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A mother's gift

Prof Zulikha Jamaluddin's
dyslexic daughter inspired
her to help other kids
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Making it easier for dyslexics

Academician mother Prof Zulikha Jamaluddin invents an app for dyslexic children, writes **Izwan Ismail**

WHEN she first realised that her daughter, Nada Musafir Kelana, was dyslexic, it took Zulikha Jamaluddin time to come to terms with it. That was 13 years ago.

It was hard to accept initially. After all, Nada was an active and playful child, just like others her age.

"I didn't realise it until one of my students, who was doing research on dyslexic children, pointed out that my daughter had similar symptoms, such as reading upside down and dropping consonants when speaking," says Zulikha, a professor at Universiti Utara Malaysia.

Naturally she was worried sick. She tried various methods to improve Nada's reading, pronunciation and learning ability, using conventional ways like using rice placed on the floor for writing and the use of transparency colours to create contrast to words on papers.

Happily, Nada was only mildly dyslexic and she recovered after several years of carefully planned learning process.

She went on to excel in her studies, scoring straight As in the examinations. She will be sitting for her SPM examination this year.

TECH SOLUTION

But Zulikha's interest in dyslexia didn't wane. Instead, she was more motivated to continue her research and in 2007, initiated a programme to produce a computer software to help dyslexics overcome their learning difficulties.

She was assisted by two researchers — Husniza Husni and Fakhrul Anuar Aziz — and programmer Mohd Fitri Yusof.

"I wanted to help these children learn better in Bahasa Melayu. There are software created for dyslexic children but all are in English," she says.

Zulikha, 49, named her software *Bacaan Bahasa Melayu Untuk Kanak-Kanak Disleksia* or BacaMax. Since then, she has created three versions, with the latest one in app format which can be downloaded for free at Google Play Store.

"Giving it out for free is the best way that my team and I can help dyslexic children," she says.

There is a paid version that has added functions such as database storage and better multimedia features.

Sekolah Kebangsaan Jalan Datuk Kumbar in Alor Setar, Kedah is the testing ground for Zulikha's work. Nine dyslexic students there are using the app on various devices like laptops, tablets and smartphones. The school also hosts classes for other special needs children.

THE CHALLENGES

Creating the BacaMax app was easy, but gathering data from dyslexic children was a challenge. She and her team had to sit and listen to hundreds of dyslexic children to study their problems so that they could find ways to overcome them before creating the app.

"One needs to be patient when dealing with these children. Their concentration span is short, about 15 minutes, after which they will move on to do other things," says Zulikha.

The data collected was crucial

information on phonological deficit and visual impairment and Zulikha realised that dyslexic children were smart, not just in academic terms, but also in creative areas.

"They are also sensitive to colours. When it comes to reading, there are only eight colours, pastel ones, which are good for them," she says.

Dyslexic children find difficulty reading when the text and background colours are highly contrasting, like black on white. When the contrast is less, they will read better and faster, she adds.

BEYOND BACAMAX

Zulikha's efforts have not gone unnoticed. At the recent International Invention, Innovation and Technology Exhibition (Itex) 2013 in Kuala Lumpur, the BacaMax app was awarded a gold medal.

She is now working on a book titled *Dunia Sains & Teknologi For Dyslexic Students: Program Khas Integrasi Masalah Pembelajaran Spesifik Disleksia*. It will be out in three months' time.

"It has illustrations, pictures with colour words and minimal text," says Zulikha adding that it uses a handwritten font which dyslexic students find easier to read instead of the usual print fonts.

HOW IT WORKS

BACAMAX is an Android application with voice activated assistance and colours to help children with dyslexia learn Bahasa Melayu better. It can be downloaded for free at Play Store.

The software has voice replay functionality, speech recognition and speech analysis to overcome the phonological deficit of the dyslexic children.

"If you want to overcome visual impairment, the reading must be done by colours. This method is called Irlen method," says academician Zulikha Jamaluddin.

With the app, the children learn to pronounce words with

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colours of their choice, based on syllables. Dyslexic children have trouble reading when colours are highly contrasting. There are eight colours that they read best with — pastel colours including pink, green, blue and a combination of warm and cool colours.

Zulikha says dyslexic children often pronounce words without consonants and they think that is correct.

The BacaMax app records the children's voice when they read, and there is a replay button where a cute little dinosaur will indicate if the pronunciation is correct. If not, it will help pronounce it correctly.

PATIENCE THE KEY

NORHAFIZAH Ahmad Hadi, 36, who has been teaching dyslexic children at SK Jalan Datuk Kumbar

for four years, says patience is really important.

She says errors like writing the same number and mirrored alphabets (such as *bada* instead of *bapa*) is normal.

"These students have difficulty distinguishing alphabets which look similar, such as b and d. They also tend to leave out the consonants when reading. For example, *kangkung* is often pronounced as *kaku*," she explains.

Norhafizah says the BacaMax software is fun to use and the students enjoy using it as it involves using a computer, tablets and smartphones.

"It's an interactive app and the children love it," she says.

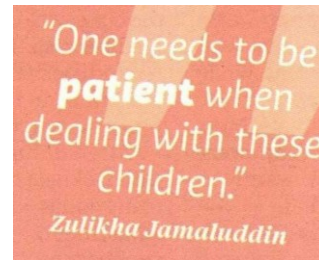
FUN LEARNING

MUHAMMAD Arief Mat Amin says

the BacaMax app has helped him with his pronunciation. The Standard Six pupil thinks the dinosaur animation which corrects wrong pronunciation, is cool.

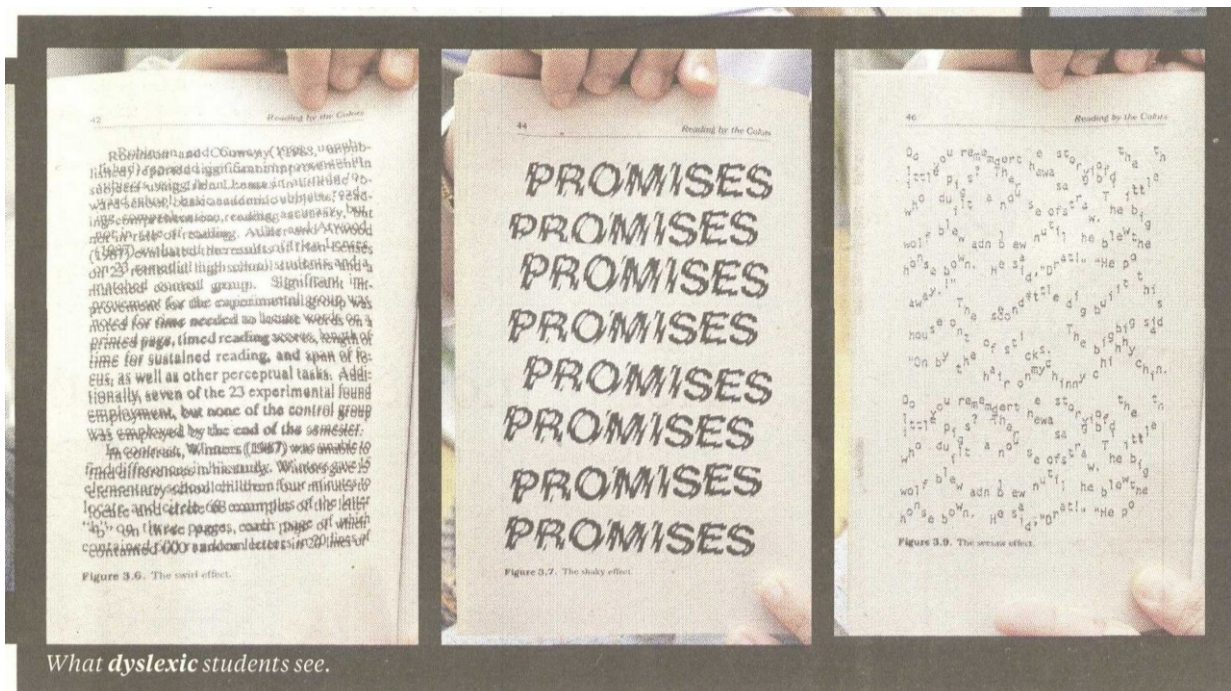
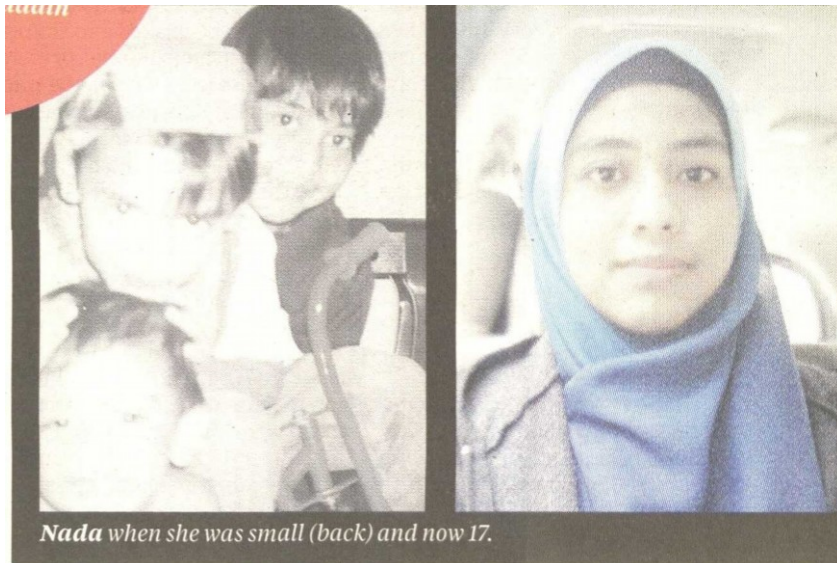
"At first I had trouble pronouncing some words but now I think I have improved a lot," he says.

*There is also a video on dyslexic students at SK Jalan Datuk Kumbar learning using the BacaMAX app.



Students, teacher and UUM researchers at the special class for dyslexics at SK Jalan Datuk Kumbar. From left (standing) are teacher **Wan Norhasny Abd Aziz**, **Muhammad Nabil Mohamad Anuar**, **Muhammad Azreen Ishak**, **Zulikha**, **Muhammad Arief Mat Amin**, **Husniza Husni** and **Fakhrul Anuar Aziz**. Sitting from left are **Siti Nur Adilla Shahbudin**, **Nur Batrisyia Baharom**, **Nur Ayuni Azme** and **Nur Fariza Johari**.

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The classroom for dyslexic students at SK Jalan Datuk Kumbang.



Zulikha showing the BacaMAX app on a smartphone.

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Norhafizah assisting dyslexic students (from left) Nur Ayuni Azme, Nur Fariza Johari and Muhammad Arief Mat Amin using the BacaMAX app.



Muhammad Arief Mat Amin



UUM researcher Fakhru collecting data from dyslexic students for the app development.