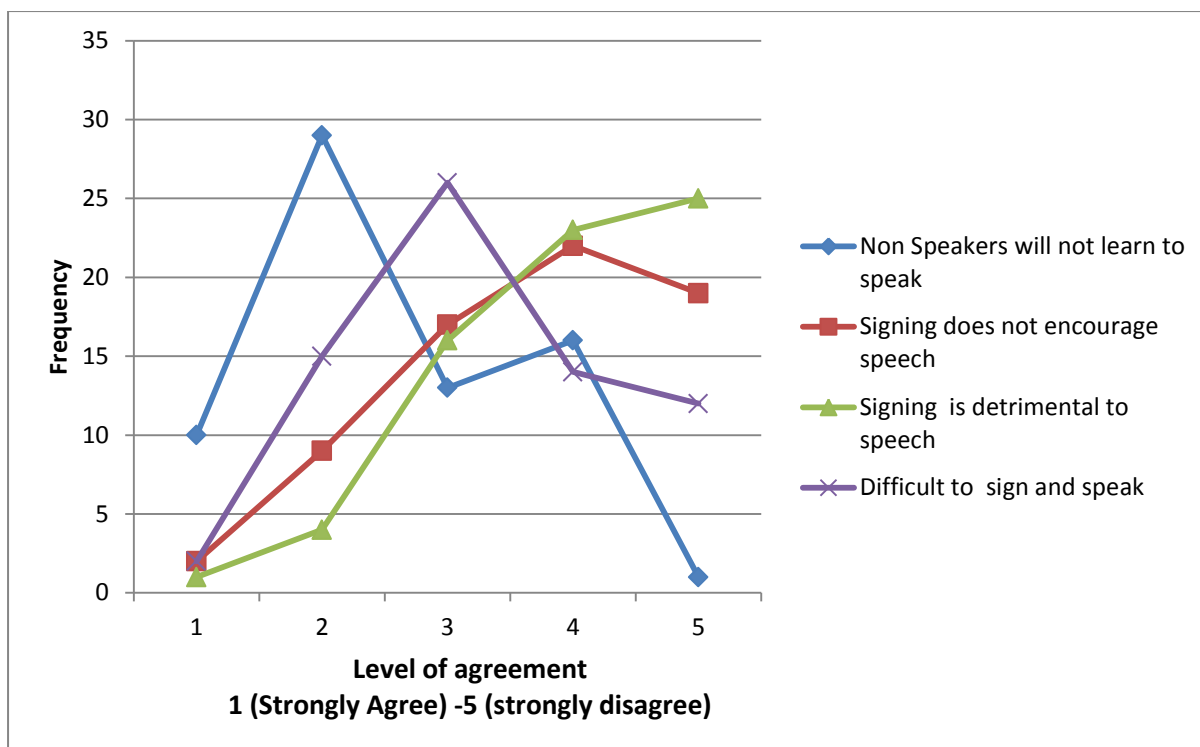


Figure 4. Teachers responses to individual questions in Principal Component 4. *Signing and Speech*

Appendix 1.

Questionnaire

The following statements are about the use of signed language vocabulary for children who have learning and language difficulties. This approach uses hand signs to express words.

If you have not heard of this type of approach that's fine. You can still express your thoughts on the use of teaching signing to children who have learning difficulties.

All questionnaires are completely anonymous.

Please read the statements on the left and then circle the number that best describes how you feel about the statement.

1=Strongly agree, 2=agree, 3= neither agree or disagree, 4=disagree, 5=strongly disagree

I have heard of a signed language vocabulary for children with learning disabilities.	AGREE 1	DISAGREE 5			
I have used this type of approach	AGREE 1	DISAGREE 5			
I have met a child who uses signing	AGREE 1	DISAGREE 5			
I have been on a signing training course.	AGREE 1	DISAGREE 5			
Signs are of limited use as they are not used in the wider community	1	2	3	4	5
Signing would be enjoyable	1	2	3	4	5
Signing would encourage speech	1	2	3	4	5
Signing is suitable for "non-speakers" only	1	2	3	4	5
Signing is detrimental to speech	1	2	3	4	5
Signing stigmatises children who use it.	1	2	3	4	5
Children who learn signing do not sign spontaneously	1	2	3	4	5

A minimum level of language comprehension is required to benefit from signing	1	2	3	4	5
Signs are easier to learn than spoken words	1	2	3	4	5
Non-speakers do not learn to speak using signing	1	2	3	4	5
Signing is suitable for children with profound learning difficulties	1	2	3	4	5
It is difficult to do two things at once e.g. sign and speak.	1	2	3	4	5
Talking palm top computers/mobiles are better than signing for children to communicate with	1	2	3	4	5
Signing does not encourage speech	1	2	3	4	5
Signing should form part of my In Service Training.	1	2	3	4	5
Signs are easily understood, obvious to the untrained eye.	1	2	3	4	5
All members of a class should learn to sign	1	2	3	4	5
Signing requires certain minimum physical skills	1	2	3	4	5
Not all children should learn to sign in a class, just the ones who need to.	1	2	3	4	5
Children who can speak won't sign	1	2	3	4	5
<p>What is your current occupation? Please include any comments you would like to make about the statements or the topic itself.</p> <p>Thank you for your time and thought.</p>					