Asia Pacific Journal of Developmental Differences
Vol. 9, No. 1, January 2022, pp. 65—81
DOI: 10.3850/S2345734122000128

Home-Based Psychoeducational Strategies for Supporting Children with Specific Learning Disabilities during School Closures

Julia Ai Cheng Lee[1*]

1. Universiti Malaysia Sarawak

Abstract

Specific learning disabilities (SLDs) refer to a diverse academically related disabilities manifested by significant difficulties in listening, speaking, reading, handwriting, spelling, writing, reasoning and/or mathematics. With the long school closures and the lack of face-to-face teacher presence during the Covid-19 pandemic, it can be challenging for parents to support their children with SLDs during home-based learning. One of the biggest challenges during home-based learning is homework completion by children with SLDs; another challenge is the competition one can observe between doing schoolwork and playing games on technology gadgets. Thus, the focus of this article is to draw from a range of extant literature regarding evidenced based prescriptive strategies for the psychoeducational support of children with SLDs, many of whom have self-regulation challenges, which include difficulty in shifting attention and sustaining mental effort. The prescriptive strategies aim to provide useful research-to-practice information to parents and caregivers on strategies for improving home-based education for exceptional learners with SLDs during the long school closures. These prescriptive strategies can be applied in the daily home-based support of children with SLDs for their academic success and wellbeing.

Keywords: psychoeducational support, specific learning disabilities, children, parents, school closures, home-based learning, Covid-19 pandemic

* *Correspondence to:*
Julia Ai Cheng, Lee, 1Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, Malaysia. Email: aclee@unimas.my
orcid.org/0000-0001-9149-3848

As a result of the Covid-19 pandemic, children all around the world are experiencing home-based learning and they are given various kinds of school work through the internet by their teachers. With this sudden disruption to the status quo of schooling, the Covid-19 pandemic poses a challenging time for teachers, parents, and caregivers because of the sudden need to learn various e-learning tools quickly and to facilitate the home-based online learning experiences of children (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021). Parents, in particular, have to play the role of both the parent and facilitator of the learning process from home. Many parents are worried about their children falling behind and not being able to manage their children's home-based learning process (Lardieri, 2020).

One of the biggest challenges during this time is the competition one can observe between doing schoolwork and playing games on technology gadgets. Technology gadgets such as tablets, iPads, and mobile phones can be distracting especially if a child does not have good self-regulation. Conversely, homework and schoolwork may seem boring to children. Furthermore, there are issues that may relate to internet access, computers, laptops, or mobile computing gadgets, shared access of these technology gadgets with siblings, and allowing time for working parents to also work from home during home-based learning. Some of the reported parental challenges with regards to home-based learning for children with specific learning disabilities (SLDs) during the pandemic include the establishment of routines, completion of homework by the children, insufficient support from the teachers, and time spent by parents on assisting children with learning disabilities (Soriano-Ferrer et al., 2021). Many parents and children with special needs including specific learning disabilities are feeling overwhelmed and are struggling to cope with the burden of home-based learning (Asbury et al., 2020).

Thus, this article draws from a broad range of extant literature (e.g., psychology, special education, child psychology, and child psychiatry) on evidenced based prescriptive strategies for the psychoeducational support of children with SLDs, many of whom have self-regulation challenges, which includes difficulty in shifting attention and sustaining mental effort (American Psychiatric Association, 2013; Grigorenko et al., 2020; Lichtinger & Kaplan, 2015). Parents and caregivers will become more aware of the strategies they could use proactively during this difficult time when access to face-to-face professional therapy and intervention may be disrupted. Being equipped with skill sets such as providing corrective feedback and using environmental strategies is important for helping parents and caregivers to enhance the coping skills and wellbeing of children with SLDs while ensuring academic success during this difficult time (Clarke, 2020).

Specific Learning Disabilities

Specific learning disabilities refer to a heterogeneous group of disabilities manifested by significant difficulties in the acquisition and use of listening, speaking, reading, handwriting, spelling, writing, reasoning and/or mathematical abilities (American

Psychiatric Association, 2013; Dominguez & Carugno, 2020; Grigorenko et al., 2020; McDowell, 2018; Royal College of Psychiatrists, 2015; Swanson, 2001). Thus, academic deficits are the hallmark of SLDs (Grigorenko et al., 2020; Pennington, 2009). The common SLDs are dyslexia, which occurs in the domain of literacy and is manifested in reading and spelling difficulties; dyscalculia, which occurs in the domain of mathematics; dysgraphia, which occurs in the domain of handwriting and is evident from the distorted and illegible handwriting; and non-verbal learning disabilities, which occurs in the domain of handwriting, mathematics, and organization (Dominguez & Carugno, 2020; McDowell, 2018).

SLDs result from weaknesses in one or more processes related to thinking and learning, including (but not limited to) language processing, memory, attention, phonological processing, processing speed, and executive functioning (e.g., response inhibition, response control, working memory, and planning) (American Psychiatric Association, 2013; Cirino et al., 2017; Denckla & Mahone, 2018; National Institute of Child Health and Development, 2018a; Papanastasiou, 2017). According to the American Psychiatric Association (2013), the diagnosis of SLDs takes place when there are specific deficits related to the perception or processing of information in an accurate and efficient manner. As per the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013), the following are the diagnostic criteria of SLDs: 1) Difficulties processing instructions and learning skills in one or more areas for at least 6 months despite having received relevant intervention. The areas of difficulties include difficulties in word reading, difficulties to comprehend what is read, difficulties in spelling, difficulties in written expression, difficulties in mastering number facts or calculations, and/or difficulties in mathematical reasoning; 2) The academic skills are substantially lower than the expected chronological age resulting in significant interference in academic performance or daily living; 3) Difficulties are manifested during school-age years but becomes fully evident when academic demands increases (e.g., timed tests; lengthy reading and writing tasks); and 4) Aberrations from typical academic performance are not better elucidated by intellectual disabilities, sensory disorders, neurological disorders, psychosocial adversity, language incompetency, or inadequate instruction (Dominguez & Carugno, 2020; Grigorenko et al., 2020).

SLD is a common disorder with a prevalence rate of 5% and 15% among school-age children (American Psychiatric Association, 2013). The diagnosis and interventions for children with SLDs are often more complex than they seem. This is because children with SLDs may also have attention-deficit/hyperactivity disorder (ADHD) (American Psychiatric Association, 2013; Denckla & Mahone, 2018; Ferrin et al., 2016). The main symptoms of ADHD are hyperactivity, impulsivity, and/or inattention (Ferrin et al., 2016). Mounting evidence suggests that comorbidity issues may be present where children with SLDs may also have ADHD behaviors (Castro et al., 2020; DuPaul et al., 2013; Margari et al., 2013). The percentage of co-occurrence between SLDs and ADHD has been reported to have a comorbidity rate of between 33% and 41.5% (DuPaul et al., 2013; Margari et al., 2013)

while a recent synthesis of 50 years of scientific evidence states that the comorbidity between specific word reading difficulties and ADHD is between 25% and 50% (Grigorenko et al., 2020). Other studies have also reported that children's difficulties in reading and mathematics are positively related with their hyperactive behaviors (Castro et al., 2020). Overall, these percentages highlight the magnitude of the challenges faced by parents and caregivers in providing the necessary support to children with SLDs during home-based learning.

Psychoeducational Support Strategies for Children with SLDs

Children with SLDs who have been referred to qualified professionals for psychoeducational assessment typically require psychoeducational intervention to help them how to learn and to overcome their learning problems (Hoffman & DuPaul, 2000; National Institute of Child Health and Development, 2018a). Psychoeducation refers to the integration of psychotherapeutic and educational intervention focusing on the didactic communication of information and guidance of coping skills for patients and families (Dahl et al., 2020). Parental awareness and training on psychoeducational support have been reported to have promising effects on influencing parental perceptions regarding their child's difficulties and improving parenting skills such as recognizing the particular pattern of difficulties experienced by their child, having access to specific explanations regarding the behavioral and learning challenges faced by their child, empowering parents to break negative parent–child interactions, and influencing developmental outcomes (Daley et al., 2014).

During home-based learning, parents may experience increasing challenges in managing their child with SLDs. Recent research has reported parenting-related exhaustion and distress experienced by parents during home-based learning (Soriano-Ferrer et al., 2021). Thus, it is important for parents and caregivers to be equipped with effective strategies to help children with SLDs adapt to home-based learning. There are evidenced based approaches from the fields of educational psychology, special education, child psychology, and child psychiatry that are helpful for assisting parents and caregivers to make more informed decisions and applying strategies during home-based learning (Barkley, 2013; Betker, 2017; Bryan & Burstein, 2004; Dahl et al., 2020; Daley et al., 2018; Hoffman & DuPaul, 2000; Kim & Fineup, 2021; National Institute of Child Health and Development, 2018a; Nielsen et al., 2018). It is of utmost importance to use the suitable strategies so that children with SLDs are able to learn effectively during this difficult time and parents and caregivers can proactively prevent burnout and excessive stress. Listed below are several psychoeducational strategies for supporting children with SLDs during home-based learning.

Implement Routines and Structure

It is important to prepare and implement routines and structure for children with SLDs (Betker, 2017; Maciver et al., 2019). Routines, sequence of activities, and transitions within the routines are crucial (Betker, 2017; Whiting, 2020). Routines are particularly important for children with SLDs, including children with ADHD (American Psychiatric Association, 2013). Thus, bedtime, afternoon naps, meal times, and various times for studying, doing homework, having free time for relaxation and exercise, and learning new skills such as cooking and baking should be planned in the routine. Well planned and predictable daily schedules are important to provide the structure, which in turn ensure that the children feel safe and secure. In addition, parents and caregivers will have some free time to themselves and the space to make plans for the week. The schedule should be posted in a visible and easily accessible area so that the child is more time aware of the daily routines. Overall, having routines and structure improve efficiency and daily functioning during home-based learning.

Reduce Noise and Visual Distractions

Children with SLDs who also have issues with ADHD have difficulty focusing on the correct thing (Betker, 2017). Thus, it is important to minimize auditory and visual distractions so that children with SLDs can focus on the task at hand. The working space should be a corner of the home that is free from distraction. In addition, the house and working space should be as quiet as possible. It is best to position the study table away from the window so that the child is not distracted by movements outside (Betker, 2017). Ideally, the study area is not in the sitting room where there is a lot of "traffic", distraction, and noise from, say, the television set (Betker, 2017). The stationaries that are used regularly should be organised properly to avoid too much time wasted looking for misplaced items. Modifying the child's environment helps ensure success (Betker, 2017).

Make Mental Information Physical

Children with SLDs may also experience other issues which disadvantage them. Examples of these issues are self-regulation deficits such as difficulties in focusing, staying on task, and keeping track of time. Therefore, it is important to externalize the child's learning processes in visible form by providing visual and verbal cues (Betker, 2017; Furlong et al., 2016). Children with SLDs often times cannot hold things in mind. This is related to weak working memory. Thus, there is a need to substitute for poor working memory. Parents and caregivers can use external forms of information such as checklists, post-it notes, signs, symbols, charts, and reminders (Barkley, 2013; Betker, 2017; Denton et al., 2020). Other examples include putting up visual cues such as visual reminders, using verbal cues such as questions to remind the child on what needs to be done (e.g., "What are you supposed to be doing now?"), and non-verbal cues such as hand signal. These cues alert the children on what needs to be done at a particular point in time

(Betker, 2017). Making mental information physical is a proactive approach parents and caregivers can adopt for supporting the learning process of children with SLDs.

Make Time Real and Concrete through Clocks and Timers

Time management is a common problem among children with SLDs (Lerner & Johns, 2012; Newhall, 2008; Smith, 2002). When children with SLDs are doing homework using technological gadgets and virtual technologies during home-based learning, they may lose focus easily because they may have inhibition/self-control problems and the games that await them are far more exciting than completing their homework. Thus, children with SLDs who have self-regulation problems need something outside of themselves to signal the passage of the passing time (Barkley, 2013; Newhall, 2008). Parents and caregivers could use cooking timers or digital timers that are within the visual field of the child with SLDs. A kitchen timer, which buzzes when time is up, may also serve as a behavior management mechanism to help the child to be more time aware. The clock, which is within the visual field of the child, then helps him/her to become more aware of the passing time (Betker, 2017; Newhall, 2008).

Break Up Lengthy Tasks, Homework, and Assignments

Children with SLDs and self-regulation deficits have limited sense of the future. Telling or nagging at a child to complete an essay by a certain date or in 3 days' time is not going to work. An alternative approach to helping children to stay on task is to allocate a certain time to complete a small chunk of the homework each day (Barkley, 2013; Bryan et al., 2001). Therefore, parents and caregivers must be proactive in assisting the child to chunk the tasks into smaller doable parts for the child and in training the child to monitor his/her own progress using strategies such as checklists or graphing homework completion (Betker, 2017; Bryan et al., 2001). For example, read x number of pages per day or write 10 sentences or 15 sentences a day and upon completion of an assigned task, to record it in a visual graph. It is more productive for the parent and caregiver to break the "task" into chunks or smaller parts so that the child is able to complete smaller chunks on a regular basis until the entire task gets done. Being proactive rather than reactive is the key to productivity in facilitating the learning process of children with SLDs.

Provide Extrinsic Motivation

Extrinsic motivation refers to the willingness to engage in an activity for the sake of external rewards or punishment avoidance (Zisimopoulos & Galanaki, 2009). Conversely, intrinsic motivation refers to an individual's inner desire to engage in activities for the sake of internal rewards such as enjoyment or interest (Daniel & Cooc, 2018). Children with SLDs lack the intrinsic motivation to initiate academic tasks by themselves (Zisimopoulos & Galanaki, 2009). They are dependent on the environment for motivation.

Therefore, children with SLDs often times require the external motivation from their parents and caregivers (Lerner & Johns, 2012).

Parents and caregivers could create the extrinsic motivation for the children with SLDs; that is to provide positive reinforcements for desired behaviors (Hoffman & DuPaul, 2000). For example, tokens such as stickers and stars can be used to reward the child for the work completed (Ivy et al., 2017). In addition, giving the child recognition for a good job done, the attention he/she desires such as a simple give me five, a hug, thumbs up, or the satisfaction of knowing that the answer is correct are common reinforcers (Barkley, 2013). Positive and immediate reinforcements are the most effective in fostering the desired behavior (Hoffman & DuPaul, 2000; Lerner & Johns, 2012). Parents may want to creatively form a "redemption store" where contingent on attaining a target behavior or the completion of tasks, the child may exchange the token with something of his/her preference (Ivy et al., 2017; Kim & Fineup, 2021). For example, after a child reads five pages, she receives two tokens that are exchangeable for toys or an outing when the situation gets better.

Monitor and Regulate Children's Screen Time

Game-based learning for enhancing subject matter content knowledge and skills can enhance learners' cognitive, behavioral, affective, and sociocultural engagement (Plaas et al., 2015) including attention among children with SLDs and ADHD (García-Redondo et al., 2019). Extrinsic reinforcements are aplenty in digital games (Alsawaier, 2018; Westera, 2015). For example, video games provide constant extrinsic motivations through reinforcements such as points, tokens, and continuous reinforcements to the children. Thus, video games are far more attractive and entertaining to the children. Every few seconds during the game, there is a reward being given to the player.

During the Covid-19 pandemic, screen time use among children has increased (Hammons et al., 2021; Hartshorne et al., 2021; ParentsTogether, 2020). Furthermore, with the increasing screen time use during home confinement, children, out of boredom and loneliness, are susceptible to excessive video gaming (Zhu et al., 2021). The susceptibility of children to addiction to gaming calls for more parental involvement and monitoring to curb the time spent on gaming and to prevent excessive gaming (Donati et al., 2021). Donati and colleagues found that parents who engaged in parent-child discussions and employed rules (i.e., controlled the types and content of the video games), reinforcement, and modeling (i.e., spending less time on gaming themselves) can protect their child from excessive gaming. While these studies have been conducted on the general population and not specifically on children with SLDs, findings from these studies can inform parents of children with SLDs about the importance of parental involvement in regulating the use of video games and curbing the negative effects of excessive video gaming.

Enhance Parental Involvement and Teacher Facilitation during Homework Completion

Children with SLDs tend to struggle with homework completion due to practices and characteristics that interfere with the task (Bryan & Burstein, 2004). Examples of the challenges faced by children with SLDs include lack of motivation, distractibility, and taking longer time to start and longer time to complete the homework. During the Covid-19 pandemic, children are spending a lot of time online completing homework or assignments at home, but without the necessary intervention, the completion of the assignments may be problematic for children with SLDs (Kim & Fineup, 2021). Parental involvement during homework completion among children with and without special needs has been demonstrated to influence student outcomes including attitudes towards homework, self-perception towards personal competence, and self-regulatory skills (Kim & Fineup, 2021; see also Hoover-Dempsey et al., 2001).

The quality of parental involvement and strong family-school partnerships also play a mediating role in student achievement and well-being (Dettmers et al., 2019). A recent study on homework completion among children with SLDs with Individualized Education Plans (IEPs) demonstrated that purposeful instructional support and facilitation by teachers can enhance online learning engagement and daily completion of instructional activities during the school closures (Kim & Fineup, 2021). Children with SLDs received individual intervention components on reading in addition to whole class online sessions, which comprised class-wide postings of the daily schedule on the Google Classroom homepage, morning meeting questions, and written feedback for work completed (Kim & Fineup, 2021). The following day, the teachers provided verbal prompts to encourage the children to finish any incomplete components of the work from the previous day. If there were 3 or more missed components for four consecutive days, the head teacher emailed the parents to facilitate the completion of the daily assignments. A checklist of tasks was provided to the children with SLDs using sharescreen on Google Meet and the children were informed that they would earn virtual rewards such as playing a game with the teacher or act as the teacher for morning announcement if the tasks were completed. Every morning, the children with SLDs were required to stay online after the other students had logged off and the teacher would run through the checklist of daily tasks. This study showed that active facilitation by the teachers using daily task analysis and virtual rewards, and the strong family-school partnership are necessary for increasing children's engagement in online learning and for facilitating their well-being during remote teaching-learning on online platforms.

Externalize Mental Problem Solving

Children with SLDs have difficulty holding information in their minds. Mental manipulations are challenging for them unlike other typically developing peers. This means that solving problems using mental calculation and making estimations mentally is challenging for them. For example, children with mathematics difficulties find it more

difficult to determine whether 6 is more than 4 compared to whether a group of 6 marbles is more than 4 marbles (Powell & Fuchs, 2012). Therefore, parents/caregivers should provide children with SLDs number lines and manipulatives (Barnes et al., 2016; Bryant et al., 2008; Soares et al., 2018) so that the children with SLDs can grasp mathematics concepts by using concrete materials (i.e., manipulatives) first before progressing to the more abstract representations (i.e., numbers and symbols) (Powell & Fuchs, 2012). LEGO bricks and colored chips are great manipulatives for learning mathematics and have been shown to be effective in helping struggling learners (Altakhayneh, 2020; Lewis & Lynn, 2018). For example, colored chips may be used to help children understand and appreciate the concept of quantity. At the basic level of understanding quantity such as "Which one is more?" and "Which one is less?" two groups of colored chips may be used to differentiate the concept of quantity between 4 (e.g., 4 orange chips) and 9 (e.g., 9 green chips).

Real food stuff in the kitchen also provides real and contextualized methods of externalizing mental problem solving because the real world and authentic approach can enable children with mathematics difficulties connect meaningfully through everyday experiences with mathematics (Baker et al., 2002; Lewis & Lynn, 2018; Shin & Bryant, 2015). For example, during a baking session, the window of instructional opportunity is readily available for the adult to help the child to discover fractions at home through the use of physical materials such as measuring cups and spoons (Australian Psychological Society, 2020; Kaminski & Sloutsky, 2020; Siegler et al., 2010), which fosters multisensory learning in children with specific learning disabilities (Stern, 2011).

Build Academic Skills

For children with reading disabilities (including dyslexia), explicit, systematic (step-by-step), and multisensory approaches should be used to improve the letter-sound correspondence, reading at the word and sentence level, writing skills, and reading comprehension (Farrell & Sherman, 2011; National Institute of Child Health and Development, 2018b). Children who struggle with word reading benefit from systematic phonics instruction that fosters their alphabetic skills and decoding skills (National Reading Panel, 2000; Rose, 2009; Wanzek et al., 2018). In addition, intervention that targets the five core reading componential skills recommended by the National Reading Panel (2000) namely, phonological awareness, phonics, vocabulary, fluency, and reading comprehension, including spelling and handwriting, which are able to improve students' reading outcomes, could be used to complement other forms of learning support for struggling readers (Al Otaiba et al., 2018; Alqahtani, 2020; Jamshidifarsani et al., 2019). There are many assistive technologies that parents can explore to ameliorate their child's reading difficulties such as speech-to-text and text-to-speech software (Svensson et al., 2021; The Dyslexia Association UK, 2021).

For children with difficulties in mathematics, visuals with colours, verbalizations, memory aids, repeated practice, and corrective feedback are able to help children understand math concepts (Barnes et al., 2016; Furlong et al., 2016; Johnson et al., 2021; National Institute of Child Health and Development, 2018b). A structured multisensory approach to teaching children mathematics is especially important for children with SLDs because they typically struggle with multiple difficulties including language, memory associations, and attention issues (Stern, 2011). Thus, children with mathematics difficulties should be taught mathematics concepts using concrete representations and visual representations including manipulatives (Barnes et al., 2016) and the approaches discussed in the previous section on externalizing mental problem solving.

Visualize and Talk about Future Rewards

A child with SLDs who also has ADHD has difficulty focusing on rewards coming in the future (Furukawa et al., 2014, 2017). Before and after demanding tasks, teach the child with SLDs to visualize his/her ability to complete the task and discuss the future rewards in relation to the tasks. A child with SLDs need to see "what is it in it" for him/her when carrying out tasks. Therefore, parents and caregivers should facilitate the child's learning process in understanding the purpose of engagement with the task and seeing "what is it in it" for him/her (Lichtinger & Kaplan, 2015). The child with SLDs needs a reason for completing his/her school work. Help him/her to identify the point of the task, his/her highest priorities, goals, and values (Raskind et al., 2003). During the lockdown, there is a lot of flexibility for the child and his parents/caregivers to discover the child's passion. In turn, passion leads to career ideas and career ideas can motivate the child to identify and discover his/her priorities (Raskind et al., 2003).

Strengthen Self-Esteem and Self-Efficacy

Children with SLDs may experience low self-esteem and poor self-efficacy (Livingston et al., 2018). Self-esteem refers to the core beliefs about oneself, which develops from life experiences (MacMaster et al., 2002). Children with low self-esteem have many negative beliefs about themselves (MacMaster et al., 2002). Self-efficacy refers to the belief an individual has about his/her own capacity to execute behaviors necessary to produce specific outcomes (MacMaster et al., 2002). Low self-esteem and low self-efficacy are associated with internalizing behaviors such as anxiety and depression, which when left unattended will demonstrate worsening symptoms (Giovagnoli et al., 2020). Therefore, it is important to "catch" the child with SLDs doing a good job, provide praise for effort and accomplishment, and give specific feedback regarding a particular task that has been completed (Betker, 2017). This will enhance the child's sense of self-efficacy. In addition, encourage the child to use positive self-talk and statements such as "I can do this" so that it becomes what they believe about themselves and their ability (Denton et al., 2020). Positive statements such as "Yes, I can!" "Nothing is impossible." "I believe that I can. I am a smart boy." "I am a smart girl." I will never give up." will enhance their

self-esteem. Helping children with SLDs to build their personal resources such as hope, self-efficacy and optimism is related to academic success (Al-Yagon & Margalit, 2018; Cavioni et al., 2017; Sainio et al., 2019). Thus, fostering self-esteem and academic self-efficacy is one of the ways to address the negative consequences of having SLDs (Livingston et al., 2018).

Incorporate Physical Activities

It is important for children with SLDs to engage in physical activities to ensure that they build their physical strength, health, and mental wellbeing, improve their executive functions (Barkley, 2013; Grassmann et al., 2017; Huang et al., 2020; Miks & McIlwaine, 2020), and reduce their inattention (Reynolds & Nicolson, 2006). Physical activities are linked to behavior engagement and enhanced learning (Harvey et al, 2018). Children with SLDs benefit from short bursts of studying with movement breaks in between tasks because these movement breaks help them to focus (Betker, 2017; Nielsen et al., 2018). Physical activities may include walking, running, bike riding, playing, basketball, and skateboarding (Betker, 2017). During the long home confinement, children are likely to engage in sedentary behaviors such as watching television and playing video games (Donati et al., 2021). Thus, parents can encourage children to participate in physical and alternative activities such as board games and playing an instrument instead of excessive sedentary screen time (Donati et al., 2021; Hammons et al., 2021). Positive and healthy use of 'exergames' aimed at non-sedentary activities for stimulating healthy habits can foster home-based physical activity (Benzing & Schmidt, 2018; Donati et al., 2021; Rüth & Kaspar, 2021).

CONCLUSION

This present research-to-practice article has expounded on the challenges experienced by children with SLDs and evidenced based psychoeducational support strategies that parents and caregivers can apply at home during home-based learning. Given that the children's academic learning and wellbeing are paramount, it is important for parents and caregivers to take on the proactive role in providing home-based psychoeducational support to cope with the demands of managing the needs of children with SLDs. By re-engineering the surrounding environment and applying suitable psychoeducational strategies for supporting children with SLDs, the children's learning experience will become more positive and optimal during home-based learning.

REFERENCES

Al Otaiba, S., Rouse, A. G., & Baker, K. (2018). Elementary grade intervention approaches to treat specific learning disabilities, including dyslexia. *Language Speech and Hearing Services in Schools, 49*(4), 829–. doi:10.1044/2018_LSHSS-DYSLC-18-0022

Alqahtani, S. S. (2020). Technology-based interventions for children with reading difficulties: a literature review from 2010 to 2020. *Educational Technology Research and Development, 68*, 3495–3525. doi:10.1007/s11423-020-09859-1

Alsawaier, R. S. (2018). The effect of gamification on motivation and engagement. International *Journal of Information and Learning Technology, 35*(1), 56-79. https://doi.org/10.1108/IJILT-02-2017-0009

Altakhayneh, B. (2020). The impact of using the LEGO education program on mathematics achievement of different levels of elementary students. *European Journal of Educational Research, 9*(2), 603-610. https://doi.org/10.12973/eujer.9.2.603

Al-Yagon, M., & Margalit, M. (2018). Hope and coping in individuals with specific learning disorder. In M. W. Gallagher & S. J. Lopez (Eds.), *The Oxford Handbook of Hope* (pp. 1-20). DOI: 10.1093/oxfordhb/9780199399314.013.29

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. Arlington, VA: American Psychiatric Association.

Asbury, K., Fox, L., Deniz, E., Code, A., & Toseeb, U. (2020). How is Covid-19 affecting the mental health of children with special educational needs and disabilities and their families? *Journal of Autism and Developmental Disorders, 51*, 1772-1780. doi:10.1007/s10803-020-04577-2

Australian Psychological Society. (2020). Maths tips for children with learning difficulties and disabilities: Support and strategies for e-learning environments. https://www.psychology.org.au/getmedia/8325e962-75e9-47ef-9629-c570060688f3/APS-CCN-IS-LD-Primary-School-Math-tips-P1.pdf

Baker, S., Gersten, R., & Lee, D. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. *The Elementary School Journal, 103*(1), 51-73.

Barkley, R. A. (2013). *Taking charge of ADHD: The complete authoritative guide for parents*. New York, NY: Guilford Press.

Barnes, M. A., Klein, A., Swank, P., Starkey, P., McCandliss, B., Flynn, K., Zucker, T., Huang, C.-W., Fall, A.-M., & Roberts, G. (2016) Effects of tutorial interventions in mathematics and attention for low-performing preschool children, *Journal of Research on Educational Effectiveness, 9* (4), 577-606. DOI: 10.1080/19345747.2016.1191575

Benzing, V., & Schmidt, M. (2018). Exergaming for Children and Adolescents: Strengths, Weaknesses, Opportunities and Threats. *Journal of Clinical Medicine, 7*(11), 422. https://doi.org/10.3390/jcm7110422

Betker, C. (2017) Environmental strategies for managing attention deficit hyperactivity disorder. *Journal of Childhood & Developmental Disorders,* 3(4), 24. DOI: 10.4172/2472-1786.100062

Bryan, T., & Burstein, K. (2004) Improving homework completion and academic performance: Lessons from special education. *Theory into Practice, 43*(3), 213-219, DOI: 10.1207/s15430421tip4303_7

Bryan, T., Burstein, K., & Bryan, J. (2001) Students with learning disabilities: Homework problems and promising practices. *Educational Psychologist, 36*(3), 167-180, DOI: 10.1207/S15326985EP3603_3

Bryant, B. R., Bryant, D. P., Kethley, C., Kim, S. A., Pool, C., & Seo, Y.-J. (2008). Preventing mathematics difficulties in the primary grades: The critical features of instruction in

textbooks as part of the equation. *Learning Disability Quarterly, 31*(1), 21–35. https://doi.org/10.2307/30035523

Castro, E., Cotov, M., Brovedani, P., Coppola, G., Meoni, T., Papini, M., Terlizzi, T., Vernucci, C., Pecini, C., & Muratori, P. (2020). Associations between learning and behavioral difficulties in second-grade children. *Children (Basel, Switzerland), 7*(9), 112. https://doi.org/10.3390/children 7090112

Cavioni, V., Grazzani, I., & Ornaghi, V. (2017). Social and emotional learning for children with learning disability: Implications for inclusion. *International Journal of Emotional Education, 9* (2), 100-109.

Cirino, P. T., Miciak, J., Gerst, E., Barnes, M. A., Vaughn, S., Child, A., & Huston-Warren, E. (2017). Executive function, self-regulated learning, and reading comprehension: A training study. *Journal of Learning Disabilities, 50*(4), 450–467. https://doi.org/10.1177/0022219415618497

Clarke, T. (2020). Children's wellbeing and their academic achievement: The dangerous discourse of 'trade-offs' in education. *Theory and Research in Education, 18*(3), 263-294. https://doi.org/10.1177/1477878520980197

Dahl, V., Ramakrishnan, A., Spears, A. P., Jorge, A., Lu, J., Bigio, N. A., Chacko, A. (2020). Psychoeducation interventions for parents and teachers of children and adolescents with ADHD: A systematic review of the literature. *Journal of Developmental and Physical Disabilities, 32*, 257–292. https://doi.org/10.1007/s10882-019-09691-3

Daley, D., Van Der Oord, S., Ferrin, M., Cortese, S., Danckaerts, M., Doepfner, M., Van den Hoofdakker, B. J., Coghill, D., Thompson, M., Asherson, P., Banaschewski, T., Brandeis, D., Buitelaar, J., Dittmann, R. W., Hollis, C., Holtmann, M., Konofal, E., Lecendreux, M., Rothenberger, A., Santosh, P., ... Sonuga-Barke, E. J. (2018). Practitioner Review: Current best practice in the use of parent training and other behavioural interventions in the treatment of children and adolescents with attention deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry, 59*(9), 932-947. doi: 10.1111/jcpp.12825

Daley, D., van der Oord, S., Ferrin, M., Danckaerts, M., Doepfner, M., Cortese, S., . . . ADHD Guidelines Group. (2014). Behavioral interventions in attention-deficit/hyperactivity disorder: A meta-analysis of randomized controlled trials across multiple outcome domains. *Journal of the American Academy of Child & Adolescent Psychiatry, 53*, 835-847, 847. e1-847.e5.

Daniel, J. R., & Cooc, N. (2018). Teachers' perceptions of academic intrinsic motivation for students with disabilities. *The Journal of Special Education, 52*(2), 101-112 .doi:10.1177/0022466918765276

Denckla, M. B., & Mahone, E. M. (2018). Bringing together the definition of attention deficit/hyperactivity disorder and learning disabilities (pp. 5- 24). In L. Meltzer (Ed.*). Executive function in Education: From Theory to Practice.* New York, NY: Guilford Press.

Denton, C. A., Montroy, J. J., Zucker, T. A., & Cannon, G. (2020). Designing an intervention in reading and self-regulation for students with significant reading difficulties, including dyslexia. *Learning Disability Quarterly*. doi:10.1177/0731948719899479

Dettmers, S., Yotyodying, S., & Jonkmann, K. (2019). Antecedents and outcomes of parental homework involvement: How do family-school partnerships affect parental homework involvement and student outcomes? *Frontiers in Psychology, 10*, 1048. doi: 10.3389/fpsyg.2019.01048

Dominguez, O., & Carugno, P. (2020). *Learning disability*. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK554371/?report=printable

Donati, M. A., Guido, C. A., De Meo, G., Spalice, A., Sanson, F., Beccari, C., & Primi, C. (2021). Gaming among children and adolescents during the COVID-19 lockdown: The Role of

parents in time spent on video games and gaming disorder symptoms. International *Journal of Environmental Research and Public Health, 18*(12), 6642. https://doi.org/10.3390/ijerph18126642

DuPaul, G. J., Gormley, M. J., & Laracy, S. D. (2013). Comorbidity of LD and ADHD: implications of DSM-5 for assessment and treatment. *Journal of Learning Disabilities, 46*, 43–51. 10.1177/0022219412464351

Farrell. M. L., & Sherman, G. F. (2011). Multisensory structure language education. In Ed. Judith R. Birsh (Ed.), *Multisensory teaching of basic language skills* (pp. 25-47). Baltimore, MA: Paul H. Brookes Publishing.

Ferrin, M., Perez-Ayala, V., El-Abd, S., Lax-Pericall, T., Jacobs, B., Bilbow, A., & Taylor, E. (2016). A randomized controlled trial evaluating the efficacy of a psychoeducation program for families of children and adolescents with ADHD in the United Kingdom: Results After a 6-Month Follow-Up. *Journal of Attention Disorders*, 1-12. doi:10.1177/1087054715626509

Furlong, M., McLoughlin, F., McGilloway, S., & Geary, D. (2016). Interventions to improve mathematical performance for children with mathematical learning difficulties (MLD). *Cochrane Database of Systematic Reviews, 4.* Art. No.: CD012130. DOI: 10.1002/14651858.CD012130.

Furukawa, E., Bado, P., Tripp, G., Mattos, P., Wickens, J. R., Bramati, I. E., et al. (2014) Abnormal striatal BOLD responses to reward anticipation and reward delivery in ADHD. *PLoS ONE, 9* (2): e89129. https://doi.org/10.1371/journal.pone.0089129

Furukawa, E., Bado, P., Tripp, G., Mattos, P., & Moll, J. (2017). Focusing is hard! Brain responses to reward in attention deficit hyperactivity disorder. *Frontiers for Young Minds, 5*, 18. doi: 10.3389/frym.2017.00018

García-Redondo, P., García, T., Areces, D., Núñez, J. C., & Rodríguez, C. (2019). Serious games and their effect improving attention in students with learning disabilities. International *Journal of Environmental Research and Public Health, 16*(14), 2480. https://doi.org/10.3390/ijerph16142480

Giovagnoli, S., Mandolesi, L., Magri, S., Gualtieri, L., Fabbri, D., Tossani, E., & Benassi, M. (2020). Internalizing symptoms in developmental dyslexia: a comparison between primary and secondary school. *Frontiers in Psychology, 11*. doi: 10.3389/fpsyg.2020.00461

Grassmann, V., Alves, M. V., Santos-Galduróz, R. F., & Galduróz, J. C. (2017). Possible cognitive benefits of acute physical exercise in children with ADHD. *Journal of Attention Disorders, 21* (5), 367–371. https://doi.org/10.1177/1087054714526041

Grigorenko, E. L., Compton, D. L., Fuchs, L. S., Wagner, R. K., Willcutt, E. G., & Fletcher, J. M. (2020). Understanding, educating, and supporting children with specific learning disabilities: 50 years of science and practice. *American Psychologist, 75*(1), 37–51. http://dx.doi.org/10.1037/amp0000452

Hammons, A. J., Villegas, E., & Robart, R. (2021). "It's been negative for us just all the way across the board": Focus group study exploring parent perceptions of child screen time during the Covid-19 pandemic. *JMIR Pediatrics and Parenting, 4*(2), e29411. doi: 10.2196/29411

Hartshorne, J. K., Huang, Y. T., Lucio Paredes, P. M., Oppenheimer, K., Robbins, P. T., & Velasco, M. D. (2021). Screen time as an index of family distress. Current *Research in Behavioral Sciences, 2,* 100023. https://doi.org/10.1016/j.crbeha.2021.100023.

Harvey, S. P., Lambourne, K., Greene, J. L., Gibson, C. A., Lee, J., & Donnelly, J. E. (2018). The effects of physical activity on learning behaviors in elementary school children: A randomized controlled trial. *Contemporary School Psychology, 22,* 303–312. https://doi.org/10.1007/s40688-017-0143-0

Hoffman, J. A., & DuPaul, G. J. (2000). Psychoeducational interventions for children and adolescents with attention-deficit/hyperactivity disorder. *Child and Adolescent Psychiatric Clinics of North America, 9*(3), 647-661.

Hoover-Dempsey, K. V., Battiato, A. C., Walker, J. M. T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental involvement in homework. *Educational Psychologist, 36*(3), 195–209. doi:10.1207/s15326985ep3603_5

Huang, C.-J., Tu, H.-Y., Hsueh, M.-C., Chiu, Y.-H., Huang, M.-Y., & Chou, C.-C. (2020). Effects of acute aerobic exercise on executive function in children with and without learning disability: A randomized controlled trial. *Adapted Physical Activity Quarterly, 37*(4), 404–422. https://doi.org/10.1123/apaq.2019-0108

Ivy, J. W., Meindl, J. N., Overley, E., & Robson, K. M. (2017). Token economy: A systematic review of procedural descriptions. *Behavior Modification, 41*(5), 708-737. doi:10.1177/0145445517699559

Jamshidifarsani, H., Garbaya, S., Lim, T., Blazevic, P., & Ritchie, J. M. (2019). Technology-based reading intervention programs for elementary grades: An analytical review. *Computers and Education.* https://doi.org/10.1016/j.compedu.2018.10.003

Johnson, E. S. Clohessy, A. B.; Chakravarthy, P. (2021). A self-regulated learner framework for students with learning disabilities and math anxiety. *Intervention in School and Clinic, 56*(3), 163-171. doi:10.1177/1053451220942203

Kaminski, J. A. & Sloutsky, & Vladimir, M. (2020). The use and effectiveness of colorful, contextualized, student-made material for elementary mathematics instruction. *International Journal of STEM Education, 7*(1), 6– doi:10.1186/s40594-019-0199-7

Kim, J.Y., & Fineup, D. M. (2021). Increasing access to online learning for students with disabilities during the COVID-19 pandemic. *Journal of Special Education, 1-9*. https://doi.org/10.1177/0022466921998067

Lardieri, A. (2020, October 29). Most parents worry students will fall behind due to the pandemic. *U.S. News & World Report.* https://www.usnews.com/news/education-news/articles/2020-10-29/most-parents-worry-students-will-fall-behind-due-to-coronavirus-survey-finds

Lerner, J. W., & Johns, B. (2012). *Learning disabilities and related mild disabilities: Characteristics, teaching strategies, and new directions*. Canada: Wadsworth.

Lewis, K., & Lynn, D. (2018). Against the odds: Insights from a statistician with dyscalculia. *Education Sciences, 8*(2), 63. https://doi.org/10.3390/educsci8020063

Lichtinger, E., & Kaplan, A. (2015). Employing a case study approach to capture motivation and self-regulation of young students with learning disabilities in authentic educational contexts. *Metacognition and Learning, 10*(1), 119–149. doi:10.1007/s11409-014-9131-1

Livingston, E. M., Siegel, L. S., & Ribary, U. (2018). Developmental dyslexia: emotional impact and consequences. *Australian Journal of Learning Difficulties, 23*(2), 107-135, DOI:10.1080/19404158.2018.1479975

Maciver, D., Rutherford, M., Arakelyan, S., Kramer, J. M., Richmond, J., Todorova, L., et al. (2019). Participation of children with disabilities in school: A realist systematic review of psychosocial and environmental factors. *PLoS ONE, 1*4(1): e0210511. https://doi.org/10.1371/journal.pone.0210511

MacMaster, K., Donovan, L. A., & MacIntyre, P. D. (2002). The effects of being diagnosed with a learning disability on children's self-esteem. *Child Study Journal, 32*(2), 101+. https://link.gale.com/apps/doc/A94591678/AONE?u=anon~2e45d4a0&sid=googleScholar&xid=8cf235d5

Margari, L., Buttiglione, M., Craig, F., Cristella, A., de Giambattista, C., Matera, E., Operto, F., & Simone, M. (2013). Neuropsychopathological comorbidities in learning disorders. *BMC Neurology, 13*, 198. https://doi.org/10.1186/1471-2377-13-198

McDowell, J. (2018). Specific learning disability. *Journal of Pediatrics and Child Health, 54*, 1077–1083. doi:10.1111/jpc.14168

Miks, J., & McIlwaine, J. (2020). Keeping the world's children learning through COVID-19. https://www.unicef.org/coronavirus/keeping-worlds-children-learning-through-covid-19

National Institute of Child Health and Development. (2018a, September 11). What are the treatments for learning disabilities? https://www.nichd.nih.gov/health/topics/learning/conditioninfo/treatment

National Institute of Child Health and Development. (2018b, September 11). What some signs of learning disabilities? https://www.nichd.nih.gov/health/topics/learning/conditioninfo/signs

National Reading Panel. (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction (National Institute of Health Pub. No. 00-4754). Washington, DC: National Institute of Child Health and Human Development.

Newhall, P. W. (2008). Teaching time management to students with learning disabilities. Adapted from Study Skills: Research-Based Teaching Strategies. Prides Crossing, MA: Landmark School, 28-31. http://www.ldonline.org/article/23676/

Nielsen, K., Henderson, S., Barnett, A. L., Abbott, R. D., & Berninger, V. (2018). Movement issues identified in Movement ABC2 checklist parent ratings for students with persisting dysgraphia, dyslexia, and OWL LD and typical literacy learners. Learning *Disabilities: A Multidisciplinary Journal, 23*(1), 10–23. https://doi.org/10.18666/LDMJ-2018-V23-I1-8449

Papanastasiou, F. (2017). Executive functions and their role in learning disabilities. *Journal of Psychology and Brain Studies, 1*(3), 17.

ParentsTogether. (2020). Survey shows parents alarmed as kids' screen time skyrockets during COVID-19 crisis. https://parents-together.org/survey-shows-parents-alarmed-as-kids-screen-time-skyrockets-during-covid-19-crisis/.

Pennington, B. F. (2009). *Diagnosing learning disorders: a neuropsychological framework.* New York, NY: Guilford Press.

Plass, J. L., Homer, B. D., & Kinzer, C. K. (2015). Foundations of game-based learning. *Educational Psychologist, 50*(4), 258–283. doi:10.1080/00461520.2015.1122533

Powell, S. R., & Fuchs, L. S. (2012). Early numerical competencies and students with mathematics difficulty. Focus *on Exceptional Children, 44*(5), 1-16.

Raskind, M. H., Goldberg, R. J., Higgins, E. L.; & Herman, K. L. (2003). Life *success for children with learning disabilities: A parent guide*. Pasadena, CA: Frostig Center

Reynolds, D., & Nicolson, R. I. (2007). Follow-up of an exercise-based treatment for children with reading difficulties. *Dyslexia, 13*(2), 78–96. doi:10.1002/dys.331

Rose, J. (2009). Identifying and teaching children and young people with dyslexia and literacy difficulties. *Department for Children, Schools and Families* [DSCF], DCSF-00659-2009. http://www.thedyslexia-spldtrust.org.uk/media/downloads/inline/the-rose-report.1294933674.pdf

Royal College of Psychiatrists. (2015). Specific learning disabilities: For parents and carers. https://www.rcpsych.ac.uk/mental-health/parents-and-young-people/information-for-parents-and-carers/specific-learning-disabilities-for-parents-and-carers

Rüth, M., & Kaspar, K. (2021) Educational and social exergaming: A perspective on physical, social, and educational benefits and pitfalls of exergaming at home during the COVID-19 pandemic and afterwards. *Frontiers in Psychology, 12*, 644036. doi: 10.3389/fpsyg.2021.644036

Sainio, P. J., Eklund, K. M., Ahonen, T. P. S., & Kiuru, N. H. (2019). The role of learning difficulties in adolescents' academic emotions and academic achievement. *Journal of Learning Disabilities, 52(*4), 287-298. doi:10.1177/0022219419841567

Shin, M., & Bryant, D. P. (2015). Fraction interventions for students struggling to learn mathematics: A research synthesis. *Remedial and Special Education, 36*(6), 374–387. doi:10.1177/0741932515572910

Siegler, R., Carpenter, T., Fennell, F., Geary, D., Lewis, J., Okamoto, Y., Thompson, L., & Wray, J. (2010). Developing effective fractions instruction for kindergarten through 8th grade: A practice guide (NCEE #2010-4039). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from whatworks.ed.gov/ publications/practiceguides.

Smith S. L. (2002). What do parents of children with learning disabilities, ADHD, and related disorders deal with?. *Pediatric Nursing, 28*(3), 254–257.

Soares, N., Evans, T., & Patel, D. R. (2018). Specific learning disability in mathematics: a comprehensive review. *Translational Pediatrics, 7*(1), 48–62. doi:10.21037/tp.2017.08.03

Soriano-Ferrer, M., Morte-Soriano, M. R., Begeny, J, & Piedra-Martínez, E. (2021) Psychoeducational challenges in Spanish children with dyslexia and their parents' stress during the Covid-19 pandemic. *Frontiers in Psychology, 12*, 648000. doi: 10.3389/fpsyg.2021.648000

Stern. M. B. (2011). Multisensory mathematics instruction. In Ed. Judith R. Birsh (Ed.), *Multisensory teaching of basic language skills* (pp. 631-655). Baltimore, MA: Paul H. Brookes Publishing.

Swanson, L. H. (2001). Searching for the best model for instructing students with learning disabilities. *Focus on Exceptional Children, 34*(2), DOI: 10.17161/foec.v34i2.6785

Svensson, I., Nordström, T., Lindeblad, E., Gustafson, S., Björn, M., Sand, C., Almgren/Bäck, G., & Nilsson, S. (2021) Effects of assistive technology for students with reading and writing disabilities. Disability and Rehabilitation: *Assistive Technology, 16*(2), 196-208, DOI: 10.1080/17483107.2019.1646821

The Dyslexia Association UK. (2021). Assistive technology. https://www.dyslexia.uk.net/services/assistive-technology/

United Nations Educational, Scientific and Cultural Organization. (2021). Adverse consequences of school closures. https://en.unesco.org/covid19/educationresponse/consequences

Wanzek, J., Stevens, E. A., Williams, K. J., Scammacca, N., Vaughn, S., & Sargent, K., (2018). Current evidence on the effects of intensive early reading interventions. *Journal of Learning Disabilities, 51*(6): 612–624. doi:10.1177/0022219418775110

Whiting, K. (2020). How to stay creative and keep your family sane during lockdown – from one of the world's best teachers. https://www.weforum.org/agenda/2020/04/coronavirus-education-homeschooling-teaching-creativity/

Zhu, S., Zhuang, Y., Lee, P., Li, J. C., & Wong, P. W. C. (2021). Leisure and problem gaming behaviors among children and adolescents during school closures caused by Covid-19 in Hong Kong: Quantitative cross-sectional survey study. *JMIR Serious Games, 9*(2), e26808. doi: 10.2196/26808

Zisimopoulos, D. A., & Galanaki, E. P. (2009). Academic intrinsic motivation and perceived academic competence in Greek elementary students with and without learning disabilities. *Learning Disabilities Research & Practice, 24*(1), 33–43. doi:10.1111/j.1540-5826.2008.01275.x