



# Dyslexia with Attention Deficit Hyperactivity Disorder: a case study

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*This article is a case study of a child with dyslexia and ADHD who was provided with behavioural strategies to cope in class which proved to be effective. Children who have dyslexia and Attention Deficit Hyperactivity Disorder (ADHD) often face great challenges in school as their academic abilities are usually impeded by these two learning disorders. While dyslexia affects their literacy abilities, ADHD often affects their ability to pay attention and exercise executive functions. Children with ADHD are often found to be hyperactive, inattentive or a combination of both. On the other hand, these children often have normal to above average intelligence and can do very well academically if they are equipped with coping mechanisms. Physicians may suggest that children with ADHD be medically treated in order to curb their behaviour and perform better in school. However, these medications may contribute to undesirable side effects and this is the reason why many parents may disagree with having their children with ADHD under any form of medication.*

## Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a developmental disorder which falls under the umbrella of Disruptive Behavioural Disorder (DBD) (Chia, Ng & Kuan, 2010). Chia et al. (2010) classified this disorder as relating to behaviour difficulties that are referred to as disciplinary challenges of neurobiogenic origin with a lack of and/or inadequacy in self-regulation through

manifestation of internalising (e.g. anxiety, depression, low mood) and/or externalising (e.g. conduct disorder, oppositional disorder, behavioural difficulties) socio-emotional traits. The defining characteristics or 'core symptoms' of ADHD as cited in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2002), are difficulties with attention and

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concentration, hyperactivity and impulsivity. Simply, ADHD is diagnostically separated into three subtypes namely: Predominantly Inattentive (ADHD-I), Hyperactive/Impulsive (ADHD-HI), and Combined (ADHD-C) (Martin et al., 2006). These characteristics may stand alone, that is a child may display only inattention and low concentration span (ADHD-I), or they can exist in combination (ADHD-C) where the child is inattentive, hyperactive and impulsive. These key markers typically manifest as a loss of self-control, poor self-regulation and a deficit in inhibitory control (Taylor, O'Donoghue & Houghton, 2006). Such behaviours can be frustrating, not only for the child, but parents and teachers too. However the 'face' of ADHD is soon to change with the introduction of the DSM-5. The proposed changes to ADHD in the DSM-5 may reduce the stigmatization towards children with a learning disorder and/or ADHD. The DSM-5 suggested classifying ADHD as a neurodevelopmental disorder, separate from the disruptive behaviour disorder classification which it was conferred in the DSM-IV. This proposal may change pessimistic educational and parental attitudes, as well as restrict considering ADHD as a result of emotional and familial dysfunctional factors. This change may enable more children to receive the necessary therapy (see Al-Yagon et al., 2013 for a review of the expected impact).

Cook (2005) argued that through genetic and brain imaging studies, it had been found that ADHD is a brain disorder, not a disorder caused by parenting or other environmental factors. ADHD clearly runs in families, with heritability estimates

ranging from 0.55 to 0.92. On average, 25% of immediate family members of children with ADHD are likely to have the disorder. Additionally, twin studies have been crucial in identifying ADHD within familial ties as well as causes of co-morbidity (Martin et al., 2006). It was also identified in this research that there is a strong association of genetic heritability between reading disability and the inattentive subtype (ADHD-I), and between the hyperactive/impulsive subtype (ADHD-HI) and Conduct Disorder (CD) as well as Oppositional Defiant Disorder (ODD). ADHD may present as co-morbid with other DBD such as CD or ODD. Up to 65% of children with ADHD are likely to have ODD and children with CD may also exhibit traits of ADHD. Further, children with ADHD are at risk of developing co-morbid psychiatric disorders, such as anxiety and depression, substance abuse as well as learning disabilities (Cook, 2005).

Children with ADHD are at risk of learning disorders such as reading disability or dyslexia. Hence, they are likely to struggle in school, display poor or negative academic performance and have low academic self-esteem. However, ADHD is not a learning disability but an associated disorder as it does not impact on the brain's ability to learn although it can interfere with the child's availability for learning (Silver, 2001). Furthermore, children with ADHD may display difficulties controlling their emotions or anger as there are issues of anger management and social-emotional behaviour relating to ADHD. They may show social impairment due to their tendency for offensive impulsive remarks or misinterpreting social cues. For

instance, children with ADHD with/without other DBD are more likely to assume hostile intent when bumped in line by a peer than children without ADHD. These children may then react aggressively towards peers which could get them into trouble with teachers. They may also exhibit bullying tendencies towards peers, can be rowdy, emotionally immature and lack insight regarding their behaviours and feelings. They tend to have an external locus of control, and can blame teachers, parents or peers for their misbehaviour or academic failure.

ADHD is a condition of early onset usually identified in children as young as preschool ages. It is believed that children with ADHD will outgrow their disorder. However, studies have revealed that although they seem to outgrow their hyperactivity and impulsivity symptoms, which begin to dissipate around the age of 11 and 13 respectively, a significant portion of these children continue to manifest clinically significant levels of inattention into adolescence and young adulthood. As ADHD seems to be a lifelong condition only appearing to be dissipated with maturity, self-regulation or behaviour modification, some clinicians have suggested medication for children with ADHD in order to curb their disruptive tendencies so as to function more acceptably in school.

In their study, Wegrzyn, Herrington, Martin and Randolph (2012) stated that many of the medications available for the treatment of ADHD are of the stimulant variety. Brain research and theory indicated that ADHD is caused by a dysfunction in the prefrontal cortex (Barkley, 1997) where important

neurotransmitters, dopamine and norepinephrine are typically in short supply in children with ADHD. As a result, children with ADHD do not perform as well as controls in tests of their executive functions, which are the mental processes that control thinking, emotions, and behaviour. Therefore, ADHD medication activates these neurotransmitters to stimulate the prefrontal cortex (Szegegy-Maszak, 2002). Not surprisingly, there have been positive reports from children who have been medicated who experience improved behaviour which consequently reduced 'trouble-making' incidents, and made them more able to concentrate on schoolwork (Travell & Visser, 2006). Unfortunately, 20% of childhood ADHD patients do not respond to stimulant medication (Fox, Tharp & Fox, 2005) and thus, may continue to display challenging behaviours in the classroom. Moreover, not all parents of children with ADHD are advocates of pharmacological medication for fear of side effects such as suppression of appetite and sleeplessness, depression and head or stomach aches. Most have opted for alternative treatment as a solution such as social skills training, behaviour modification, anger management training or problem-solving skills training. Indeed the process of diagnosing children with ADHD and treating them with medication such as methylphenidate hydrochloride (e.g. Ritalin) continues to be controversial (Travell & Visser, 2006).

The challenging behaviours exhibited by children with ADHD have often been misconstrued as bad attitudes and any behaviour deemed to have resulted from it may lead to punishment either by parents or teachers. However, it is

important to distinguish between these two terms so that children with ADHD are not wrongfully judged for their actions or behaviour. According to Chia et al. (2010), "behaviour" refers to an act or function done by a person in a particular way while "attitude" refers to the way of thinking or perception which in turn, effects the way a person behaves. Hence, any bad attitude can result in bad behaviour which can become challenging for parents or teachers. However, not all bad behaviours stem from bad attitudes. Borba (2004) noted that behaviours are more reactive and impulsive but attitudes are longer term. Therefore, a child 'behaving badly' may not necessarily have the intention to do so.

Reid, Wagner and Marder (2006) stated that ADHD is a chronic condition that is thought to affect 3 - 5% of children. The clinical definition of ADHD in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) expects a general impairment in behaviour and academic performance in school and/or at home. It is the most common type of co-morbidity that occurs with dyslexia in schools. A student may not be diagnosed with ADHD but they may show symptoms or traits that are commonly associated with it. Hence, it is pertinent that teachers be aware of the symptoms and traits of ADHD and how this condition impacts on children's academic and social performance, peers' learning in the classroom as well as teachers delivery of lessons.

Children with ADHD have been found to perform below their academic ability. In their longitudinal study, Galéra et al. (2009) found that the results corroborated

with previous research findings which presented a significant relationship between ADHD and poor academic achievement. This was identified by Loe and Feldman (2007) who stated that there is a significant link between ADHD and negative academic and educational outcomes. In particular, children with ADHD were found to display poor academic functioning with poor reading and mathematics test scores (Biederman et al., 1996; Barry et al., 2002), increased rates of being retained at grade level in school (Barkley et al., 1990), and low rates of secondary graduation as well as post-secondary education (Mannuzza et al., 1993).

Besides being co-morbid with dyslexia, ADHD can sometimes co-exist with other DBD such as Oppositional defiant disorder (ODD). The high rate of association between ADHD and ODD, at 65%, is worth noting as children with ADHD may not only present with inattentive, hyperactive or impulsive symptoms but also those symptoms that are linked with ODD such as being naughty, playing tricks on others, flouting class rules or throwing temper tantrums (O'Regan, 2006). Hence, teachers must exercise acute awareness and care when dealing with such students in order to garner their cooperation in the classroom which will lead to effective learning for these children.

### **Characteristics of ADHD**

As mentioned earlier, the core characteristics of ADHD can be categorised by three subtypes namely, Predominantly Inattentive (ADHD-I), Hyperactive/Impulsive (ADHD-HI), and

Combined (ADHD-C), which can be further identified according to specific traits manifested by the children's actions. Chia et al. (2010) listed these traits as commonly related to ADHD:

- failure to give close attention to details
- commit careless mistakes in written work or other activities
- has difficulty sustaining attention in tasks or play
- does not seem to listen when spoken to
- does not follow through instructions
- failure to complete school work or duties
- avoid or/and dislike or reluctant to engage in tasks that require sustained mental effort
- easily distracted
- display forgetfulness when performing daily activities
- fidget a lot with hands or feet, or squirm in seat
- often leave seat during lessons
- often run about or climb excessively
- talk excessively
- often blurt out answers before questions are complete
- failure to observe turn taking and often interrupt or intrude on others

Any child with ADHD will present some of these characteristics. Moreover, many children with dyslexia will also present with similar symptoms, mainly because they experience difficulty in completing their work satisfactorily. It will undoubtedly be challenging and frustrating for parents and teachers to work with children who constantly display such behaviours at home or in the classroom. However, support and

understanding can transform interactions with the child.

### **Profile of the child**

Edwin (not real name) was diagnosed with dyslexia at a very early age when his mother noticed that he was unable to read and spell despite repeated teaching of the words. At the age of six, Edwin was still unsure of the alphabet and struggled when learning phonics. He also found it difficult to learn Chinese as he was confused by the hanyu pinyin. Additionally, Edwin showed difficulty writing within given spaces or on lines, made letter reversal errors with his words unevenly spaced as well as confusion with the alphabet upper and lower case.

Edwin's childcare centre teachers also provided similar feedback to his parents and added that Edwin was not learning at the same pace as his peers. Moreover, there is a family history of reading and spelling difficulties with Edwin's cousins experiencing the same challenges. Due to parental concerns, Edwin was subsequently referred to the Dyslexia Association of Singapore (DAS) and was assessed by a DAS psychologist. The assessment found Edwin to have an uneven cognitive profile. He had an above average to high cognitive ability but relative weaknesses in reproducing visual-spatial details and expressive language. He exhibited average literacy skills but had exceptionally high listening comprehension skills. While he could use phonological rules to read unfamiliar words, he showed some difficulties in his phonological processing.

The discrepancy between Edwin's

cognitive ability and his reading skills, coupled with his difficulties in phonological processing, are suggestive of dyslexia. Edwin joined the DAS remediation programme when he was in Primary 1. He was observed by his teacher to need more help with reading and spelling, as well as presenting weak ability to grasp concepts and comprehend passages. His handwriting was also an issue and hence, Edwin was taught cursive handwriting to help him improve these skills.

Research indicated that children with dyslexia sometimes have problems with handwriting as decoding the patterns of letters in words on paper can be troubling for them (Berninger et al., 2008). As a result, they frequently fail to develop the automatic flow of writing which helps them to express themselves clearly and easily in writing. Therefore, the continuous cursive handwriting style is best recommended for these children as each letter is formed without taking the pencil off the paper and consequently, each word is formed in one, flowing movement.

At Primary 2, Edwin was observed to be extremely hyperactive and impulsive in class by his new teacher who found working with Edwin rather challenging. Edwin's impulsivity can sometimes disrupt the flow of lessons and distract his teacher from delivering a smooth lesson. Although he was able to pass his English tests in school, Edwin was struggling with Mathematics which he had been failing since Primary 1. He was not able to comprehend Chinese and kept failing this subject too - due to his constant failure, Edwin was granted exemption from Mother Tongue at Primary 5. Edwin loved

Science but was only marginally passing this subject. Edwin's teacher wondered if his under-performance could be the result of his hyperactivity and lack of interest towards task completion as he frequently observed that Edwin's enthusiasm frittered away as the class progressed. It was suggested to Edwin's mother that he should be assessed for ADHD. By the end of Primary 2, Edwin was diagnosed with ADHD [Conners' Continuous Performance Test II (CPT II)]. His report concluded that Edwin had a significant attention problem coupled with impulsivity and low perseverance.

As a result, Edwin's teacher had to consult a DAS educational advisor for the most suitable form of support for Edwin so that his learning potential could be met in school. It was suggested that Edwin be placed in a small class in order for his teacher to provide more guided assistance to Edwin.

The author began working with Edwin when he was in Primary 5. As with most children with ADHD, Edwin was easily distracted, had a very short attention span on tasks, avoided and sometimes showed reluctance to engage in tasks that require sustained mental effort, was fond of fidgeting with his hands and rocked in his seat excessively, could hardly sit still while doing work in the classroom, enjoyed walking around the classroom while the lesson was going on, often blurted out answers and failed to take turns to speak or interrupted others.

Besides the behavioural challenges that Edwin displayed in class, his literacy development was a concern too. He tended to misread, omit words or skip a

line when reading. He had difficulty understanding passages that he read and thus, questions had to be posted to establish meaning for him. Edwin disliked writing activities and he would find ways and means to avoid undertaking this task. His verbal ability was not commensurate with his written expression ability as his writing was brief though he had many ideas to share. The grammar and technicalities of sentence construction were usually ignored. He often showed reversals of 'b' and 'd' and had a poor sense of capitalisation and punctuation in sentences. Edwin continued to produce messy handwriting, depicting poor spatial awareness, letter formation and an inability to write within the given line and space.

During this time, Edwin was also seeing an Occupational Therapist at a children's hospital to address his difficulty in visual-motor integration as well as consulting an optometrist who assessed Edwin as having Amblyopia (lazy eye), Meares-Irlen Syndrome (visual stress) and visual tracking issues. It was also suspected that Edwin was suffering from perceptual distortion when he read certain font types. Subsequently, Edwin was recommended to use a tinted overlay to aid him in reading as this would help him to focus better.

### **Interventions and Remediation**

While stimulant medication can be one intervention technique used on children with ADHD, its effects are not similar for every child. Due to this, some parents may not advocate the use of medication on their child with ADHD. Moreover, pharmacological treatment is rarely

sufficient in addressing the multitude of chronic difficulties faced by children with ADHD. Hence, alternative intervention techniques or strategies must be employed in order to help children with ADHD cope with their disorder.

Preference-based teaching is one approach that can be employed by educators when working with these children. The essence of preference-based teaching involves identifying student preferences and then designing teaching programs in consideration of those preferences. Items and activities students prefer are incorporated within the teaching process. In addition, activities or events that students dislike are removed from the process where possible (Reid & Green, 2006). This approach can be used with any typical teaching programme for students with disabilities and in the case of this student profile, a child with dyslexia and ADHD. According to Reid and Green (2006), preference-based teaching involves setting the occasion for an enjoyable teaching session, identifying students' preferences and using the preferred ABC model where *A* refers to *antecedent* which pertains to what is done to promote student performance of a skill being taught, typically through prompting, *B* refers to the *target behaviour* that the teacher desires the student to demonstrate and *C* refers to *consequences* of the student's target behaviour applied by the teacher to reinforce or correct performance.

This approach requires the teacher to: build rapport with students by spending time to interact with them so that their enjoyment in participating in the teaching

sessions are enhanced as they enjoy interacting with the teacher; identify which activities, items or environment the students like or dislike and to become familiar with them, thus incorporating those activities that the students like into the lesson and omitting those they dislike; and finally via the ABC model, establish what can be done to get students to demonstrate skills which they have been taught and what then are the consequences for their performance.

Besides preference-based teaching, other effective classroom intervention strategies for children with ADHD that have been researched consist of behaviour intervention, self-regulation intervention, academic intervention, home-school communication programmes, interventions addressing social relationship difficulties and collaborative consultation (DuPaul, Weyandt & Janusis, 2011). According to Barkley (2006), impaired delayed responding to the environment is the putative core deficit underlying ADHD. Hence, behavioural interventions that include antecedent and consequence-based strategies which may involve modifying the environment are used to directly address this impairment. Examples of antecedent-based strategies are classroom rules, task choices and task reduction. As antecedent-based strategies aim to trigger the occurrence of a specific behaviour, children with ADHD should be given structure so that the required behaviour can be obtained from them. Thus, they should be informed of classroom rules that they have to adhere to or be told of options and/or reduction in tasks that they have to complete before they get a reward. Reducing the length of an assignment to

match students' attention spans, may reduce off-task, disruptive behaviour (DuPaul & Stoner, 2003) where as Dunlap et al. (1994) found that when students were provided with assignment choices, they showed higher rates of task engagement and lower frequency of disruptive behaviour relative to class sessions when teachers chose the specific assignments.

On the other hand, consequence-based strategies involve manipulating environmental events following a specific behaviour to alter the frequency of that behaviour. Examples of consequence-based strategies are contingent positive reinforcement, response cost and self-management interventions (DuPaul & Weyandt, 2006). The most popular among these are contingent positive reinforcement and response cost where a desired behaviour from the student would earn him a reward which can be in the form of praise, a token or point reinforcement, but misbehaviour may result in token or point reinforcements being removed contingent on disruptive, off-task behaviour. DuPaul et al. indicated that several studies (e.g., DuPaul, Guevremont, & Barkley, 1992) have presented significant improvements in task-related attention, as well as productivity and accuracy of class work, when the combination of token reinforcement and response cost is used.

As children with ADHD mature, they can be taught self-regulation strategies to monitor, evaluate and/or reinforce their own behaviour. This is usually achieved in conjunction with or following the successful application of teacher-mediated behavioural approaches.



Self-monitoring has been used successfully to promote on-task behaviours and class work completion. It has been widely established that children with ADHD usually face challenges in the academic front. Therefore, academic intervention is another strategy to help children with ADHD cope better in school. Sometimes students misbehave in the classroom because they are not able to grasp what is being taught due to a learning disability such as dyslexia. Academic interventions can be in the form of teacher-mediated direct instruction in relevant skills that require remediation such as note-taking which can improve their test performance, using computer technology and employing classroom peers to enhance task engagement and test performance. The combination of both academic and self-regulation interventions have shown to be beneficial for children with ADHD.

Home-school communication programmes are also pertinent since children with ADHD experience difficulties across settings. For example, a daily report card provides students and parents with feedback on class performance as well as target behaviours that need to be achieved or have been achieved by the student. Teacher ratings in the form of a Likert scale can be incorporated for ease of understanding. Based on this feedback, parents can employ home-based reinforcements so that the children will continue to work on target behaviours since children with ADHD have been known to improve in structured environments.

Besides parents and family members, peers also play a part in helping children

with ADHD improve in their social skills as these children often experience difficulties making and keeping friends due to their inability to respond to situations in a non-aggressive manner. Hence, interventions that target social behaviours such as social skills training are designed to address peer relations and must be implemented for a sufficient duration to counteract the high risk for problematic outcome. Finally, collaborative consultation with school personnel can also improve the academic outcome of children with ADHD where these personnel will identify the areas needing improvement and work together to help the children with ADHD achieve this target.

In Edwin's case, most of the strategies mentioned above were employed. When preparing a lesson for Edwin, the author took his interests into consideration. For example, Edwin likes animals and technology and loves working with his hands. Therefore, the author would find passages on animals or technology for Comprehension or Cloze Passage exercises and based on the exercises, get him to form something using scrap material upon completion of the worksheets. Before the lesson began, Edwin got 5 minutes of 'chat time' where he would chat with the author, play a game on his phone or find scrap material to create something. Edwin was informed of what his 'reward' might be if he were to complete any tasks within the time given. He was also given 2 short breaks (5 and 7 minutes) in the 2-hour class. Besides this, the author would also bring Edwin out for a 10 minute exercise of walks or jogs around the school compound. Due to Edwin's difficulty with

handwriting, he was allowed to use the iPad or Word Processor when doing Composition. This also encouraged him to attempt the activity which he liked the least. As Edwin was a young student, he needed to be constantly reminded to self-regulate his behaviour especially since he enjoyed walking around the classroom and attempting to create something with scrap materials. If he wished to do so, the ABC model was employed where he was expected to accomplish a required task before being allowed to have his way. Although the DAS did not have a daily report card programme, the author communicated with Edwin's mother via email to give her feedback on Edwin and how she could reinforce this approach with him at home. One particular collaboration between the author and Edwin's mother was the conversion of points to cash - points that Edwin earned in class were converted to cash by his mother. This spurred Edwin on to be more cooperative and accomplish more tasks when he attended lesson at the DAS. Additionally, Edwin's mother would share feedback given by his school special education teacher with the author so that she could also work on the same areas with Edwin. Indeed, the author found collaborating with Edwin's mother and his special education teacher beneficial in providing Edwin with structure that would assist him in doing better at school work and tests.

### **Educational Implications**

Barkley (2006) stated that deficits in executive functions among children with ADHD have been well documented (Toplak et al., 2009). In their paper, Johnson and Reid (2011) indicated that

executive functions refers to cognitive processes necessary for complex goal-directed behaviour (Loring, 1999) which include metacognitive knowledge regarding strategies and tasks, attention and memory systems that support these processes such as the working memory, and self-regulatory processes such as planning and self-monitoring (Meltzer, 2007). Executive functions involve planning, organizing, maintaining effort, and monitoring activities, all of which are necessary for academic success. Therefore, not surprisingly, executive functions deficit can negatively affect academic performance (Clark, Prior, & Kinsella, 2002).

Students with ADHD often experience serious academic difficulty (Johnson & Reid, 2011) and this is partly due to their poor executive functions. They often have school-related difficulties that affect learning, such as problems with organisation, attending class unprepared, writing down assignments, completing assignments at home, turning in class assignments on time (Gureasko-Moore, DuPaul, & White, 2007), and are inconsistent and careless in their schoolwork (Hinshaw, 2002). Students with ADHD are often referred to special education services and around 50% of them are deemed qualified for support (Barkley, 2006; Reid, Maag, Vasa, & Wright, 1994).

Typically, Edwin too experienced poor executive functions control, particularly in maintaining effort on tasks. He was also forgetful at times, leaving his possessions in the classroom when rushing off upon dismissal. At DAS, the author had employed the strategies mentioned

above in order to get Edwin to be more task-focused so as to complete worksheets and exercises in good time. In a 2-hour class setting, Edwin was able to follow the structure that had been set for him rather successfully. In school, Edwin was coached not only by his teacher, but also the special education teacher to improve on his test performances. Needless to say, Edwin's parents played a vital role in providing him with the necessary support and guidance that he needed, such as coaching him on school subjects as well as allowing him to do activities that he liked as a form of reward.

### Reflections

Children with ADHD can be a challenge. In the case of children with dyslexia and ADHD, what do we tackle first? Is it the behaviour that is impeding their progress in educational attainment or is it the difficulty that they face with academic demands that contributes to their negative behaviour? The situation is akin to that of the chicken and the egg. It is indeed problematic to determine which factor contributes more to a child's learning if an educational therapist does not know the child under his or her charge well.

Before Edwin came under the author's charge, she had the opportunity to read through his psychological reports as well as reports from his previous educational therapists. It was also fortunate that the author was acquainted with Edwin and had seen and interacted with him at the centre. Verbal feedback from his previous teachers prepared the author for what to expect from Edwin. Much has been said

about working with children with ADHD or any form of DBD and how they can affect classroom teaching and teacher welfare such as affecting the learning of other students (Dodge & Pettit, 2003), exhibiting aggression (Frick et al., 1991), and their behaviour taking a toll on teachers as well as increasing teacher's level of frustrations and stress which may lead to burn out (Kokkinos, 2007). Therefore, it was fortunate that in this particular class, Edwin's class was kept small with no more than two students.

Edwin was a challenge but in a good way. The most critical factor for the author was to alter her expectations of him despite his high cognitive intelligence. The author's lesson objective had to be clear and thus, worksheet activities had to be minimised. Nevertheless, academic expectations were not reduced but it was important to keep expectations high whilst realising that these could be met in a different way. In this case, the amount of worksheets done did not equate to the amount of learning that took place in the classroom. Edwin's learning and behavioural difficulties allowed the author to explore various ways to engage him during lessons and to work with him through a different paradigm. Tapping into his interest, the author developed her lessons in ways that would encourage Edwin to attempt as well as sustain his interest in completing them. Although his handwriting continued to be an issue, Edwin was getting better at his spelling. He was also reading more carefully and accurately despite not using the tinted overlay or his spectacles (Edwin refused to use them after trying them a few times).

Edwin's ADHD behaviour was considered in his learning in many ways. For instance, even though the mainstream curriculum does not allow students to use a word processor in examinations, letting Edwin use his iPad for writing activities was a way to encourage him to embark on an activity that he would otherwise avoid. Moreover, the author's objective was to get Edwin to sustain his attention to attempt and complete the activity - a product focused approach - how it was done was of secondary importance. For someone like Edwin who could hardly be seated for 20 minutes, completing a piece of writing activity on his iPad was commendable. As writing activities are time consuming, Edwin was granted the occasional walk-about but he should immediately return to his seat to continue with task completion when specific instructions were given such as "Get back to your seat once you've done that" or "I give you 2 minutes to do it and then you've to continue your work". The timed break sessions as well as a short 'exercise' routine that were inserted in Edwin's two hour lesson helped him to focus better as the class progressed.

Another critical factor was the amount of parental support that Edwin received. Edwin's mother was tireless in her efforts to provide as much educational assistance to him as possible. She also encouraged him to explore his area of interests and supported them such as his interest in animals and keeping aquatic pets. Her spontaneous suggestion to convert the point system that the author implemented with Edwin into cash was a surprise but it was a positive motivating factor for Edwin to accomplish more tasks as well as behave better in the

classroom. In this respect, he was more conscientious in his attempts and always tried his best.

Recently Edwin sat for the Primary School Leaving Examination (PSLE). This examination is important for all Primary 6 students as the result will determine if they could go to a secondary school and the level they would be eligible for. Edwin received his PSLE results with startling achievements - scoring a distinction for Mathematics, a subject he had been struggling with since Primary 1 and getting to the Express stream in secondary school. This would not have been possible if Edwin had lacked parental and school support as well as the protective factors that he possessed.

Edwin's difficulty with reading and spelling in his younger years as well as the academic demands when he began formal schooling, handwriting issues and dealing with ADHD could easily present him with many risk factors that were mentioned above. However, his determination, high-spirited personality and high cognitive ability were crucial protective factors that contribute to his success today.

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