

Dyslexia Friendly Publishing

Deborah Hewes

Assistant Director of Publicity and Publications

Dyslexia Association of Singapore

There are a number of ways in which we can make the reading and learning experience for our students with dyslexia a more comfortable exercise. Educators, and indeed, Publishers, should consider adopting the following recommendations which will help to promote best practices when providing information for our students who learn differently.

As a publisher and designer of resources for those with dyslexia I would like to recommend that these factors be considered when presenting text to our readers with dyslexia. The areas to recognise dyslexia friendly publishing are:



FONT

Font is a very personal subject. We all have fonts that we like and those we despise. (Well, I do!)

There is a thriving industry surrounding the development of fonts and we choose fonts in publishing and design to give a desired look and feel for our publications. However, it is recommended that when providing text to our readers with dyslexia that sans serif fonts be utilised rather than serif fonts.

FONT – IT'S VERY PERSONAL!

- **SERIF V'S SAN SERIF**
- **SERIF**
 - Have curvy flicks at the end of letters
- **SANS SERIF**
 - Sans means 'without' in French
 - Fonts without the flicks



Serif v's Sans Serif

Serif Fonts have the extra flicks at the end of the letters where as Sans Serif are without. Serif fonts also tend to have letters like the A and G (a and g) represented in forms that are not formally taught to students when they are instructed on how to write, hence, even though we learn to recognise the serif A and G they are not reflective of how we want our students to reproduce the letters when writing.

Font development also sees the mixture of serif font characteristics within Serif Fonts, therefore your choice of font will need consideration of the following typography features:

SANS SERIF V'S SERIF

a f g l j k l t m o q Q

Filson Soft Light

a f g I j k l t m o q Q

New Times Roman

- ◆ Are you able to distinguish between letters? Is it important that the letter I be represented differently from a lower case l. (I and l)?
How does your chosen font represent the capital I and a lower case L?
- ◆ Do you want to have the double story A and G represented as serif, even when you have selected a sans serif font?
- ◆ Do you want your students to write the lower case j without a curve?
- ◆ Are the Capital letters represented correctly in your font choice?
- ◆ See some examples below.

SANS
SERIF
Tw Cen MT

Aa Gg li Jj Ll Pp Qq Tt Uu

SERIF
Times New
Roman

Aa Gg Ii Jj Ll Pp Qq Tt Uu

SANS
SERIF
Open Sans

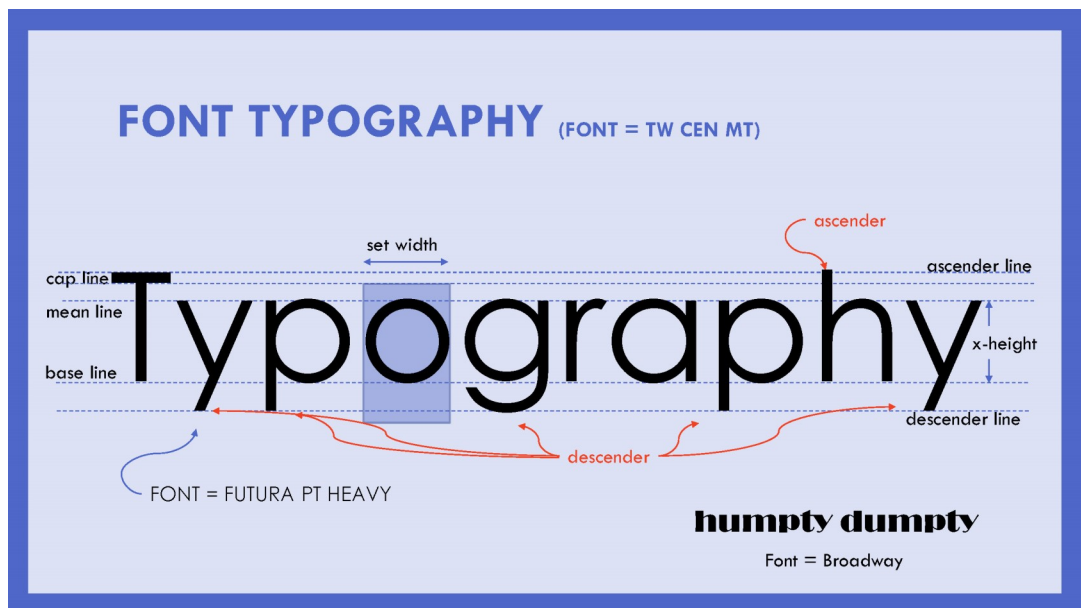
Aa Gg li Jj Ll Pp Qq Tt Uu

SANS
SERIF
Arial

Aa Gg li Jj Ll Pp Qq Tt Uu

SANS
SERIF
Macho

Aa Gg li Jj Ll Pp Qq Tt Uu



Typography

It is also important that the ascenders and descenders have a good height and depth so that they can be read easily and not confused for other letters.

For example, the letter H can be distinguished from a letter N (h and n) if the design of the font for 'h' has short ascenders then the letter can be misread as an 'n'. And if the letter 'y' has a short descender this can be misread as a 'v'.

This is demonstrated in the **Broadway** font below:

◆ Ascender confusion

hear near **hear** **near**

◆ Descender confusion

yet vet **yet** **vet**

Broadway font is best used as an uppercase font where ascender and descender confusion is omitted (and used sparingly!):

BROADWAY IS BEST USED UPPERCASE!

(But look at the D and P!)

Font choice is deeply personal, we like what we like, however, it might be prudent to ask your students what font they like to read and learn with. I would suggest that the most suitable font choice be made considering the learner.

I recommend the use of Sans Serif fonts that represent the letters as they are taught in their classrooms. Educators are advised on recommended fonts for their worksheets and presentations below. I would recommend for publishers, employers and others interested in dyslexia friendly fonts for those who learn differently to consider using these fonts.

SANS SERIF FONTS

- ◆ Arial
- ◆ Calibri
- ◆ Century Gothic
- ◆ Myriad Pro
- ◆ NeuzeitgroT
- ◆ Tahoma
- ◆ Trebuchet
- ◆ Open Sans
- ◆ Questrial
- ◆ Roboto

MY PERSONAL FAVOURITE FONTS

- ◆ A-Futura Round
- ◆ Cadman
- ◆ Century Gothic
- ◆ Cavolini
- ◆ Filson
- ◆ Montserrat
- ◆ Quicksand
- ◆ Questrial
- ◆ Raleway
- ◆ Tw Cent

FONT SIZE: 12pt. Some fonts are smaller than others so increasing the font size may be necessary

DYSLEXIA FONTS

There are two fonts that have been developed for individuals with dyslexia, Dyslexie Font and Open Dyslexic Font. I do not endorse these fonts to help individuals with dyslexia any more than the font recommendations that I have made in this article.

a b c d e f
g h i j k l m
n o p q r s t
u v w x y z

Dyslexie Font (www.dyslexifont.com)

- ◆ Developed by a Dutch designer in 2008 and is free for personal use.
- ◆ *Personally, I don't like how "Q and a" is represented in this font.*

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9 ! ? #

Open Dyslexic Font (Opendyslexic.org)

- ◆ Developed by an American designer in 2011 and is free.
- ◆ *Personally, I don't like how "a and l" is represented in this font.*

RECOMMENDED FONTS

Arial 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Amaranth 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Calibri 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Cadman 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Century Gothic 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Comic Sans 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890

FuturaRound 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Myriad Pro 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
NeuzeitGroT 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Open Sans 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Print Clearly Bold 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Quicksand 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890

Other font recommendations: www.bdadyslexia.org.uk/advice/employers/creating-a-dyslexia-friendly-workplace/dyslexia-friendly-style-guide

Raleway 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Shortstack 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Source Sans Pro 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Tahoma 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Trebuchet MS 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Verdana 30PT	ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890

FONT FOR TEACHERS

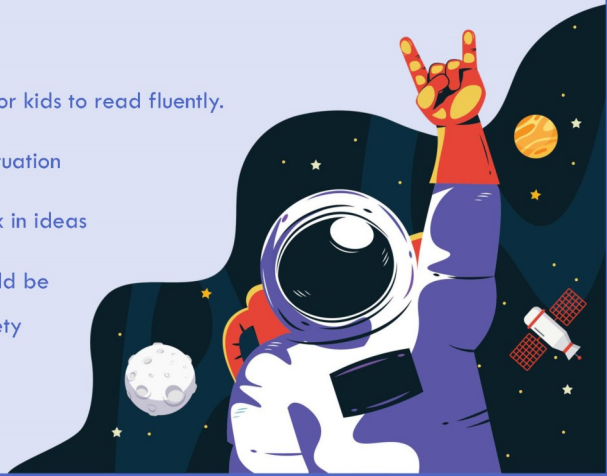
FONT	SAMPLE FONT
Comic Sans	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Arial	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Tahoma	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Verdana	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Century Gothic	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Cadman	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
Print Clearly Bold	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy
KG Primary Penmanship	Aa Dd Gg Jj Ii Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Yy

SPACING

Good spacing between text, sentences and paragraphs will support fluent reading for our students. Text that is presented well reduces reading anxiety. Research on spacing has concluded that fluency and comprehension increases when text is presented with more spacing (Corzi et al., 2012; Madavan, et al., 2016;). I would recommend 12pt font and 1.15 line spacing with a Font that is not too 'condensed'.

SPACING

- Spacing should be predictable for kids to read fluently.
- Ending of a sentence – see punctuation
- End of a paragraph – see break in ideas
- Spacing between sentences should be relaxed to reduce reading anxiety



SPACING – 1.15 lines

When ending the sentence with a full stop the child should pause. When adding a double space before the next sentence this gives an indication to the child that the sentence is ending. Children with dyslexia are notorious for not pausing at the end of a sentence. This may be due to them not seeing the full stop or the break in the sentences. When the break is obvious their forward scanning helps them to know when to stop.

Using a single space after the sentence, the child may not see the full stop. This may affect their fluency and intonation. Some dyslexic children who have visual distortions will be affected by spacing more than those who don't. However, whatever you think about spacing, it is easier to see a comma than a full stop because of its size.

SPACING

- Research on spacing has indicated the better spaced words are and between sentences the better the fluency and comprehension for dyslexic readers.
- APJDD Research - Spacing in the spacing between letters, words and lines improve reading rate in these children.

www.das.org.sg/images/publications/apjdd/apjddjan2016/APJDDVol3No1-Sharanjeet.pdf

Samples of the text read by the dyslexic and normally developing children matched for reading level.

A	B
ando la pera. La bambina asc	Il ragazzo che
illo è magro. La quercia si tro	lo è magro. La q
fioe è rosso. La bambina ave	ella città. Non so
ola. Il ragazzo non ha né capp	è rosso. La baml
stanno saltando sopra il mur	stella, dentro cu
no seduti e guardano verso la	l ragazzo non ha
terrazza potrebbero vedere tu	
tetto della casa si vede anche	
to, ma non il bicchiere. L'elef	
o sul ramo dell'albero. La bar	
i è verde. I ragazzi raccolgono	

Marco Zorzi et al. PNAS 2012;109:28:11455-11459

©2012 by National Academy of Sciences

PNAS

www.pnas.org/content/109/28/11455.full

Spacing between letters, or kerning, can be adjusted to relax the space in words. Some fonts are more relaxed than others, for example Myriad Pro and Century Gothic.

MYRIAD PRO (12PT) ABCDEFGHIJKLMNOPQRSTUVWXYZ
CENTURY GOTHIC (12PT) ABCDEFGHIJKLMNOPQRSTUVWXYZ

SPACING - KERNING

- Kerning adjusts space between two letters.
- Kerning can also have an impact on fluency, too close together can distort letters and too far apart can distort words in sentences.
- MS – Font “Character spacing”

JUSTIFICATION AND HYPHENATION

Justification of text is when we decide to left, right, centre or fully justify text on a page.

Most publishers and indeed newspaper and magazine publishers will choose to fully justify text into neat boxes, as this makes the page look aesthetically pleasing and present well. However, the decision to do this impacts on how the reader interacts with the text, especially our readers with dyslexia. Fully justified text also means that many publishers opt for hyphenation to maximise their publication space.



JUSTIFICATION & HYPHENATION

FULLY JUSTIFIED WITH HYPHENATION

- Newspapers fully justify due to space limitations
- Columns tend to be narrow which increases the use of hyphenation
- They also maximise the amount of space they have available making this form of text more difficult for dyslexic readers

<https://www.tnp.sg/news/singapore/attending-school-cannot-be-made-voluntary-ong-ye-kung>

Hyphenated text makes reading more challenging for those with dyslexia, it reduces their reading fluency. In newspaper stories, like the one above, the use of hyphenation is accentuated. However, in publications where hyphenation is used for full page texts such as books, textbooks and magazines the distance between the beginning and the end of the sentence increases which make reading even more challenging. Students find they read the same line over and over again.

I would recommend that text is left justified and that hyphenation be avoided.

- ◆ Text is left justified
- ◆ Zero Hyphenation
- ◆ Avoid very long strings of text so that tracking from one sentence to another is not challenging

UNDERLINING AND EMPHASISING

To emphasise text and headings traditionally we underline this text. When text is underlined it obscures some features of text, such as the descenders. Therefore, to emphasise text it is better to use other methods such as bolding, highlighting or using different colours to do this. Underlining uppercase text doesn't obscure descenders (depending on the font) but having a rule to avoid underlining altogether is more consistent.

UNDERLINING

- We underline text to emphasise meaning
- Headings, Sub-headings, important information
- AVOID Underlining as it obscures sentence case text decenders
- Teacher obsession with underlining
- Other ways to emphasise text – BOLD, HIGHLIGHT or COLOUR

Fifty Shopping Days left!

Fifty Shopping Days left!

FIFTY SHOPPING DAYS LEFT!

For our students who have dyslexia I would recommend that underlining of text be avoided. To emphasise important text such as headings and key words that the following be used:

Bold

Different Colours

Highlighted

Capitals for headings (Note: underlining capitals doesn't obscure descenders)

Happy Birthday!	HAPPY BIRTHDAY!	Happy Birthday!
Wishing you a wonderful day and an amazing year ahead!	Wishing you a wonderful day and an amazing year ahead!	Wishing you a wonderful day and an amazing year ahead!

HYPERLINKS

Hyperlinks are automatically underlined in documents. This is done to identify links easily and once clicked on a digital document will lead you directly to the weblink.

However, hyperlinks also obscure text. Therefore, when publishing hyperlinks in paper form, where the individual is expected to retype the link to gain access, please remove the underlining/hyperlink. Hyperlinks can remain for digital documents.

Also, if you are directing people to a link remember very long links are quite challenging for everyone to retype so it is recommended that short links be created to make that process easier. Or the use of QR codes make it even easier.


When publishing a document in print please remember that hyperlinks can create a lot of stress for readers with dyslexia who would like to find the information that you would like them to read in another place. When a hyperlink is added to a document it comes with the full web formatting (ie: includes https://) which is really not required in the document only the web address is necessary.

E.g. www.das.org.sg <https://www.das.org.sg/>

I would recommend that the hyperlinks be removed in printed documents where the end user is expected to type out the link they read.

HYPERLINKS

- Auto underline in text
- Unless the document is accessed digitally, remove hyperlink formatting
www.das.org.sg www.das.org.sg
- Copying weblink into documents (Remove Https://)
das.org.sg/news-events/blogs/39-from-the-ceo-desk-ceo-thoughts/998-ceo-thoughts-das-embraces-online-learning.html
das.org.sg/news-events/blogs/39-from-the-ceo-desk-ceo-thoughts/998-ceo-thoughts-das-embraces-online-learning.html
- Create quick links (Tinyurl, bitly, google links)
Tinyurl.com/ASKPNP <https://bit.ly/3eg0xZi>



COLOUR

Using colour is one of the most positive things we can do for dyslexic learners. Colour makes learning a multisensory experience. Innovative use of colour can enhance the learning and reading experience!

Colour contrasts should be considered. Try not to have colour combinations that are too contrasting, e.g., black and white, which is what we traditionally see in the classroom, white paper and black text!. Many publishers will use off white or cream to publish their books to reduce the eyestrain on their readers, this should be considered for our dyslexia learners, not only in print but also digitally in our presentations.

I would recommend the following:

- ◆ Colour should be encouraged for multisensory learning
- ◆ Coloured Pens and Pencils used instead of traditional black and blue
- ◆ Presentations should avoid white backgrounds
- ◆ When printing, colour be used to identify headings, sections and chapters.
- ◆ Take note of the colours your students like!
- ◆ Print on matte paper rather than gloss
- ◆ Ensure there is good contrast between the text and background

USING COLOUR

- AVOID WHITE / LIGHT BACKGROUNDS
- AVOID PATTERNED BACKGROUNDS
- USE CONTRASTING COLOURS
- COLOUR BLINDNESS
AVOID GREEN AND RED COMBINATION



ABCDEFGHIJKLMNOPQRSTUVWXYZ

WRITING STYLE

The more concise and direct the writing style, the better a learner with dyslexia is able to extract meaning from text. Students with dyslexia struggle with comprehension and extracting information from text. I would recommend the following when presenting text to those who learn differently:

- ◆ Use short instructive sentences and avoid long sentences and large paragraphs of information.
- ◆ Break information into meaningful headings and subheadings.
- ◆ Use lists and bullet points to present information.
- ◆ Use images, diagrams, figures and charts to support text to reinforce the information and message provided.
- ◆ Ensure the information is in the text and not inferred.
- ◆ Construct questions clearly, do not use double negatives.
- ◆ Provide a glossary of important terms.
- ◆ Avoid the overuse of acronyms, however, if they are important include them in the glossary of terms
- ◆ Structure the document so that it is predictable and easy to find information—use contents and an index pages.
- ◆ Ensure the document is presented and designed with good spacing.

Publishers need to reconsider their publishing style to ensure all learners can engage in their publications by using the recommendations above, even for mature learners who study in higher education (see below).

TEXTBOOKS

- FONT - Times New Roman
- Fully Justified text
- Hyphenation
- Tight Spacing
- No Colour
- Indented Paragraphs
- No use of bullet points or images
- One long sentence!!

CHAPTER 3

Survey Results by Demographics, Region, and Market Segment

In the first half of this chapter, key survey responses are reviewed in terms of gender and age. The second half presents the segmentation of the full sample not into predefined categories (e.g., gender and age) but rather into clusters of survey respondents who share similar patterns of attitudes and behaviors; the concept of latent class cluster segmentation is briefly presented in the second half of the chapter, and the market segments are described.

3.1 Relationship Between Key Demographic Categories and Survey Responses

This section will present a wide array of relationships between basic demographic categories and key results of the NCBRP survey. Data presented in this section are simply empirical in nature—major interpretations of the meaning of this information are not emphasized here, as most of them benefit from the results of the statistical efforts presented in Chapters 4 (attitudinal model), 5 (hybrid model), and 6 (scenario model).

Figure 16 shows that there are stark generational differences in mode choice for intercity trips. Whereas the likelihood of taking rail does not differ between millennials (11%) and those 35 years old and older (11%), pronounced differences occur about taking the bus and a personal car. Twice as many millennials compared to older respondents took the bus for their last intercity trip (15% and 7%, respectively), surpassing rail as the second most preferred mode after car among millennials. On the other hand, millennials are much less likely to have taken a personal car on their last trip (58%) compared to those 35 years old and older (69%).

Consistent with prior research, millennials are less likely to hold a driver's license than older generations. Whereas 91% of the millennial respondents hold a driver's license, that percentage jumps to 96% for respondents 35 years old and older (Figure 17).

As shown in Figure 18, there were statistically significant differences ($p < 0.001$) between the mean scores of the millennial group and the older group for auto orientation, privacy in travel, and ICT productivity (Mean scores for the four basic longer-term values were estimated by taking an unweighted average of the mean scores for each of the observed variables used in the creation of the factors). The differences between the values of the groups for urbanism were not significant. While the comparative mean scores for auto orientation and desire for ICT were consistent with conventional wisdom, the fact that millennials had more interest in privacy in travel than older respondents was an important result and is further examined in Chapter 8, where factors influencing the use of intercity bus are investigated.

As reviewed in Chapter 1, Figure 19 demonstrates the important interaction of gender and age on mode choice for intercity travel. Importantly for this project, millennials have the same

CONCLUSION

We should present text to our learners in the way that they learn best and we should do whatever we can to support students who learn differently. I have adopted these guidelines in my work at DAS and have encouraged educators at DAS to do so too. I have found that these changes help me to access text and that others I know also find these recommendations help them too. It is hoped that educators, employers and publishers consider these guidelines to ensure that their learning resources have all learners reading accessibility in mind!

RECOMMENDATIONS



REFERENCES

- BDA (2018) Dyslexia Friendly Style Guide, retrieved from www.bdadyslexia.org.uk/advice/employers/creating-a-dyslexia-friendly-workplace/dyslexia-friendly-style-guide
- Corzi, M., Carbiero, C., Facoetti, A, Loncaiari, I., Carrozzi, M., Montico, M., Ziegler, J. (2012). Extra-large letter spacing improves reading in dyslexia, *PNAS*, 109, 28 11455-11459 retrieved from www.pnas.org/content/109/28/11455.full
- Madhavan, I., Karu, S, Hariol, M. I, and Zainora m. (2016). Spacing improves reading in Dyslexic children. *Asia Pacific Journal of Developmental Differences*, 3, 1, 3-20— Retrieved from www.das.org.sg/images/publications/apjdd/apjddjan2016/APJDDVol3No1-Sharanjeet.pdf

ABOUT THE AUTHOR



DEBORAH HEWES

Assistant Director, Publicity and Publications

Deborah is the Assistant Director of Publicity and Publications at the Dyslexia Association of Singapore.

She has been with DAS since May 2011. Deborah has dyslexia and is passionate about raising awareness about learning differences. All three of her children have learning differences and as a result, she has spent most of the last 20 years supporting her children's academic careers as well as helping other families with children who have learning differences. Deborah has lived in Singapore since 2001 and she has devoted the first 10 years working in an International School as a Learning Support Assistant and parent volunteer supporting students who learn differently with math, reading and literacy. She has also worked as a shadow assistant for students with behavioural issues, ADHD and Asperger's Syndrome.

Deborah completed her Psychology honours degree at Singapore University of Social Sciences and her thesis was titled "Adolescents with learning disabilities: an investigation of academic self-concept, self-esteem and depression in International school students." Deborah graduated from the University of South Wales with a Masters in Special Education Needs with Merit in 2019. Her dissertation researched "Singaporean Entrepreneurs and Dyslexia"

Deborah is the Managing Editor of the Asia Pacific Journal of Developmental Differences and the annual DAS Handbook, editor of the DAS publications. In 2015, she edited the first book of its kind in Singapore, "Embrace a Different Kind of Mind—Personal Stories of Dyslexia" and in 2017 designed and published the 25th-anniversary book for DAS, "Clearly Different—Discovering the Differences"